



Evolution
MINING

Environmental Monitoring Data

December 2018

EPL No: 11912

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Dust

Monitoring Point 1 - «Mkshada Shed»

Dust monitoring, Dust gauge located on private property to the west of M.L135 boundary

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	05/01/2018	20/02/2018	20/02/2018	8.2	Some bugs
Monthly	28/02/2018	16/03/2018	20/02/2018	1.6	
Monthly	28/02/2018	16/03/2018	20/02/2018	-	Sample broken in transit by courier
Monthly	28/02/2018	16/03/2018	20/02/2018	2.8	
Monthly	05/05/2018	22/06/2018	20/02/2018	2.7	
Monthly	31/05/2018	18/07/2018	17/08/2018	1.8	
Monthly	02/07/2018	14/08/2018	17/08/2018	0.6	
Monthly	05/08/2018	13/09/2018	20/09/2018	1.3	
Monthly	04/09/2018	19/10/2018	18/11/2018	0.9	
Monthly	02/10/2018	08/11/2018	18/11/2018	1.1	
Monthly	05/11/2018	20/12/2018	18/01/2019	10.1	Algae, Sediment, Bugs
Monthly	05/12/2018	22/01/2019	20/02/2019	7.8	
Number of Samples Collected				12	
Lowest Value				0.6	
Mean of Sample				3.6	
Highest Sample Value				10.1	
Median				2.8	

Monitoring Point 2 «Site Office»

Dust monitoring, Dust gauge located on private property to the south of M.L135 boundary

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	05/01/2018	20/02/2018	20/02/2018	6.0	Some Algae
Monthly	31/01/2018	16/03/2018	20/02/2018	1.6	
Monthly	28/02/2018	16/03/2018	20/02/2018	11.1	Dark Brown, Some Bugs
Monthly	28/02/2018	16/03/2018	20/02/2018	2.2	
Monthly	05/05/2018	22/06/2018	20/02/2018	1.2	
Monthly	31/05/2018	18/07/2018	17/08/2018	1.2	
Monthly	02/07/2018	14/08/2018	20/09/2018	0.7	
Monthly	05/08/2018	13/09/2018	20/09/2018	1.3	
Monthly	04/09/2018	19/10/2018	18/11/2018	0.3	
Monthly	02/10/2018	08/11/2018	18/11/2018	1.0	
Monthly	05/11/2018	20/12/2018	18/01/2019	6.5	Algae, Bugs
Monthly	05/12/2018	22/01/2019	20/02/2019	3.7	
Number of Samples Collected				12	
Lowest Value				0.3	
Mean of Sample				3.6	
Highest Sample Value				11.1	
Median				2.2	

Monitoring Point 3 «GG6»

Dust monitoring, Dust gauge located on private property to the east of M.L135 boundary

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	27/12/2017	20/02/2018	20/02/2018	1.8	
Monthly	31/01/2018	16/03/2018	20/02/2018	1.5	
Monthly	28/02/2018	16/03/2018	20/02/2018	3.5	
Monthly	28/02/2018	16/03/2018	20/02/2018	1.3	
Monthly	30/04/2018	22/06/2018	20/02/2018	6.1	
Monthly	31/05/2018	18/07/2018	17/08/2018	0.7	
Monthly	02/07/2018	14/08/2018	17/08/2018	0.7	
Monthly	05/08/2018	13/09/2018	20/09/2018	1.8	
Monthly	04/09/2018	19/10/2018	18/11/2018	7.0	
Monthly	02/10/2018	08/11/2018	18/11/2018	1.4	
Monthly	05/11/2018	20/12/2018	18/01/2019	13.3	Algae, Sediment, Bugs
Monthly	05/12/2018	22/01/2019	20/02/2019	8.5	
Number of Samples Collected				12	
Lowest Value				0.7	
Mean of Sample				4.3	
Highest Sample Value				13.3	
Median				3.7	

Monitoring Point 4 «GG9»

Dust monitoring, Dust gauge located on private property to the south of M.L135 boundary

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	05/01/2018	20/02/2018	20/02/2018	3.6	
Monthly	31/01/2018	16/03/2018	20/02/2018	1.5	
Monthly	28/02/2018	16/03/2018	20/02/2018	1.6	
Monthly	28/02/2018	16/03/2018	20/02/2018	2.2	
Monthly	30/04/2018	22/06/2018	20/02/2018	2.3	
Monthly	31/05/2018	18/07/2018	17/08/2018	0.6	
Monthly	02/07/2018	14/08/2018	17/08/2018	4.2	
Monthly	05/08/2018	13/09/2018	20/09/2018	1.8	
Monthly	04/09/2018	19/10/2018	18/11/2018	0.2	
Monthly	02/10/2018	08/11/2018	18/11/2018	1.3	
Monthly	05/11/2018	20/12/2018	18/01/2019	7.5	Algae and insects present in sample
Monthly	05/12/2018	22/01/2019	20/02/2019	2.1	
Number of Samples Collected				12	
Lowest Value				0.2	
Mean of Sample				3.1	
Highest Sample Value				7.5	
Median				2.3	

Monitoring Point 5 «Site S2»

Dust monitoring, Dust gauge located within M.L135 and north of the open pit

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	05/01/2018	20/02/2018	20/02/2018	10.7	Algae
Monthly	31/01/2018	16/03/2018	20/02/2018	4.0	
Monthly	05/05/2018	22/06/2018	20/02/2018	2.3	
Monthly	28/02/2018	16/03/2018	20/02/2018	1.8	
Monthly	05/05/2018	22/06/2018	20/02/2018	1.8	
Monthly	02/07/2018	14/08/2018	17/08/2018	5.3	
Monthly	31/05/2018	18/07/2018	17/08/2018	1.8	
Monthly	02/07/2018	14/08/2018	17/08/2018	3.6	
Monthly	05/08/2018	13/09/2018	20/09/2018	3.5	
Monthly	04/09/2018	19/10/2018	18/11/2018	6.3	
Monthly	02/10/2018	08/11/2018	18/11/2018	3.1	
Monthly	05/11/2018	20/12/2018	18/01/2019	9.2	
Monthly	05/12/2018	22/01/2019	20/02/2019	2.9	
Number of Samples Collected				12	
Lowest Value				1.8	
Mean of Sample				5.1	
Highest Sample Value				10.7	
Median				3.6	

Monitoring Point 6 «GG5»

Dust monitoring, Dust gauge located on private property to the north of M.L135 boundary

Frequency	Date Sampled (Date Out)	Date Obtained	Date Published	Particulates (µg/m ³ /month)	Comments
Monthly	05/01/2018	20/02/2018	20/02/2018	3.3	
Monthly	31/01/2018	16/03/2018	20/02/2018	1.2	
Monthly	28/02/2018	16/03/2018	20/02/2018	1.4	
Monthly	28/02/2018	16/03/2018	20/02/2018	1.5	
Monthly	05/05/2018	22/06/2018	20/02/2018	1.4	
Monthly	31/05/2018	18/07/2018	17/08/2018	0.3	
Monthly	02/07/2018	14/08/2018	17/08/2018	0.7	
Monthly	05/08/2018	13/09/2018	20/09/2018	1.1	
Monthly	04/09/2018	19/10/2018	18/11/2018	0.3	
Monthly	02/10/2018	08/11/2018	18/11/2018	1.0	
Monthly	05/11/2018	20/12/2018	18/01/2019	6.5	
Monthly	05/12/2018	22/01/2019	20/02/2019	2.4	
Number of Samples Collected				12	
Lowest Value				0.3	
Mean of Sample				2.7	
Highest Sample Value				6.5	
Median				1.3	

Monitoring Point 6 «W1»

Dust monitoring, High volume sampler located on private property to the north of M.L135 boundary

Frequency	Date Sampled	Date Obtained	Date Published	Total Suspended Particles (µg/m ³)	Comments
Every 7 days	05/01/2018	23/03/2018	20/02/2018	85.5	Unit fault, run time - 12hr
Every 7 days	13/01/2018	27/02/2018	20/02/2018	126.5	Power outage/auge tipped bracket, unit did not run
Every 7 days	19/01/2018	27/02/2018	20/02/2018	142	Unit fault, run time - 9.5hr
Every 7 days	26/01/2018	27/02/2018	20/02/2018	55.5	Unit fault, run time - 9.9hr
Every 7 days	02/02/2018	27/02/2018	20/02/2018	11.2	Unit fault, run time - 12hr
Every 7 days	09/02/2018	27/02/2018	20/02/2018	207	Unit fault, run time - 4.7hr
Every 7 days	16/02/2018	27/02/2018	20/02/2018	106	Unit fault, run time - 11.5hr
Every 7 days	23/02/2018	18/03/2018	20/02/2018	111	Unit fault, run time - 8.4hr
Every 7 days	03/03/2018	18/03/2018	20/02/2018	73.9	Manual unit in block fault run time - 15hr
Every 7 days	09/03/2018	24/03/2018	21/05/2018	40.4	Run time 205
Every 7 days	16/03/2018	24/03/2018	21/05/2018	84.6	Run time - 411
Every 7 days	23/03/2018	24/03/2018	21/05/2018	107.5	Power outage, run time 459
Every 7 days	30/03/2018	24/03/2018	21/05/2018	91.8	Run time 379
Every 7 days	06/04/2018	14/05/2018	21/05/2018	16.3	
Every 7 days	13/04/2018	14/05/2018	21/05/2018	126.0	High winds and dust storm recorded on the 13/04
Every 7 days	20/04/2018	14/05/2018	21/05/2018	41.3	
Every 7 days	27/04/2018	14/05/2018	21/05/2018	77.6	
Every 7 days	04/05/2018	04/06/2018	20/09/2018	46.2	
Every 7 days	11/05/2018	04/06/2018	20/09/2018	21.3	
Every 7 days	18/05/2018	04/06/2018	20/09/2018	88.1	
Every 7 days	25/05/2018	04/06/2018	20/09/2018	49.3	Run time - 21.2hr
Every 7 days	01/06/2018	11/07/2018	20/07/2018	-	External lab error - no data due to filters not weighed for TSP before other testing
Every 7 days	08/06/2018	11/07/2018	20/07/2018	-	External lab error - no data due to filters not weighed for TSP before other testing
Every 7 days	15/06/2018	11/07/2018	20/07/2018	-	External lab error - no data due to filters not weighed for TSP before other testing
Every 7 days	22/06/2018	11/07/2018	20/07/2018	-	External lab error - no data due to filters not weighed for TSP before other testing
Every 7 days	29/06/2018	11/07/2018	20/07/2018	-	External lab error - no data due to filters not weighed for TSP before other testing
Every 7 days	06/07/2018	11/07/2018	17/08/2018	18.4	
Every 7 days	13/07/2018	27/07/2018	17/08/2018	5.2	
Every 7 days	20/07/2018	14/08/2018	17/08/2018	77.2	
Every 7 days	27/07/2018	14/08/2018	17/08/2018	26.2	
Every 7 days	03/08/2018	17/08/2018	20/09/2018	76.0	Dust storm recorded on the 03/08, high winds max reading 45.8 µg/m ³
Every 7 days	10/08/2018	24/08/2018	20/09/2018	30.7	
Every 7 days	17/08/2018	31/08/2018	20/09/2018	36.6	
Every 7 days	24/08/2018	04/09/2018	20/09/2018	49.6	
Every 7 days	31/08/2018	14/09/2018	20/09/2018	74.5	Dust storm recorded on the 31/08, high winds max reading 46.6 µg/m ³
Every 7 days	07/09/2018	24/09/2018	20/09/2018	15.2	
Every 7 days	14/09/2018	09/10/2018	18/10/2018	42.4	
Every 7 days	21/09/2018	09/10/2018	18/10/2018	46.3	
Every 7 days	28/09/2018	17/10/2018	18/10/2018	45.1	
Every 7 days	05/10/2018	23/10/2018	18/10/2018	46.4	
Every 7 days	12/10/2018	29/10/2018	18/10/2018	21.0	
Every 7 days	19/10/2018	06/11/2018	18/10/2018	46.4	Power outage, unit did not run
Every 7 days	26/10/2018	06/11/2018	18/10/2018	46.4	
Every 7 days	02/11/2018	16/11/2018	20/11/2018	137.0	High winds and dust storm recorded on the 02/11
Every 7 days	09/11/2018	06/12/2018	20/11/2018	101.1	Power outage, unit did not run
Every 7 days	16/11/2018	06/12/2018	18/12/2018	30.7	
Every 7 days	23/11/2018	11/12/2018	18/12/2018	61.4	
Every 7 days	30/11/2018	11/12/2018	18/12/2018	71.9	
Every 7 days	07/12/2018	11/12/2018	18/12/2018	52.7	
Every 7 days	14/12/2018	24/12/2018	18/01/2019	37.2	
Every 7 days	21/12/2018	08/01/2019	18/01/2019	81.8	
Every 7 days	28/12/2018	15/01/2019	18/01/2019	71.2	
Number of Samples Collected				49	
Lowest Value				0.2	
Mean of Sample				65.5	
Highest Sample Value				207.5	
Median				51.4	



Surface Water

Monitoring Point: 12 <D1>

Stormwater quality monitoring, Northern waste emplacement contained water storage

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Comments
Monthly	10/01/2017	10/01/2017	20/02/2018	8.2	6814	17	
Monthly	07/02/2018	07/02/2018	20/03/2018	8.2	7416	24	
Monthly	12/03/2018	19/03/2018	19/04/2018	8.4	8440	24	
Monthly	09/04/2018	09/04/2018	21/05/2018	8.6	9660	93	Water level low - 0.9m
Monthly	16/05/2018	16/05/2018	20/06/2018	8.6	9860	53	
Monthly	05/06/2018	15/06/2018	20/07/2018	8.9	8770	75	
Monthly	03/07/2018	12/07/2018	17/08/2018	8.9	7167	75	
Monthly	06/08/2018	14/08/2018	20/09/2018	8.5	8673	71	
Monthly	25/09/2018	04/10/2018	19/10/2018	8.6	11510	17	
Monthly	10/10/2018	17/10/2018	19/11/2018	8.7	12310	21	
Monthly	08/11/2018	15/11/2018	18/12/2018	8.7	14270	30	
Monthly	12/12/2018	21/12/2018	18/01/2019	8.3	22781	66	
Monthly	14/12/2018	24/12/2018	18/01/2019	7.8	18241	112	Rain Event Monitoring
Number of Samples Collected				13	13	13	
Lowest Value				7.8	6814	17	
Mean of Sample				8.5	11225	52	
Highest Sample Value				8.9	22781	112	
Median				8.6	9660	53	

Monitoring Point: 13 <D4>

Stormwater quality monitoring, Southern waste emplacement contained water storage

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Comments
Monthly	10/01/2017	10/01/2017	20/02/2018	8.5	2728	18	
Monthly	07/02/2018	07/02/2018	20/03/2018	8.4	3170	14	
Monthly	12/03/2018	19/03/2018	19/04/2018	8.8	4250	18	
Monthly	09/04/2018	09/04/2018	21/05/2018	9.4	3833	12	Water level low - 0.4m
Monthly	16/05/2018	16/05/2018	20/06/2018	9.0	8270	57	Water level low
Monthly	05/06/2018	15/06/2018	20/07/2018	8.9	6840	1000	Water level low
Monthly	03/07/2018	12/07/2018	17/08/2018	8.0	3242	1000	Water level low
Monthly	06/08/2018	14/08/2018	20/09/2018	-	-	-	Dry
Monthly	25/09/2018	04/10/2018	19/10/2018	-	-	-	Dry
Monthly	10/10/2018	17/10/2018	19/11/2018	-	-	-	Dry
Monthly	08/11/2018	15/11/2018	18/12/2018	-	-	-	Dry
Monthly	12/12/2018	21/12/2018	18/01/2019	-	-	-	Dry
Monthly	14/12/2018	24/12/2018	18/01/2019	6.3	499.2	844.0	Rain Event Monitoring
Number of Samples Collected				8	8	8	
Lowest Value				6.3	499	12	
Mean of Sample				8.4	4354	370	
Highest Sample Value				9.4	8270	1000	
Median				8.7	3746	38	



Lake Water



Monitoring Point: 17 -81>

Ambient water quality monitoring, Surface water point within ML1535 on Lake Cowal

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	8.20	574	
Monthly	06/02/2018	07/02/2018	20/03/2018	8.45	699	
Monthly	13/03/2018	13/03/2018	19/04/2018	8.9	738	
Monthly	04/04/2018	04/04/2018	21/05/2018	8.19	454	
Monthly	May, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	June, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	July, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	August, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	September, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	October, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	November, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	December, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Number of Samples Collected				4	4	
Lowest Value				8.2	434.0	
Mean of Sample				8.7	591.3	
Highest Sample Value				9.2	738.0	
Median				8.7	596.5	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Total Suspended Solids (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	20/02/2018	219	<0.001	0.008	<0.0001	0.002	<0.001	<0.001	0.003	<0.01	84	<0.005	
Quarterly	04/04/2018	12/04/2018	21/05/2018	180	<0.001	0.012	<0.0001	0.003	<0.001	0.009	0.004	<0.01	51	<0.005	Lake Level below 204.5 AHD
Quarterly	July, 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	Lake Level below 204.5 AHD
Quarterly	October, 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	Lake Level below 204.5 AHD

Monitoring Point: 18 -86>

Ambient water quality monitoring, Surface water point on Lake Cowal to the south-east of ML1535 boundary

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	8.10	511	
Monthly	06/02/2018	07/02/2018	20/03/2018	8.55	538	
Monthly	13/03/2018	13/03/2018	19/04/2018	8.9	750	
Monthly	04/04/2018	-	-	-	-	Unable to safely access due to low lake level <204.5 AHD
Monthly	May, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	June, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	July, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	August, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	September, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	October, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	November, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Monthly	December, 2018	-	-	-	-	Lake Level below 204.5 AHD, monitoring no longer required
Number of Samples Collected				2	3	
Lowest Value				8.1	528.0	
Mean of Sample				8.5	603.7	
Highest Sample Value				8.9	750.0	
Median				8.6	533.0	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Total Suspended Solids (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	20/02/2018	192	<0.001	0.007	<0.0001	0.002	<0.001	<0.001	0.003	<0.01	59	<0.005	
Quarterly	04/04/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	Unable to safely access due to low lake level <204.5 AHD
Quarterly	July, 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	Lake Level below 204.5 AHD
Quarterly	October, 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	Lake Level below 204.5 AHD



Groundwater

Monitoring Point: 19 «PSSA-R»
Groundwater quality monitoring. Piezometer located up gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	04/01/2018	04/01/2018	20/02/2018	6.7	29480	20.917	
Monthly	08/02/2018	08/02/2018	20/03/2018	6.89	31030	20.915	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.72	31108	20.899	
Monthly	06/04/2018	06/04/2018	21/05/2018	6.7	31248	20.894	
Monthly	08/05/2018	08/05/2018	20/06/2017	6.59	29760	20.883	
Monthly	21/06/2018	21/06/2018	20/07/2018	6.76	30650	20.928	
Monthly	10/07/2018	10/07/2018	17/08/2018	6.58	31258	20.938	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.73	30437	20.94	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.75	31092	20.863	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.67	30748	20.852	
Monthly	12/11/2018	12/11/2018	18/12/2018	6.79	27327	20.871	
Monthly	18/12/2018	18/12/2018	18/01/2019	6.77	31798	19.132	
Number of Samples Collected				12	12		
Lowest Value				6.6	27327	19.132	
Mean of Sample				6.7	30495	20.753	
Highest Sample Value				6.9	31798	20.940	
Median				6.7	30880	20.897	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	04/01/2018	19/01/2018	02/02/2018	835	<0.0005	<0.0005	0.0006	329	9640	0.001	<0.005	0.016	<0.0002	880	0.161	0.0016	0.0174	25	0.003	6790	2700	22200	4440	0.007	
Quarterly	06/04/2018	17/05/2018	21/05/2018	872	<0.0005	<0.0005	0.0005	308	10400	0.001	<0.005	0.030	<0.0002	753	0.239	0.0038	0.0097	23	0.002	5880	2580	20400	3870	0.007	
Quarterly	10/07/2018	18/07/2018	17/08/2018	854	<0.0005	<0.0005	0.0005	305	9720	0.001	<0.004	<0.005	<0.0002	805	0.205	0.0032	0.0088	22	0.003	6080	2540	28600	4280	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	840	<0.00050	<0.0005	0.0006	291	10700	0.001	<0.004	0.008	<0.0002	803	0.220	0.0031	0.0127	24	0.004	6020	2650	23900	4030	<0.005	

Monitoring Point: 21 «PSSA-R»
Groundwater quality monitoring. Piezometer located up gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	04/01/2018	04/01/2018	20/02/2018	6.68	33320	20.194	
Monthly	08/02/2018	08/02/2018	20/03/2018	6.75	33880	19.224	
Monthly	06/03/2018	06/03/2018	19/04/2018	6.58	34488	19.216	
Monthly	06/04/2018	06/04/2018	21/05/2018	6.64	34926	19.196	
Monthly	08/05/2018	08/05/2018	20/06/2017	6.51	33989	19.221	
Monthly	13/06/2018	13/06/2018	20/07/2018	6.60	34133	19.194	
Monthly	10/07/2018	10/07/2018	17/08/2018	6.59	34821	19.234	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.79	33905	19.204	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.76	34600	19.167	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.68	34213	19.178	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.77	32446	19.195	
Monthly	10/12/2018	10/12/2018	18/01/2019	6.77	35234	19.132	
Number of Samples Collected				12	12		
Lowest Value				6.5	32446	19.132	
Mean of Sample				6.7	34163	19.280	
Highest Sample Value				6.8	35234	20.194	
Median				6.7	34279	19.200	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	04/01/2018	19/01/2018	02/02/2018	803	<0.0005	<0.0005	<0.0002	318	10600	0.001	<0.005	3.24	<0.0002	879	0.161	0.0128	1.16	28	0.006	7960	3340	22300	4410	<0.005	
Quarterly	06/04/2018	17/05/2018	21/05/2018	797	<0.0005	<0.0005	<0.0002	295	11700	0.001	<0.005	4.46	<0.0002	740	0.229	0.0206	1.57	26	0.005	6960	3130	23600	3780	<0.005	
Quarterly	10/07/2018	18/07/2018	17/08/2018	831	<0.0005	<0.0005	<0.0002	288	11400	0.003	<0.004	0.014	<0.0002	779	0.0234	0.0211	0.23	26	0.006	6930	3190	32100	3930	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	833	<0.0005	<0.0005	<0.0002	264	11800	0.002	<0.004	0.018	<0.0002	781	0.0245	0.0287	0.21	26	0.007	6940	3230	21000	3880	<0.005	

Monitoring Point: 22 «P412A-R»
Groundwater quality monitoring. Piezometer located down gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	04/01/2018	04/01/2018	20/02/2018	6.54	40260	9.838	
Monthly	08/02/2018	08/02/2018	20/03/2018	6.69	39780	9.872	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.54	42887	10.032	
Monthly	09/04/2018	09/04/2018	21/05/2018	6.66	43761	9.965	
Monthly	14/05/2018	14/05/2018	20/06/2017	6.44	42893	9.986	
Monthly	04/06/2018	04/06/2018	20/07/2018	6.42	43373	9.964	
Monthly	05/07/2018	05/07/2018	17/08/2018	6.35	44728	9.890	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.57	44122	9.899	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.55	44296	9.920	
Monthly	17/10/2018	17/10/2018	19/11/2018	6.39	44273	9.879	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.61	39529	9.876	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.59	45505	9.805	
Number of Samples Collected				12	12		
Lowest Value				6.4	39529	9.805	
Mean of Sample				6.5	42951	9.911	
Highest Sample Value				6.7	45505	10.032	
Median				6.5	43667	9.895	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	04/01/2018	19/01/2018	02/02/2018	518	<0.0005	0.0009	0.0007	800	13600	0.001	<0.005	0.007	0.0003	1420	0.0313	0.0014	0.0588	46	0.003	8780	3800	27500	7840	<0.005	
Quarterly	09/04/2018	17/05/2018	21/05/2018	546	<0.0005	0.0007	0.0008	711	14900	0.001	<0.005	0.007	<0.0002	1410	0.038	0.0014	0.0657	45	0.003	8100	3760	31400	7680	<0.005	
Quarterly	05/07/2018	13/07/2018	17/08/2018	561	<0.0005	0.0007	0.0010	716	15000	<0.001	<0.005	<0.005	<0.0002	1360	0.0314	0.0024	0.1070	43	0.004	8250	3990	34100	7390	<0.005	
Quarterly	17/10/2018	26/10/2018	19/11/2018	559	<0.0005	<0.0005	0.0008	727	16100	<0.001	<0.004	0.018	<0.0002	1420	0.0336	0.0017	0.0402	47	0.003	8420	3740	34000	7660	<0.005	

Monitoring Point: 23 «P412A-R»
Groundwater quality monitoring. Piezometer located down gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	04/01/2018	04/01/2018	20/02/2018	6.64	41640	11.392	
Monthly	26/02/2018	26/02/2018	20/03/2018	6.64	41891	11.293	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.59	42503	11.31	
Monthly	09/04/2018	09/04/2018	21/05/2018	6.68	43514	11.269	
Monthly	14/05/2018	14/05/2018	20/06/2017	6.52	42216	11.288	
Monthly	13/06/2018	13/06/2018	20/07/2018	6.61	42524	11.087	
Monthly	09/07/2018	09/07/2018	17/08/2018	6.48	43170	11.186	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.7	42661	11.056	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.67	43045	11.098	
Monthly	17/10/2018	17/10/2018	19/11/2018	6.53	42804	10.979	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.73	36556	11.021	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.7	48898	10.915	
Number of Samples Collected				12	12		
Lowest Value				6.5	36556	10.915	
Mean of Sample				6.6	42127	11.158	
Highest Sample Value				6.7	48898	11.392	
Median				6.6	42993	11.142	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	04/01/2018	19/01/2018	02/02/2018	461	<0.0005	<0.0005	<0.0002	823	13700	0.001	<0.005	0.114	0.0003	1570	0.0055	0.0012	0.039	71	0.003	8810	3650	30600	8520	<0.005	
Quarterly	09/04/2018	17/05/2018	21/05/2018	479	<0.0005	<0.0005	<0.0002	708	14900	0.001	<0.005	0.058	<0.0002	1440	0.0054	0.0006	0.0392	62	0.003	7610	3560	31500	7700	<0.005	
Quarterly	09/07/2018	18/07/2018	17/08/2018	477	<0.0005	<0.0005	<0.0002	752	15700	0.001	<0.005	0.016	<0.0002	1410	0.0042	0.0014	0.0326	62	0.004	7670	3090	41000	7680	<0.005	
Quarterly	17/10/2018	26/10/2018	19/11/2018	493	<0.0005	<0.0005	<0.0002	708	15700	<0.001	<0.004	0.018	<0.0002	1460	0.0078	0.0017	0.0453	67	0.005	7890	3510	33400	7780	<0.005	



Groundwater

Monitoring Point: 24 <P414A>
Groundwater quality monitoring. Piezometer located down gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	05/01/2018	05/01/2018	20/02/2018	6.67	39830	11.909	
Monthly	12/02/2018	12/02/2018	20/03/2018	6.65	38810	11.708	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.64	40981	11.803	
Monthly	06/04/2018	06/04/2018	21/05/2018	6.66	41594	11.752	
Monthly	03/05/2018	03/05/2018	20/06/2017	6.45	40519	11.724	
Monthly	04/06/2018	04/06/2018	20/07/2018	6.48	40679	11.691	
Monthly	05/07/2018	05/07/2018	17/08/2018	6.66	37488	11.645	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.71	40952	11.586	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.71	41223	11.584	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.62	40842	11.500	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.75	39543	11.54	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.74	42073	11.424	
Number of Samples Collected				12	12	12	
Lowest Value				6.5	37488	11.424	
Mean of Sample				6.6	40378	11.656	
Highest Sample Value				6.8	42073	11.509	
Median				6.7	40760	11.668	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	05/01/2018	19/01/2018	02/02/2018	610	<0.0005	<0.0005	<0.0002	577	13600	<0.001	<0.005	0.010	<0.0002	1420	0.0032	0.0005	0.0349	40	0.015	8530	3330	27900	7290	<0.005	
Quarterly	06/04/2018	17/05/2018	21/05/2018	635	<0.0005	<0.0005	<0.0002	576	14200	<0.001	<0.005	0.009	<0.0002	1500	0.0024	0.0004	0.0206	40	0.014	8350	3040	29300	7620	<0.005	
Quarterly	05/07/2018	18/07/2018	17/08/2018	652	<0.0005	<0.0005	<0.0002	490	13700	<0.001	<0.005	<0.005	<0.0002	1300	0.0062	0.0008	0.0505	36	0.017	7660	3180	30200	6580	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	638	<0.0005	<0.0005	<0.0002	490	14600	<0.001	<0.004	0.016	<0.0002	1340	0.0102	0.0013	0.0654	38	0.017	7860	3230	24900	6740	<0.005	

Monitoring Point: 25 <P414B>
Groundwater quality monitoring. Piezometer located down gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	17/01/2018	17/01/2018	20/02/2018	6.7	40450	10.686	
Monthly	26/02/2018	26/02/2018	20/03/2018	6.89	42297	11.872	
Monthly	26/03/2018	26/03/2018	19/04/2018	6.72	40477	11.817	
Monthly	11/04/2018	11/04/2018	21/05/2018	6.76	41450	11.834	
Monthly	24/05/2018	24/05/2018	20/06/2017	7.05	40976	11.809	
Monthly	21/06/2018	21/06/2018	20/07/2018	7.05	40588	11.780	
Monthly	18/07/2018	18/07/2018	17/08/2018	6.71	40030	11.687	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.74	40838	11.636	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.73	40772	11.640	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.66	41044	11.550	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.74	39731	11.59	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.76	42396	11.471	
Number of Samples Collected				12	12	12	
Lowest Value				6.7	39731	10.686	
Mean of Sample				6.8	40921	11.614	
Highest Sample Value				7.1	42396	11.872	
Median				6.7	40805	11.664	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	17/01/2018	31/02/18	02/02/2018	517	<0.0005	<0.0005	<0.0002	439	13700	<0.001	<0.005	<0.005	<0.0002	1390	0.071	0.0004	0.0009	27	0.004	8750	2930	32600	6820	0.010	
Quarterly	11/04/2018	24/04/2018	21/05/2018	490	<0.0005	0.0005	<0.0002	410	13000	<0.001	<0.005	0.023	<0.0002	1290	0.0511	0.0003	0.0022	21	0.003	8380	2780	32500	6340	0.011	
Quarterly	18/07/2018	25/07/2018	17/08/2018	405	<0.0005	<0.0005	<0.0002	384	13400	<0.001	<0.010	0.007	<0.0002	1240	0.0044	0.0002	0.0018	22	0.004	7910	3190	30900	6060	0.017	
Quarterly	16/10/2018	26/10/2018	19/11/2018	477	<0.0005	<0.0005	<0.0002	361	14600	<0.001	<0.005	0.026	<0.0002	1240	0.0022	0.0003	0.0023	23	0.008	7960	3120	30800	6010	0.020	

Monitoring Point: 26 <PP03>
Groundwater quality monitoring. Piezometer located near the processing plant area

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	19/01/2018	19/01/2018	20/02/2018	7.80	2100	16.501	
Monthly	27/02/2018	27/02/2018	20/03/2018	7.71	1989	16.323	
Monthly	26/03/2018	26/03/2018	19/04/2018	7.05	3616	15.233	
Monthly	13/04/2018	13/04/2018	21/05/2018	7.69	4495	15.283	
Monthly	24/05/2018	24/05/2018	20/06/2017	7.22	4526	15.635	
Monthly	28/06/2018	28/06/2018	20/07/2018	7.50	6550	15.791	
Monthly	26/07/2018	26/07/2018	17/08/2018	7.03	6627	15.852	
Monthly	20/08/2018	20/08/2018	20/09/2018	7.05	6853	15.982	
Monthly	13/09/2018	13/09/2018	19/10/2018	7.03	7121	15.989	
Monthly	18/10/2018	18/10/2018	19/11/2018	7.09	6885	15.972	
Monthly	08/11/2018	08/11/2018	18/12/2018	7.32	6849	16.017	
Monthly	19/12/2018	19/12/2018	18/01/2019	6.97	7658	16.125	
Number of Samples Collected				12	12	12	
Lowest Value				7.0	1989	15.233	
Mean of Sample				7.1	5439	15.892	
Highest Sample Value				7.8	7658	16.501	
Median				7.2	6589	15.977	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	19/01/2018	06/02/2018	02/02/2018	193	0.0006	0.001	0.00005	98	841	0.0034	<0.004	0.004	0.0002	55	<0.0005	0.007	0.0005	9	0.0009	558	472	2000	471	0.002	
Quarterly	13/04/2018	24/04/2018	21/05/2018	198	<0.0005	0.0013	<0.0002	106	850	0.0050	<0.004	<0.005	<0.0002	58	<0.0005	0.008	0.0009	9	<0.002	569	512	2240	504	0.005	
Quarterly	26/07/2018	03/08/2018	17/08/2018	165	<0.0005	0.0008	<0.0002	203	1590	<0.0040	<0.004	<0.005	<0.0002	148	0.001	0.007	0.0012	12	0.002	965	635	4460	1130	0.008	
Quarterly	18/10/2018	26/10/2018	19/11/2018	177	<0.0005	0.0009	<0.0002	217	1870	0.0060	<0.004	0.009	0.0006	158	0.002	0.007	0.0021	14	0.003	1030	662	4600	1190	0.019	

Monitoring Point: 27 <PP04>
Groundwater quality monitoring. Piezometer located near the processing plant area

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	19/01/2018	19/01/2018	20/02/2018	6.71	47600	15.887	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.56	45150	15.675	
Monthly	26/03/2018	26/03/2018	19/04/2018	6.45	47164	14.784	
Monthly	13/04/2018	13/04/2018	21/05/2018	6.78	47670	14.661	
Monthly	24/05/2018	24/05/2018	20/06/2017	6.36	46342	14.517	
Monthly	28/06/2018	28/06/2018	20/07/2018	6.85	45215	14.498	
Monthly	29/07/2018	29/07/2018	17/08/2018	6.62	49988	14.524	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.60	45914	14.588	
Monthly	13/09/2018	13/09/2018	19/10/2018	6.53	48096	14.582	
Monthly	18/10/2018	18/10/2018	19/11/2018	6.52	46779	14.585	
Monthly	08/11/2018	08/11/2018	18/12/2018	6.81	46977	14.647	
Monthly	13/12/2018	13/12/2018	18/01/2019	6.62	48211	14.588	
Number of Samples Collected				12	12	12	
Lowest Value				6.4	45150	14.498	
Mean of Sample				6.6	46751	14.791	
Highest Sample Value				6.9	48211	15.887	
Median				6.6	46858	14.587	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	19/01/2018	06/02/2018	02/02/2018	524	<0.0005	<0.0005	<0.0002	812	17200	<0.001	<0.005	<0.005	0.0009	1630	0.0009	0.0012	0.0048	50	0.01	9660	3480	39000	8740	<0.005	
Quarterly	13/04/2018	24/04/2018	21/05/2018	555	<0.0005	<0.0005	<0.0002	891	17400	<0.001	<0.004	<0.005	0.0009	1740	0.001	0.0009	0.0057	48	0.011	10000	3850	56100	9390	<0.005	
Quarterly	26/07/2018	03/08/2018	17/08/2018	459	<0.0005	0.0008	<0.0002	772	13700	<0.001	<0.004	0.014	<0.0002	1570	0.0016	0.0022	0.0156	44	0.01	9200	3520	40200	8390	0.007	
Quarterly	18/10/2018	26/10/2018	19/11/2018	469	<0.0005	<0.0005	<0.0002	738	17000	<0.001	<0.004	0.027	0.0008	1520	0.004	0.0024	0.0166	42	0.011	8750	3570	29300	8080	<0.005	



Groundwater

Monitoring Point: 30 <P417A>
Groundwater quality monitoring. Piezometer located down gradient of southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	08/01/2018	08/01/2018	20/02/2018	6.49	42660	12.420	
Monthly	13/02/2018	13/02/2018	20/03/2018	6.52	42410	12.392	
Monthly	13/03/2018	13/03/2018	19/04/2018	6.49	40981	12.373	
Monthly	10/04/2018	10/04/2018	21/05/2018	6.65	45638	12.376	
Monthly	15/05/2018	15/05/2018	20/06/2017	6.31	44403	12.381	
Monthly	13/06/2018	13/06/2018	20/07/2018	6.64	44575	12.310	
Monthly	09/07/2018	09/07/2018	17/08/2018	6.38	45382	12.352	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.55	44187	12.344	
Monthly	06/09/2018	06/09/2018	19/10/2018	6.57	45129	12.281	
Monthly	15/10/2018	15/10/2018	19/11/2018	6.47	44489	12.292	
Monthly	08/11/2018	08/11/2018	18/12/2018	6.56	42971	12.322	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.6	44317	12.327	
Number of Samples Collected				12	12		
Lowest Value				6.3	40981	12.281	
Mean of Sample				6.5	43936	12.348	
Highest Sample Value				6.7	45638	12.420	
Median				6.5	44360	12.348	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	08/01/2018	22/02/2018	02/02/2018	522	<0.0005	<0.0005	0.0007	720	14900	<0.001	<0.005	0.005	<0.0002	1550	0.0497	0.0013	0.0128	34	0.005	9100	3340	35600	8180	<0.005	
Quarterly	10/04/2018	17/05/2018	21/05/2018	529	<0.0005	0.0005	0.0009	677	14400	<0.001	<0.005	0.007	<0.0002	1560	0.0391	0.0011	0.0104	31	0.006	8750	3320	22200	8110	<0.005	
Quarterly	09/07/2018	18/07/2018	17/08/2018	522	<0.0005	0.0005	0.0008	695	16800	0.002	<0.005	<0.005	<0.0002	1490	0.0362	0.0011	0.007	31	0.007	8400	3020	42300	7870	<0.005	
Quarterly	15/10/2018	26/10/2018	19/11/2018	472	<0.00050	<0.00050	0.001	641	16300	<0.00100	<0.004	<0.00500	<0.00020	1440	0.0452	0.0025	0.0144	36	0.008	8190	3420	33000	7530	<0.00500	

Monitoring Point: 31 <P417B>

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	17/01/2018	17/01/2018	20/02/2018	6.7	39890	11.989	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.49	39851	12.374	
Monthly	26/03/2018	26/03/2018	19/04/2018	6.62	40651	12.318	
Monthly	11/04/2018	11/04/2018	21/05/2018	6.64	41520	12.536	
Monthly	24/05/2018	24/05/2018	20/06/2017	7.04	40374	12.328	
Monthly	28/06/2018	28/06/2018	20/07/2018	6.94	38889	12.290	
Monthly	19/07/2018	19/07/2018	17/08/2018	6.65	39755	12.273	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.57	40740	12.315	
Monthly	06/09/2018	06/09/2018	19/10/2018	6.68	41214	12.246	
Monthly	15/10/2018	15/10/2018	19/11/2018	6.6	40642	12.267	
Monthly	08/11/2018	08/11/2018	18/12/2018	6.69	40071	12.285	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.69	37697	12.281	
Number of Samples Collected				12	12		
Lowest Value				6.5	37697	11.989	
Mean of Sample				6.7	40107	12.292	
Highest Sample Value				7.0	41520	12.536	
Median				6.7	40222	12.288	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	17/01/2018	31/01/2018	02/02/2018	252	<0.0005	<0.0005	<0.0002	605	13600	<0.001	<0.005	<0.005	0.0002	1460	<0.0005	0.0003	0.0008	23	0.008	8490	2510	31200	7520	0.009	
Quarterly	11/04/2018	24/04/2018	21/05/2018	266	<0.0005	0.0007	<0.0002	565	13200	<0.001	<0.005	0.014	<0.0002	1330	0.0006	0.0003	0.0017	19	0.01	7920	2860	37400	6890	0.009	
Quarterly	19/07/2018	25/07/2018	17/08/2018	230	<0.0005	0.0005	<0.0002	539	13600	<0.001	<0.010	0.01	<0.0002	1300	0.0006	0.0002	0.003	21	0.01	7560	2780	31200	6700	0.008	
Quarterly	15/10/2018	26/10/2018	19/11/2018	245	<0.0005	<0.0005	<0.0002	516	14800	<0.001	<0.004	<0.005	0.0002	1290	0.0024	0.0003	0.0026	22	0.011	7210	2950	24800	6440	0.016	

Monitoring Point: 32 <P418A>
Groundwater quality monitoring. Piezometer located down gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	05/01/2018	05/01/2018	20/02/2018	6.51	48010	9.839	
Monthly	08/02/2018	08/02/2018	20/03/2018	6.62	46430	9.809	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.46	45862	9.787	
Monthly	06/04/2018	06/04/2018	21/05/2018	6.48	47199	9.769	
Monthly	18/05/2018	18/05/2018	20/06/2017	6.45	46012	9.777	
Monthly	13/06/2018	13/06/2018	20/07/2018	6.42	45985	9.673	
Monthly	10/07/2018	10/07/2018	17/08/2018	6.38	46925	9.734	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.54	45822	9.686	
Monthly	09/09/2018	09/09/2018	19/10/2018	6.55	46895	9.661	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.48	46447	9.626	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.61	42680	9.668	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.57	45830	9.703	
Number of Samples Collected				12	12		
Lowest Value				6.4	42680	9.626	
Mean of Sample				6.5	46258	9.728	
Highest Sample Value				6.6	48010	9.839	
Median				6.5	46638	9.739	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	05/01/2018	22/01/2018	02/02/2018	639	<0.0005	<0.0005	<0.0002	553	15200	0.002	<0.005	0.008	<0.0002	1450	0.211	0.0007	0.0098	23	0.005	10900	4730	37800	7350	<0.005	
Quarterly	06/04/2018	17/05/2018	21/05/2018	647	<0.0005	<0.0005	<0.0002	514	16200	<0.001	<0.005	<0.005	<0.0002	1450	0.126	0.0012	0.0082	23	0.004	9610	4820	33200	7250	<0.005	
Quarterly	10/07/2018	19/07/2018	17/08/2018	638	<0.0005	<0.0005	<0.0002	516	16800	0.002	<0.005	<0.005	<0.0002	1380	0.175	0.0008	0.0167	21	0.007	9680	4090	45500	6970	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	672	<0.0005	<0.0005	<0.0002	469	16400	0.004	<0.004	0.012	<0.0002	1340	0.308	0.0007	0.0292	22	0.005	9080	4750	36400	6690	<0.005	

Monitoring Point: 33 <P418B>
Groundwater quality monitoring. Piezometer located down gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	05/01/2018	05/01/2018	20/02/2018	6.47	41280	9.81	
Monthly	08/02/2018	08/02/2018	20/03/2018	6.58	40270	9.784	
Monthly	12/03/2018	12/03/2018	19/04/2018	6.58	42123	9.749	
Monthly	06/04/2018	06/04/2018	21/05/2018	6.64	42505	9.734	
Monthly	18/05/2018	18/05/2018	20/06/2017	6.64	41678	9.745	
Monthly	13/06/2018	13/06/2018	20/07/2018	6.47	41726	9.633	
Monthly	10/07/2018	10/07/2018	17/08/2018	6.34	42460	9.708	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.5	41410	9.678	
Monthly	09/09/2018	09/09/2018	19/10/2018	6.51	42538	9.643	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.43	42058	9.610	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.55	38878	9.644	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.51	41838	9.681	
Number of Samples Collected				12	12		
Lowest Value				6.3	38878	9.610	
Mean of Sample				6.5	41564	9.702	
Highest Sample Value				6.6	42538	9.810	
Median				6.5	41782	9.695	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	05/01/2018	19/01/2018	02/02/2018	619	<0.0005	<0.0005	<0.0002	334	12800	0.048	<0.005	0.090	<0.0002	1200	0.102	0.0076	0.813	10	0.003	9750	4750	31000	5780	<0.005	
Quarterly	06/04/2018	17/05/2018	21/05/2018	612	<0.0005	<0.0005	<0.0002	315	14000	0.018	<0.005	0.176	<0.0002	1140	0.0371	0.0028	0.378	11	0.002	8690	4080	30000	5480	<0.005	
Quarterly	10/07/2018	19/07/2018	17/08/2018	593	<0.0005	<0.0005	<0.0002	321	14500	<0.0005	<0.005	<0.005	<0.0002	1080	0.0191	0.0049	0.276	10	0.003	8720	3740	40600	5250	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	599	<0.0005	<0.0005	<0.0002	285	14600	0.006	<0.004	0.012	<0.0002	1070	0.0208	0.0042	0.224	10	0.004	8580	4080	27300	5120	<0.005	



Groundwater

Monitoring Point: 34 <TSFNA>
Groundwater quality monitoring, Piezometer located down gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	22/01/2018	22/01/2018	20/02/2018	6.62	47120	11.549	
Monthly	13/02/2018	13/02/2018	20/03/2018	6.58	44930	12.013	
Monthly	28/03/2018	28/03/2018	19/04/2018	6.57	48406	11.198	
Monthly	18/04/2018	18/04/2018	21/05/2018	6.61	48803	11.423	
Monthly	25/05/2018	25/05/2018	20/06/2017	6.48	47440	11.156	
Monthly	11/07/2018	11/07/2018	20/07/2018	6.47	48272	11.534	No access due to rainfall
Monthly	13/08/2018	13/08/2018	20/09/2018	6.63	47474	11.7	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.61	48173	11.493	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.56	48234	11.628	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.7	44792	11.585	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.68	49459	11.502	
Number of Samples Collected				11	11	11	
Lowest Value				6.5	44792	11.156	
Mean of Sample				6.6	47553	11.525	
Highest Sample Value				6.7	49459	12.011	
Median				6.6	48173	11.534	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	22/01/2018	31/01/2018	02/02/2018	551	<0.0005	0.0011	<0.0002	605	15300	<0.001	<0.005	0.037	<0.0002	1610	1.73	0.0030	0.0047	32	<0.002	11300	4370	30400	8140	<0.005	
Quarterly	18/04/2018	26/04/2018	21/05/2018	603	<0.0005	0.0016	0.0004	640	16100	<0.001	<0.005	0.268	<0.0002	1460	4.17	0.0048	0.0124	23	<0.002	9570	4620	50000	7610	0.023	
Quarterly	11/07/2018	19/07/2018	17/08/2018	572	<0.0005	0.0011	<0.0002	616	14900	<0.001	<0.005	0.072	<0.0002	1470	3.02	0.0043	0.0165	22	<0.002	9720	4600	47800	7590	0.014	
Quarterly	16/10/2018	26/10/2018	19/11/2018	544	<0.0005	0.0010	<0.0002	624	16000	<0.001	<0.004	0.042	<0.00020	1460	2.86	0.0052	0.0215	24	<0.002	9210	4550	35600	7570	<0.005	

Monitoring Point: 36 <PDB1A>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	6.38	50970	15.718	
Monthly	12/02/2018	12/02/2018	20/03/2018	6.50	54198	15.774	
Monthly	13/03/2018	13/03/2018	19/04/2018	6.40	52354	16.319	
Monthly	10/04/2018	10/04/2018	21/05/2018	6.55	52948	15.913	
Monthly	14/05/2018	14/05/2018	20/06/2017	6.17	51378	16.005	
Monthly	19/06/2018	19/06/2018	20/07/2018	6.48	52276	16.117	
Monthly	18/07/2018	18/07/2018	17/08/2018	6.38	48331	16.187	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.42	51932	16.304	
Monthly	12/09/2018	12/09/2018	19/10/2018	6.36	53877	16.355	
Monthly	10/10/2018	10/10/2018	19/11/2018	6.32	52158	16.444	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.50	47409	16.501	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.44	51632	16.566	
Number of Samples Collected				12	12	12	
Lowest Value				6.3	47409	15.718	
Mean of Sample				6.4	51639	16.184	
Highest Sample Value				6.6	54198	16.566	
Median				6.4	52045	16.346	

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	02/02/2018	<0.0005	<0.0005	0.002	950	16900	<0.001	<0.005	<0.0002	1950	2.06	0.0008	0.0547	37	<0.002	12000	4370	44000	10400	<0.005	
Quarterly	10/04/2018	17/04/2018	21/05/2018	<0.0005	0.0008	0.0043	1010	16900	<0.001	0.014	<0.0002	1870	3.18	0.0018	0.0482	25	<0.002	10500	4140	27300	10200	<0.005	
Quarterly	18/07/2018	25/07/2018	17/08/2018	<0.0005	<0.0005	0.0028	1060	17400	<0.001	0.030	<0.0002	1890	3.23	0.0020	0.0293	31	0.003	10800	4410	40800	10400	<0.005	
Quarterly	10/10/2018	19/10/2018	19/11/2018	<0.0005	<0.0005	0.0043	1050	17400	<0.001	0.017	<0.0002	1900	3.25	0.0009	0.0255	32	0.003	10900	4640	51200	10400	<0.005	

Monitoring Point: 38 <PDB3A>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	30/01/2018	30/01/2018	20/02/2018	6.73	47720	82.203	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.75	47721	82.287	
Monthly	27/03/2018	27/03/2018	19/04/2018	6.51	51897	82.206	
Monthly	18/04/2018	18/04/2018	21/05/2018	6.51	52397	82.286	
Monthly	24/05/2018	24/05/2018	20/06/2017	7.24	52459	83.270	
Monthly	28/06/2018	28/06/2018	20/07/2018	6.95	50171	82.230	
Monthly	23/07/2018	23/07/2018	17/08/2018	6.71	48958	82.170	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.68	51522	82.200	
Monthly	13/09/2018	13/09/2018	19/10/2018	6.58	51360	81.834	
Monthly	15/10/2018	15/10/2018	19/11/2018	6.50	52484	81.682	
Monthly	19/11/2018	19/11/2018	18/12/2018	6.71	51387	81.653	
Monthly	10/12/2018	10/12/2018	18/01/2019	6.67	54098	81.629	
Number of Samples Collected				12	12	12	
Lowest Value				6.5	47720	81.629	
Mean of Sample				6.7	51256	82.138	
Highest Sample Value				7.2	54098	83.270	
Median				6.7	51709	82.302	

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	30/01/2018	06/02/2018	02/02/2018	0.0015	0.002	0.0004	482	4320	0.002	0.011	<0.0002	486	0.09	0.0097	<0.0005	35	0.020	2610	3170	12200	3200	<0.005	Results off trend for boron, potential lab error/sample contamination
Quarterly	18/04/2018	26/04/2018	21/05/2018	0.0009	0.0016	0.0061	1160	18200	0.01	0.008	<0.0002	1830	1.39	0.0081	0.0386	48	0.003	9210	4040	55800	10400	0.120	Results trending with historic monitoring
Quarterly	23/07/2018	02/08/2018	17/08/2018	0.0008	0.0019	0.0062	1100	19000	0.008	0.006	<0.0002	1750	1.16	0.0087	0.0161	41	0.003	8650	3810	33800	9950	0.545	
Quarterly	15/10/2018	26/10/2018	19/11/2018	<0.0005	0.0017	0.0073	1110	19800	0.002	<0.005	<0.0002	1740	1.21	0.0090	0.0163	35	0.004	8700	3970	42100	9940	0.190	

Monitoring Point: 40 <PDB5A>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	16/01/2018	16/01/2018	20/02/2018	6.68	53670	30.484	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.77	53104	30.614	
Monthly	16/03/2018	16/03/2018	19/04/2018	6.57	51525	30.951	
Monthly	11/04/2018	11/04/2018	21/05/2018	6.87	51997	30.642	
Monthly	15/05/2018	15/05/2018	20/06/2017	6.72	49829	30.619	
Monthly	14/06/2018	14/06/2018	20/07/2018	6.99	50185	30.589	
Monthly	30/07/2018	30/07/2018	17/08/2018	6.21	45320	30.912	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.22	45740	31.119	
Monthly	12/09/2018	12/09/2018	19/10/2018	6.17	47423	31.253	
Monthly	15/10/2018	15/10/2018	19/11/2018	6.23	51456	31.556	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.43	44577	31.772	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.38	51033	31.919	
Number of Samples Collected				12	12	12	
Lowest Value				6.2	44577	30.484	
Mean of Sample				6.5	49656	31.036	
Highest Sample Value				7.0	53670	31.919	
Median				6.5	50909	30.932	

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	16/01/2018	31/01/2018	02/02/2018	<0.0005	0.0037	0.0096	868	17900	0.008	0.008	<0.0002	1860	0.0294	0.0055	0.0291	44	0.004	9380	3110	43800	9830	0.052	
Quarterly	11/04/2018	24/04/2018	21/05/2018	<0.0005	0.0052	0.0084	854	16900	0.011	0.011	<0.0002	1890	0.0386	0.0074	0.0472	38	0.006	9740	3480	51100	9920	0.081	
Quarterly	30/07/2018	03/08/2018	17/08/2018	<0.0005	0.0029	0.0017	829	14700	0.009	0.009	0.0008	1820	0.0363	0.0024	0.0122	45	<0.002	9280	3320	43100	9560	0.055	
Quarterly	15/10/2018	26/10/2018	19/11/2018	<0.0005	0.0065	0.0051	773	18500	<0.001	0.012	<0.0002	1810	0.0275	0.0005	0.0136	41	0.004	9160	3570	41300	9380	0.039	



Groundwater

Monitoring Point: 44 <MOND1A>
Groundwater quality monitoring, Groundwater monitoring bore located to the east of the northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	04/01/2018	04/01/2018	20/02/2018	6.47	45360	10.881	
Monthly	14/02/2018	14/02/2018	20/03/2018	6.44	44150	10.908	
Monthly	13/03/2018	13/03/2018	19/04/2018	6.47	46681	10.656	
Monthly	09/04/2018	09/04/2018	21/05/2018	6.55	47443	10.547	
Monthly	24/05/2018	24/05/2018	20/06/2017	6.59	45843	10.424	
Monthly	20/06/2018	20/06/2018	20/07/2018	6.51	46064	9.277	
Monthly	18/07/2018	18/07/2018	17/08/2018	6.46	45225	10.221	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.53	46496	10.137	
Monthly	05/09/2018	05/09/2018	19/10/2018	6.51	46822	10.210	
Monthly	15/10/2018	15/10/2018	19/11/2018	6.42	45981	10.328	
Monthly	12/11/2018	12/11/2018	18/12/2018	6.57	43764	9.99	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.53	45634	10.099	
Number of Samples Collected				12	12		
Lowest Value				6.4	43764	9.277	
Mean of Sample				6.5	45789	10.307	
Highest Sample Value				6.6	47442	10.508	
Median				6.5	45912	10.275	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	04/01/2018	19/01/2018	02/02/2018	333	<0.0005	0.0015	0.0005	515	14400	<0.001	<0.005	0.246	<0.0002	1420	1.590	0.0006	0.0226	25	<0.002	9850	4590	30200	7130	<0.005	
Quarterly	09/04/2018	17/04/2018	21/05/2018	346	<0.0005	<0.0005	0.0009	553	16100	<0.001	<0.005	0.332	<0.0002	1500	0.472	0.0009	0.0591	26	<0.002	9990	4590	34100	7560	<0.005	
Quarterly	18/07/2018	25/07/2018	17/08/2018	295	<0.0005	0.0017	0.0002	500	14700	<0.001	<0.010	0.339	<0.0002	1350	1.220	0.0014	0.0274	25	<0.002	9450	4720	34200	6810	<0.005	
Quarterly	15/10/2018	26/10/2018	19/11/2018	320	<0.0005	<0.0005	0.0010	480	16200	<0.001	<0.004	0.020	<0.0002	1290	0.588	0.0012	0.0583	23	<0.002	8860	4720	35700	6510	<0.005	

Monitoring Point: 45 <MOND2A>
Groundwater quality monitoring, Groundwater monitoring bore located to the south of the southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	6.67	37760	9.301	
Monthly	14/02/2018	14/02/2018	20/03/2018	6.69	38730	9.283	
Monthly	13/03/2018	13/03/2018	19/04/2018	6.64	40361	9.285	
Monthly	10/04/2018	10/04/2018	21/05/2018	6.70	40828	9.277	
Monthly	17/05/2018	17/05/2018	20/06/2017	6.52	39732	9.243	
Monthly	14/06/2018	14/06/2018	20/07/2018	6.49	40003	9.165	
Monthly	19/07/2018	19/07/2018	17/08/2018	6.68	39173	8.960	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.70	40209	8.890	
Monthly	06/09/2018	06/09/2018	19/10/2018	6.72	40551	8.903	
Monthly	17/10/2018	17/10/2018	19/11/2018	6.59	40079	8.919	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.73	33406	8.933	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.72	39566	8.891	
Number of Samples Collected				12	12		
Lowest Value				6.5	33406	8.890	
Mean of Sample				6.7	39200	9.088	
Highest Sample Value				6.7	40828	9.301	
Median				6.7	39668	9.063	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	02/02/2018	722	<0.0005	<0.0005	<0.0002	486	12500	0.003	<0.005	0.011	<0.0002	1200	0.0383	0.0018	0.103	48	0.009	8060	3040	31200	6160	<0.005	
Quarterly	10/04/2018	17/04/2018	21/05/2018	790	<0.0005	0.0005	0.0002	494	12600	<0.001	<0.005	0.010	<0.0002	1220	0.0246	0.0019	0.143	40	0.010	8310	3170	20700	6260	<0.005	
Quarterly	19/07/2018	25/07/2018	17/08/2018	636	<0.0005	<0.0005	0.0002	522	12900	0.002	<0.010	0.018	<0.0002	1270	0.0340	0.0024	0.181	48	0.010	8480	3360	24500	6530	<0.005	
Quarterly	17/10/2018	26/10/2018	19/11/2018	777	<0.0005	<0.0005	0.0002	470	14300	<0.001	<0.004	0.006	<0.0002	1180	0.0204	0.0011	0.038	46	0.012	7920	3040	30800	6030	<0.005	

Monitoring Point: 50 <TSFNB>
Groundwater quality monitoring, Piezometer located down gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	6.40	43880	12.292	
Monthly	13/02/2018	13/02/2018	20/03/2018	6.39	42290	12.424	
Monthly	28/03/2018	28/03/2018	19/04/2018	6.38	45396	12.108	
Monthly	18/04/2018	18/04/2018	21/05/2018	6.38	46002	12.204	
Monthly	25/05/2018	25/05/2018	20/06/2017	6.32	46972	12.196	
Monthly			20/07/2018				No access due to rainfall
Monthly	11/07/2018	11/07/2018	17/08/2018	6.33	45960	12.222	
Monthly	13/08/2018	13/08/2018	20/09/2018	6.47	45043	11.254	
Monthly	09/09/2018	09/09/2018	19/10/2018	6.45	45733	12.224	
Monthly	16/10/2018	16/10/2018	19/11/2018	6.37	45651	12.180	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.51	39543	12.173	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.48	46827	12.139	
Number of Samples Collected				11	11		
Lowest Value				6.3	39543	11.254	
Mean of Sample				6.4	44663	12.129	
Highest Sample Value				6.5	46827	12.434	
Median				6.4	45396	12.196	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	02/02/2018	239	<0.0005	<0.0005	0.0005	466	14800	0.097	<0.005	<0.005	<0.0002	1550	0.41	0.0779	2.390	60	0.005	10900	4300	31000	7500	<0.005	
Quarterly	18/04/2018	26/04/2018	21/05/2018	233	<0.0005	<0.0005	0.0004	464	15300	0.174	<0.005	12.100	<0.0002	1370	0.527	0.0008	2.890	45	0.004	8860	4350	44400	6800	<0.005	
Quarterly	11/07/2018	19/07/2018	17/08/2018	271	<0.0005	<0.0005	0.0003	420	14300	0.025	<0.005	0.042	<0.0002	1380	0.078	0.0494	0.505	35	0.005	8720	4500	44900	6730	<0.005	
Quarterly	16/10/2018	26/10/2018	19/11/2018	248	<0.0005	<0.0005	0.0004	436	16000	0.081	<0.004	3.320	<0.0002	1280	0.344	0.1520	1.970	45	0.005	8230	4360	29500	6360	<0.005	

Monitoring Point: 51 <TSFNC>
Groundwater quality monitoring, Piezometer located down gradient of northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	6.07	41450	12.716	
Monthly	13/02/2018	13/02/2018	20/03/2018	5.94	41920	12.895	
Monthly	28/03/2018	28/03/2018	19/04/2018	6.3	47026	12.624	
Monthly	18/04/2018	18/04/2018	21/05/2018	6.42	47548	12.648	
Monthly	25/05/2018	25/05/2018	20/06/2017	6.4	47009	12.626	
Monthly			20/07/2018				No access due to rainfall
Monthly	11/07/2018	11/07/2018	17/08/2018	5.83	48606	12.581	
Monthly	13/08/2018	13/08/2018	20/09/2018	5.96	47774	12.603	
Monthly	09/09/2018	09/09/2018	19/10/2018	5.94	48264	12.576	
Monthly	16/10/2018	16/10/2018	19/11/2018	5.91	48805	12.482	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.04	47027	12.485	
Monthly	12/12/2018	12/12/2018	18/01/2019	6.03	50425	12.443	
Number of Samples Collected				11	11		
Lowest Value				5.8	41450	12.443	
Mean of Sample				6.1	46896	12.589	
Highest Sample Value				6.4	50425	12.716	
Median				6.0	47548	12.603	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	02/02/2018	131	<0.0005	<0.0005	0.0006	477	13900	0.010	<0.005	0.039	<0.0002	1460	0.089	0.0086	0.393	58	0.002	10200	4780	34800	7200	0.070	
Quarterly	18/04/2018	26/04/2018	21/05/2018	141	<0.0005	<0.0005	0.0006	548	15700	0.008	<0.005	0.411	<0.0002	1480	0.084	0.0124	0.357	48	<0.002	9140	4660	49500	7460	0.081	
Quarterly	11/07/2018	19/07/2018	17/08/2018	149	<0.0005	0.0005	0.0005	530	14900	0.005	<0.005	0.048	<0.0002	1600	0.058	0.0118	0.202	40	0.002	9800	4700	45700	7910	0.091	
Quarterly	16/10/2018	26/10/2018	19/11/2018	139	<0.0005	<0.0005	0.0007	544	18200	0.004	<0.004	0.033	<0.0002	1510	0.054	0.0134	0.267	51	0.002	9300	4730	37400	7580	0.085	



Groundwater

Monitoring Point: 52 <PDB18>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	6.16	46640	5.349	
Monthly	12/02/2018	12/02/2018	20/03/2018	6.13	45900	5.504	
Monthly	13/03/2018	13/03/2018	19/04/2018	6.24	49762	5.662	
Monthly	10/04/2018	10/04/2018	21/05/2018	6.47	49642	5.801	
Monthly	14/05/2018	14/05/2018	20/06/2017	6.24	48974	5.967	
Monthly	19/06/2018	19/06/2018	20/07/2018	6.20	48801	6.087	
Monthly	18/07/2018	18/07/2018	17/08/2018	6.08	47975	6.144	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.13	48894	6.288	
Monthly	12/09/2018	12/09/2018	19/10/2018	6.04	50729	6.318	
Monthly	10/10/2018	10/10/2018	19/11/2018	6.02	48890	6.414	
Monthly	15/11/2018	15/11/2018	18/12/2018	6.27	46885	6.589	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.23	48729	6.696	
Number of Samples Collected							12
Lowest Value							6.0
Mean of Sample							6.2
Highest Sample Value							6.5
Median							6.2

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	22/01/2018	02/02/2018	<0.0005	<0.0005	<0.0002	823	18100	<0.001	0.045	<0.0002	1850	0.517	0.0003	0.0079	27	<0.002	10900	4610	42000	9670	<0.005	
Quarterly	10/04/2018	17/04/2018	21/05/2018	<0.0005	0.0006	<0.0002	880	15800	<0.001	1.28	<0.0002	1810	0.548	0.0003	0.0091	19	<0.002	8660	3950	26100	8650	0.006	
Quarterly	18/07/2018	25/07/2018	17/08/2018	<0.0005	0.0009	<0.0002	860	16400	<0.001	1.95	<0.0002	1720	0.566	0.0001	0.0076	22	<0.002	9100	4250	38200	9230	0.007	
Quarterly	10/10/2018	19/10/2018	19/11/2018	<0.0005	0.0005	<0.0002	897	16200	0.003	2.32	<0.0002	1810	0.503	0.0002	0.0086	24	<0.002	9800	4470	45900	9690	0.015	

Monitoring Point: 53 <PDB38>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	30/01/2018	30/01/2018	20/02/2018	6.13	47660	21.44	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.58	52723	21.385	
Monthly	27/03/2018	27/03/2018	19/04/2018	6.31	50350	21.300	
Monthly	18/04/2018	18/04/2018	21/05/2018	6.23	51938	21.314	
Monthly	24/05/2018	24/05/2018	20/06/2017	6.44	50800	23.290	
Monthly	20/06/2018	20/06/2018	20/07/2018	6.21	50548	21.340	
Monthly	27/07/2018	27/07/2018	17/08/2018	6.02	49865	21.161	
Monthly	20/08/2018	20/08/2018	20/09/2018	6.02	50357	21.170	
Monthly	13/09/2018	13/09/2018	19/10/2018	5.94	52281	21.157	
Monthly	15/10/2018	15/10/2018	19/11/2018	5.86	50846	21.136	
Monthly	19/11/2018	19/11/2018	18/12/2018	6.07	48918	21.122	
Monthly	10/12/2018	10/12/2018	18/01/2019	6.05	52336	21.105	
Number of Samples Collected							12
Lowest Value							5.9
Mean of Sample							6.2
Highest Sample Value							6.6
Median							6.1

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	30/01/2018	06/02/2018	02/02/2018	<0.0005	<0.0005	0.0007	1110	16900	<0.001	0.007	0.0002	2270	0.021	0.0002	0.0016	65	0.016	9830	5050	44800	12100	<0.005	
Quarterly	18/04/2018	26/04/2018	21/05/2018	<0.0005	<0.0005	0.0007	1130	17200	<0.001	0.011	<0.0002	2060	0.0432	0.0002	0.0053	44	0.018	8820	5270	56400	11300	<0.005	
Quarterly	27/07/2018	03/08/2018	17/08/2018	<0.0005	0.0007	0.0007	1080	18300	<0.001	0.013	<0.0002	2010	0.0344	0.0005	0.0055	44	0.016	8480	5240	36600	11000	<0.005	
Quarterly	15/10/2018	26/10/2018	19/11/2018	<0.0005	<0.0005	0.0009	1110	19200	<0.001	<0.005	<0.0002	1990	0.0369	0.0004	0.0016	48	0.019	8710	5210	39800	11000	<0.005	

Monitoring Point: 54 <PDB58>
Groundwater quality monitoring, Pit dewatering bore

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	16/01/2018	16/01/2018	20/02/2018	5.91	46270	14.854	
Monthly	27/02/2018	27/02/2018	20/03/2018	6.17	50321	14.758	
Monthly	19/03/2018	16/04/2018	19/04/2018	6.05	48924	14.737	
Monthly	11/04/2018	11/04/2018	21/05/2018	6.16	49662	14.397	
Monthly	15/05/2018	15/05/2018	20/06/2017	5.96	48304	15.143	
Monthly	14/06/2018	14/06/2018	20/07/2018	6.24	48763	15.330	
Monthly	23/06/2017	23/06/2017	17/08/2018	5.88	47447	15.661	
Monthly	20/08/2018	20/08/2018	20/09/2018	5.88	47848	15.976	
Monthly	12/09/2018	12/09/2018	19/10/2018	5.84	49430	16.139	
Monthly	15/10/2018	15/10/2018	19/11/2018	5.81	48195	16.539	
Monthly	23/08/2017	02/08/2018	17/08/2018	6	44186	16.889	
Monthly	07/12/2018	07/12/2018	18/01/2019	5.94	51033	17.139	
Number of Samples Collected							12
Lowest Value							5.8
Mean of Sample							6.0
Highest Sample Value							6.2
Median							6.0

Frequency	Date Sampled	Date Obtained	Date Published	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	16/01/2018	31/01/2018	02/02/2018	<0.0005	0.0013	0.0014	856	16200	0.004	<0.005	<0.0002	1810	0.0172	0.0017	0.0332	48	<0.002	8970	3180	41100	9590	<0.005	
Quarterly	11/04/2018	24/04/2018	21/05/2018	<0.0005	0.0020	0.0014	840	15800	<0.001	0.019	<0.0002	1820	0.0167	0.0008	0.019	39	<0.002	9210	3590	42000	9590	0.005	
Quarterly	23/08/2017	02/08/2018	17/08/2018	<0.0005	0.0019	0.0013	779	18900	0.001	0.006	<0.0002	1680	0.0157	0.0007	0.0106	40	<0.002	8330	3500	33100	8860	<0.005	
Quarterly	15/10/2018	26/10/2018	19/11/2018	<0.0005	0.0017	0.0015	852	18300	0.001	0.005	<0.0002	1820	0.021	0.0013	0.0248	47	<0.002	9070	3690	36600	9620	<0.005	

Monitoring Point: 55 <MOND18>
Groundwater quality monitoring, Groundwater monitoring bore located to the east of the northern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	17/01/2018	17/01/2018	20/02/2018	6.71	40150	12.849	
Monthly	26/02/2018	26/02/2018	20/03/2018	6.71	44063	12.822	
Monthly	26/03/2018	26/03/2018	19/04/2018	6.02	42150	12.763	
Monthly	11/04/2018	11/04/2018	21/05/2018	6.07	41724	12.824	
Monthly	24/05/2018	24/05/2018	20/06/2017	6.16	47008	13.827	
Monthly	28/06/2018	28/06/2018	20/07/2018	6.44	42849	12.608	
Monthly	18/07/2018	18/07/2018	17/08/2018	5.46	45058	12.591	
Monthly	08/08/2018	08/08/2018	20/09/2018	5.47	46687	12.582	
Monthly	05/09/2018	05/09/2018	19/10/2018	5.38	46789	12.644	
Monthly	15/10/2018	15/10/2018	19/11/2018	5.29	47098	12.590	
Monthly	12/11/2018	12/11/2018	18/12/2018	5.38	45993	12.603	
Monthly	07/12/2018	07/12/2018	18/01/2019	5.3	47070	12.626	
Number of Samples Collected							12
Lowest Value							5.3
Mean of Sample							5.9
Highest Sample Value							6.7
Median							5.7

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	17/01/2018	31/01/2018	02/02/2018	42	<0.0005	0.0007	0.0005	523	14200	0.002	<0.005	<0.005	0.0020	1510	0.658	0.0002	0.0192	43	<0.002	9780	3950	35600	7520	0.036	
Quarterly	11/04/2018	24/04/2018	21/05/2018	38	<0.0005	0.001	0.0005	489	14000	0.002	<0.005	0.013	0.0020	1430	0.713	0.0001	0.0287	34	<0.002	9330	4730	31200	7110	0.046	
Quarterly	18/07/2018	25/07/2018	17/08/2018	26	<0.0005	0.0011	0.0005	502	15100	0.003	<0.010	0.024	0.0036	1430	0.448	<0.0001	0.0339	43	0.002	9440	4810	36100	7140	0.055	
Quarterly	15/10/2018	26/10/2018	19/11/2018	25	<0.0005	0.0010	0.0006	494	16200	0.003	<0.004	0.007	0.0035	1430	0.459	<0.0001	0.0447	41	0.002	9180	4900	35800	7130	0.072	

Groundwater

Monitoring Point: 56 «MON028»
Groundwater quality monitoring, Groundwater monitoring bore located to the south of the southern tailings storage facility

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	SWL (m)	Comments
Monthly	19/01/2018	19/01/2018	20/02/2018	6.65	36430	8.026	
Monthly	14/02/2018	14/02/2018	20/03/2018	6.63	37650	7.884	
Monthly	16/03/2018	16/03/2018	19/04/2018	6.62	39110	8.613	
Monthly	10/04/2018	10/04/2018	21/05/2018	6.62	39777	7.774	
Monthly	17/05/2018	17/05/2018	20/06/2017	6.48	38812	7.740	
Monthly	14/06/2018	14/06/2018	20/07/2018	6.49	38953	7.567	
Monthly	19/07/2018	19/07/2018	17/08/2018	6.61	38516	7.494	
Monthly	08/08/2018	08/08/2018	20/09/2018	6.70	40209	8.89	
Monthly	06/09/2018	06/09/2018	19/10/2018	6.65	39489	7.407	
Monthly	17/10/2018	17/10/2018	19/11/2018	6.54	39041	7.315	
Monthly	09/11/2018	09/11/2018	18/12/2018	6.66	29503	7.352	
Monthly	07/12/2018	07/12/2018	18/01/2019	6.65	38402	7.344	
Number of Samples Collected				12	12	12	
Lowest Value				6.5	29503	7.315	
Mean of Sample				6.6	37991	7.784	
Highest Sample Value				6.7	40209	8.890	
Median				6.6	38883	7.654	

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Cyanide WAD (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulphate (mg/L)	Total Dissolved Solids (mg/L)	Total Hardness (mg/L)	Zinc (mg/L)	Comments
Quarterly	19/01/2018	31/01/2018	02/02/2018	881	<0.0005	<0.0005	<0.0002	439	13500	0.003	<0.005	0.041	<0.0002	1280	0.0381	0.0047	0.299	73	0.013	8070	3140	33600	6370	<0.005	
Quarterly	10/04/2018	17/04/2018	21/05/2018	902	<0.0005	<0.0005	<0.0002	433	12400	0.005	<0.005	0.062	<0.0002	1300	0.0621	0.0046	0.422	56	0.012	7950	3090	29400	6430	<0.005	
Quarterly	19/07/2018	03/08/2018	17/08/2018	790	<0.0005	<0.0005	<0.0002	427	12700	0.067	<0.010	4.28	<0.0002	1250	0.235	0.0096	1.340	63	0.013	7740	3280	29000	6210	<0.005	
Quarterly	17/10/2018	26/10/2018	19/11/2018	869	<0.0005	<0.0005	<0.0002	403	11900	0.042	<0.004	2.43	<0.0002	1250	0.291	0.011	1.670	63	0.016	7650	2300	30200	6150	<0.0050	

Waste Rock Leachate

Monitoring Point: 41 -Northern Waste Emplacement-

Northern Waste Emplacement leachate quality monitoring

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Comments
Monthly	10/01/2018	10/01/2018	20/02/2018	-	-	No water present in toe drain
Monthly	26/02/2018	26/02/2018	20/03/2018	-	-	No water present in toe drain
Monthly	12/03/2018	12/03/2018	19/04/2018	-	-	No water present in toe drain
Monthly	10/04/2018	10/04/2018	21/05/2018	-	-	No water present in toe drain
Monthly	16/05/2018	16/05/2018	20/06/2018	-	-	No water present in toe drain
Monthly	05/06/2018	05/06/2018	20/07/2018	-	-	No water present in toe drain
Monthly	03/07/2018	03/07/2018	17/08/2018	-	-	No water present in toe drain
Monthly	08/08/2018	08/08/2018	20/09/2018	-	-	No water present in toe drain
Monthly	12/09/2018	12/09/2018	19/10/2018	-	-	No water present in toe drain
Monthly	10/10/2018	10/10/2018	19/11/2018	-	-	No water present in toe drain
Monthly	06/11/2018	06/11/2018	18/12/2018	-	-	No water present in toe drain
Monthly	12/12/2018	12/12/2018	18/01/2019	-	-	No water present in toe drain
Number of Samples Collected						0
Lowest Value						0.0
Mean of Sample						0.0
Highest Sample Value						0.0
Median						0.0

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Total Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Zinc (mg/L)	Comments	
Quarterly	10/01/2018	10/01/2018	20/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	10/04/2018	10/04/2018	21/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	03/07/2018	03/07/2018	17/08/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	10/10/2018	10/10/2018	19/11/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain

Monitoring Point: 42 -Southern Waste Emplacement-

Southern Waste Emplacement leachate quality monitoring

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Comments
Monthly	15/02/2018	10/01/2018	20/02/2018	7.78	11684	
Monthly	26/02/2018	26/02/2018	20/03/2018	7.58	11240	
Monthly	12/03/2018	12/03/2018	19/04/2018	7.45	12380	
Monthly	10/04/2018	10/04/2018	21/05/2018	7.69	13150	
Monthly	16/05/2018	16/05/2018	20/06/2018	7.45	13260	
Monthly	05/06/2018	05/06/2018	20/07/2018	7.51	13290	
Monthly	03/07/2018	03/07/2018	17/08/2018	7.72	11601	
Monthly	08/08/2018	08/08/2018	20/09/2018	8.32	15920	
Monthly	12/09/2018	12/09/2018	19/10/2018	8.01	14900	
Monthly	10/10/2018	10/10/2018	19/11/2018	8.08	14478	
Monthly	06/11/2018	06/11/2018	18/12/2018	8.07	15240	
Monthly	12/12/2018	12/12/2018	18/01/2019	7.89	18083	
Number of Samples Collected						12
Lowest Value						7.1
Mean of Sample						7.8
Highest Sample Value						8.3
Median						7.8

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Total Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Zinc (mg/L)	Comments
Quarterly	10/01/2018	10/01/2018	20/02/2018	282	<0.0005	<0.0005	0.0048	487	3360	0.002	<0.00500	<0.00020	391	0.283	0.0032	0.0007	25	0.003	1880	2110	120	9090	2	0.139	
Quarterly	10/04/2018	10/04/2018	21/05/2018	305	<0.0005	<0.0005	0.0041	494	4140	<0.001	<0.00500	<0.00020	400	0.0013	0.0014	0.0005	25	0.003	1900	2290	280	9850	32	0.084	
Quarterly	03/07/2018	03/07/2018	17/08/2018	296	<0.0005	<0.0005	0.0082	882	5360	<0.001	0.008	<0.0002	540	0.0175	0.0022	0.0006	27	0.002	3580	2540	4430	9680	75	0.128	
Quarterly	10/10/2018	10/10/2018	19/11/2018	282	<0.0005	0.0006	0.0027	649	5430	0.001	0.006	<0.0002	510	0.0074	0.0024	0.0007	27	<0.002	2320	2240	3720	12600	71	0.050	

Monitoring Point: 43 -Perimeter Waste Emplacement-

Perimeter Waste Emplacement leachate quality monitoring

Frequency	Date Sampled	Date Obtained	Date Published	Field - pH (units)	Field - Electrical Conductivity (µS/cm)	Comments
Monthly	15/02/2018	10/01/2018	20/02/2018	-	-	No water present in toe drain
Monthly	26/02/2018	26/02/2018	20/03/2018	-	-	No water present in toe drain
Monthly	12/03/2018	12/03/2018	19/04/2018	-	-	No water present in toe drain
Monthly	10/04/2018	10/04/2018	21/05/2018	-	-	No water present in toe drain
Monthly	16/05/2018	16/05/2018	20/06/2018	-	-	No water present in toe drain
Monthly	05/06/2018	05/06/2018	20/07/2018	-	-	No water present in toe drain
Monthly	03/07/2018	03/07/2018	17/08/2018	-	-	No water present in toe drain
Monthly	08/08/2018	08/08/2018	20/09/2018	-	-	No water present in toe drain
Monthly	12/09/2018	12/09/2018	19/10/2018	-	-	No water present in toe drain
Monthly	10/10/2018	10/10/2018	19/11/2018	-	-	No water present in toe drain
Monthly	06/11/2018	06/11/2018	18/12/2018	-	-	No water present in toe drain
Monthly	12/12/2018	12/12/2018	18/01/2019	-	-	No water present in toe drain
Number of Samples Collected						0
Lowest Value						0.0
Mean of Sample						0.0
Highest Sample Value						0.0
Median						0.0

Frequency	Date Sampled	Date Obtained	Date Published	Alkalinity (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Total Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Zinc (mg/L)	Comments	
Quarterly	10/01/2018	10/01/2018	20/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	10/04/2018	10/04/2018	21/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	03/07/2018	03/07/2018	17/08/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain
Quarterly	10/10/2018	10/10/2018	19/11/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No water present in toe drain



Ambient Noise

Q1 Noise Monitoring

Daytime Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	07/02/2018	22/02/2018	20/03/2018	25	23	-	
N11	07/02/2018	22/02/2018	20/03/2018	<20	<20	39	
N09	07/02/2018	22/02/2018	20/03/2018	<20	<20	39	
N10	07/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N12	07/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N15	07/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N17	07/02/2018	22/02/2018	20/03/2018	<20	<20	37	
N16	07/02/2018	22/02/2018	20/03/2018	<20	<20	37	

Evening Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	07/02/2018	22/02/2018	20/03/2018	20	22	-	
N11	06/02/2018	22/02/2018	20/03/2018	<20	<20	39	
N09	06/02/2018	22/02/2018	20/03/2018	<20	<20	39	
N10	06/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N12	06/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N15	07/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N17	06/02/2018	22/02/2018	20/03/2018	<20	<20	37	
N16	07/02/2018	22/02/2018	20/03/2018	20	<20	37	

Night time Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	07/02/2018	22/02/2018	20/03/2018	28	26	-	
N11	06/02/2018	22/02/2018	20/03/2018	<20	<20	39	
N09	07/02/2018	22/02/2018	20/03/2018	20	20	39	
N10	06/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N12	07/02/2018	22/02/2018	20/03/2018	<20	<20	38	
N15	06/02/2017	22/02/2018	20/03/2018	23	24	38	
N17	06/02/2018	22/02/2018	20/03/2018	<20	<20	37	
N16	08/02/2017	22/02/2018	20/03/2018	18	20	37	

n/a - Mine noise emission not discernible

Q2 Noise Monitoring

Daytime Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	10/05/2018	29/05/2018	20/06/2018	46	44	-	
N11	10/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N09	11/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N10	10/05/2018	29/05/2018	20/06/2018	25	<20	38	
N12	11/05/2018	29/05/2018	20/06/2018	<20	<20	38	
N15	10/05/2018	29/05/2018	20/06/2018	<20	<20	38	
N17	10/05/2018	29/05/2018	20/06/2018	<20	<20	37	
N16	10/05/2018	29/05/2018	20/06/2018	<20	<20	37	

Evening Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	10/05/2018	29/05/2018	20/06/2018	42	44	-	
N11	09/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N09	09/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N10	09/05/2018	29/05/2018	20/06/2018	<20	24	38	
N12	09/05/2018	29/05/2018	20/06/2018	<20	<20	38	
N15	10/05/2018	29/05/2018	20/06/2018	<20	<20	38	
N17	09/05/2018	29/05/2018	20/06/2018	22	<20	37	
N16	10/05/2018	29/05/2018	20/06/2018	21	<20	37	

Night time Mine Operating Intrinsic Noise Levels (dBA re 20 µPa)				Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
Location	Date Sampled	Date Obtained	Date Published	Survey 1	Survey 2		
N01	10/05/2018	29/05/2018	20/06/2018	42	42	-	
N11	09/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N09	09/05/2018	29/05/2018	20/06/2018	<20	<20	39	
N10	09/05/2018	29/05/2018	20/06/2018	22	<20	38	
N12	09/05/2018	29/05/2018	20/06/2018	<20	<20	38	
N15	10/05/2018	29/05/2018	20/06/2018	23	20	38	
N17	11/08/2018	29/05/2018	20/06/2018	<20	<20	37	
N16	11/08/2018	29/05/2018	20/06/2018	<20	<20	37	

N/A - Mine noise emission not discernible



Ambient Noise

Q3 Noise Monitoring

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	02/08/2018	14/08/2018	17/08/2018	26	25	-	
N11	01/08/2018	14/08/2018	17/08/2018	<20	<20	39	
N09	02/08/2018	14/08/2018	17/08/2018	33	31	39	
N10	01/08/2018	14/08/2018	17/08/2018	27	25	38	
N12	01/08/2018	14/08/2018	17/08/2018	<20	<20	38	
N15	02/08/2018	14/08/2018	17/08/2018	30	29	38	
N17	02/08/2018	14/08/2018	17/08/2018	34	33	37	
N16	02/08/2018	14/08/2018	17/08/2018	29	28	37	

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	02/08/2018	14/08/2018	17/08/2018	35	36	-	
N11	01/08/2018	14/08/2018	17/08/2018	29	21	39	
N09	01/08/2018	14/08/2018	17/08/2018	<20	<20	39	
N10	01/08/2018	14/08/2018	17/08/2018	27	28	38	
N12	01/08/2018	14/08/2018	17/08/2018	20	<20	38	
N15	02/08/2018	14/08/2018	17/08/2018	24	24	38	
N17	01/08/2018	14/08/2018	17/08/2018	24	22	37	
N16	02/08/2018	14/08/2018	17/08/2018	27	27	37	

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	02/08/2018	14/08/2018	17/08/2018	36	34	-	
N11	01/08/2018	14/08/2018	17/08/2018	31	30	39	
N09	01/08/2018	14/08/2018	17/08/2018	24	22	39	
N10	03/08/2018	14/08/2018	17/08/2018	31	31	38	
N12	02/08/2018	14/08/2018	17/08/2018	<20	<20	38	
N15	01/08/2018	14/08/2018	17/08/2018	20	20	38	
N17	01/08/2018	14/08/2018	17/08/2018	24	24	37	
N16	01/08/2018	14/08/2018	17/08/2018	22	22	37	

N/A - Mine noise emission not discernible

Q4 Noise Monitoring

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	06/12/2018	15/01/2019	18/01/2019	25	25	-	
N11	06/12/2018	15/01/2019	18/01/2019	<20	<20	39	
N09	06/12/2018	15/01/2019	18/01/2019	<20	<20	39	
N10	06/12/2018	15/01/2019	18/01/2019	18	20	38	
N12	06/12/2018	15/01/2019	18/01/2019	<20	<20	38	
N15	06/12/2018	15/01/2019	18/01/2019	30	25	38	
N17	06/12/2018	15/01/2019	18/01/2019	15	<20	37	
N16	06/12/2018	15/01/2019	18/01/2019	<20	<20	37	

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	06/12/2018	15/01/2019	18/01/2019	22	20	-	
N11	06/12/2018	15/01/2019	18/01/2019	<20	<20	39	
N09	05/12/2018	15/01/2019	18/01/2019	<20	<20	39	
N10	05/12/2018	15/01/2019	18/01/2019	18	18	38	
N12	06/12/2018	15/01/2019	18/01/2019	<20	<20	38	
N15	06/12/2018	15/01/2019	18/01/2019	<20	<20	38	
N17	05/12/2018	15/01/2019	18/01/2019	<20	<20	37	
N16	06/12/2018	15/01/2019	18/01/2019	<20	<20	37	

Location	Date Sampled	Date Obtained	Date Published	Mine Contributed LA _{eq(15min)} - dBA		Noise Criteria LA _{eq(15min)} - dBA	Comments
				Survey 1	Survey 2		
N01	07/12/2018	15/01/2019	18/01/2019	22	24	-	
N11	05/12/2018	15/01/2019	18/01/2019	17	17	39	
N09	06/12/2018	15/01/2019	18/01/2019	17	15	39	
N10	05/12/2018	15/01/2019	18/01/2019	20	19	38	
N12	05/12/2018	15/01/2019	18/01/2019	<20	<20	38	
N15	06/12/2018	15/01/2019	18/01/2019	18	21	38	
N17	06/12/2018	15/01/2019	18/01/2019	15	15	37	
N16	06/12/2018	15/01/2019	18/01/2019	16	20	37	

Blasting & Ground Vibration

Monitoring Point: BM01

Blast monitoring, Airblast overpressure and ground vibration peak particle velocity recorded at private residence to the south-east of ML1535 boundary

Blast Number	Day/Date	Time	Date Obtained	Date Published	Trigger Threshold		BM01 at Blast Time		Comments
					Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	
JANUARY									
876-30	Wednesday, 3 January 2018	12:25:51	05/02/2018	20/02/2018	5	115	0.10	91.5	
876-32	Thursday, 4 January 2018	15:07:17	05/02/2018	20/02/2018	5	115	0.10	88.0	
876-33	Monday, 9 January 2018	19:30:48	05/02/2018	20/02/2018	5	115	0.10	94.0	
876-34	Tuesday, 9 January 2018	12:27:08	05/02/2018	20/02/2018	5	115	0.10	91.5	
876-35	Wednesday, 10 January 2018	12:29:00	05/02/2018	20/02/2018	5	115	0.10	88.0	
876-40	Thursday, 11 January 2018	12:31:52	05/02/2018	20/02/2018	5	115	0.10	91.5	
876-49	Saturday, 13 January 2018	12:35:54	05/02/2018	20/02/2018	5	115	0.10	107.5	
867-2	Tuesday, 16 January 2018	15:13:29	05/02/2018	20/02/2018	5	115	0.10	88.0	
876-28	Tuesday, 16 January 2018	15:18:42	05/02/2018	20/02/2018	5	115	0.10	91.5	
867-12	Friday, 19 January 2018	12:30:49	05/02/2018	20/02/2018	5	115	0.10	88.0	
867-3	Monday, 22 January 2018	12:23:32	05/02/2018	20/02/2018	5	115	0.10	88.0	
867-513	Wednesday, 24 January 2018	12:56:24	05/02/2018	20/02/2018	5	115	0.10	102.8	
867-14	Thursday, 25 January 2018	12:30:28	05/02/2018	20/02/2018	5	115	0.10	91.5	
867-15	Sunday, 28 January 2018	12:29:09	05/02/2018	20/02/2018	1	95	0.10	91.5	
867-512	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.10	97.5	
867-16	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.10	97.5	
FEBRUARY									
867-509	Thursday, 1 February 2018	12:24:54	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-17	Friday, 2 February 2018	12:31:37	06/03/2018	20/03/2018	5	115	0.13	91.5	
867-20a	Tuesday, 6 February 2018	12:35:13	06/03/2018	20/03/2018	5	115	0.10	95.9	
867-511a	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.10	95.9	
867-4	Thursday, 8 February 2018	12:38:58	06/03/2018	20/03/2018	5	115	0.10	91.5	
867-27	Thursday, 8 February 2018	12:39:37	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-516	Saturday, 10 February 2018	12:31:30	06/03/2018	20/03/2018	5	115	0.10	98.8	
867-6	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.11	91.5	
867-515	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.11	91.5	
867-18	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.10	88.0	
867-514	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.10	91.5	
867-13	Thursday, 15 February 2018	12:54:32	06/03/2018	20/03/2018	5	115	0.10	91.5	
867-26	Saturday, 17 February 2018	12:28:08	06/03/2018	20/03/2018	5	115	0.10	88.0	
867-25	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	5	115	0.10	104.9	
867-508	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	5	115	0.10	104.9	
867-10-11	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-502	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-503	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-504	Friday, 23 February 2018	12:21:36	06/03/2018	20/03/2018	5	115	0.11	95.9	
867-28	Saturday, 24 February 2018	12:19:44	06/03/2018	20/03/2018	5	115	0.11	95.9	
867-24	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.10	88.0	
867-507	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.10	101.9	
867-501	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.10	88.0	
867-5	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.10	88.0	
MARCH									
867-23	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-506	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-505	Saturday, 3 March 2018	12:23:00	09/04/2018	19/04/2018	5	115	0.10	101.9	
867-9	Saturday, 3 March 2018	12:23:14	09/04/2018	19/04/2018	5	115	0.10	101.9	
867-19	Monday, 5 March 2018	12:31:18	09/04/2018	19/04/2018	5	115	0.11	88.0	
867-21	Wednesday, 7 March 2018	12:20:12	09/04/2018	19/04/2018	5	115	0.11	91.5	
867-8a	Thursday, 8 March 2018	12:39:11	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-22	Friday, 9 March 2018	12:30:01	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-20	Monday, 12 March 2018	12:31:16	09/04/2018	19/04/2018	5	115	0.10	88.0	
858-1	Tuesday, 13 March 2018	12:32:15	09/04/2018	19/04/2018	5	115	0.11	95.9	
867-39	Friday, 16 March 2018	12:35:04	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-511b	Tuesday, 20 March 2018	12:30:55	09/04/2018	19/04/2018	5	115	0.11	91.5	
858-2	Wednesday, 21 March 2018	12:24:59	09/04/2018	19/04/2018	5	115	0.10	108.0	
867-40	Friday, 23 March 2018	12:26:24	09/04/2018	19/04/2018	5	115	0.11	88.0	
858-5	Thursday, 29 March 2018	12:28:04	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-41	Saturday, 31 March 2018	12:23:50	09/04/2018	19/04/2018	5	115	0.11	88.0	
APRIL									
867-38	Tuesday, 3 April 2018	12:28:28	04/05/2018	21/05/2018	5	115	0.11	88.0	
867-36-37	Tuesday, 10 April 2018	12:28:06	04/05/2018	21/05/2018	5	115	0.12	91.5	
858-3	Tuesday, 10 April 2018	12:28:08	04/05/2018	21/05/2018	5	115	0.12	91.5	
867-42	Thursday, 12 April 2018	12:33:45	04/05/2018	21/05/2018	5	115	0.10	102.8	
858-4	Saturday, 14 April 2018	12:24:17	04/05/2018	21/05/2018	5	115	0.10	88.0	
867-8b	Monday, 16 April 2018	12:29:27	04/05/2018	21/05/2018	5	115	0.11	91.5	
867-29	Tuesday, 17 April 2018	12:33:35	04/05/2018	21/05/2018	5	115	0.10	88.0	
858-7-8	Monday, 19 April 2018	12:36:35	04/05/2018	21/05/2018	5	115	0.10	91.5	
867-50	Tuesday, 20 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.10	88.0	
849-516	Tuesday, 24 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.11	88.0	
867-35	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.10	91.5	
858-6	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.10	91.5	
858-9	Saturday, 28 April 2018	12:28:22	04/05/2018	21/05/2018	5	115	0.10	91.5	
May									
858-10	Tuesday, 1 May 2018	12:27:50	06/06/2018	20/06/2018	5	115	0.10	88.0	
867-31	Tuesday, 1 May 2018	12:31:31	06/06/2018	20/06/2018	5	115	0.10	88.0	
1155-58	Wednesday, 2 May 2018	12:38:49	06/06/2018	20/06/2018	5	115	0.10	95.9	
867-32	Friday, 4 May 2018	12:30:46	06/06/2018	20/06/2018	5	115	0.10	104.9	
858-20	Sunday, 6 May 2018	12:30:24	06/06/2018	20/06/2018	1	95	0.10	97.5	Local Environmental Factor
849-511	Monday, 7 May 2018	12:56:35	06/06/2018	20/06/2018	5	115	0.10	97.5	
849-515	Tuesday, 8 May 2018	12:25:37	06/06/2018	20/06/2018	5	115	0.10	88.0	
858-21	Wednesday, 9 May 2018	15:06:40	06/06/2018	20/06/2018	5	115	0.11	88.0	
858-11-12	Friday, 11 May 2018	15:11:16	06/06/2018	20/06/2018	5	115	0.10	108.8	
1146-84	Saturday, 12 May 2018	12:46:38	06/06/2018	20/06/2018	5	115	0.10	101.9	
867-33	Monday, 14 May 2018	12:38:43	06/06/2018	20/06/2018	5	115	0.10	91.5	
1146-85	Tuesday, 15 May 2018	12:45:48	06/06/2018	20/06/2018	5	115	0.10	95.9	
1146-86	Thursday, 17 May 2018	12:27:58	06/06/2018	20/06/2018	5	115	0.10	97.5	
858-13	Friday, 18 May 2018	12:30:28	06/06/2018	20/06/2018	5	115	0.14	88.0	
1146-87	Saturday, 19 May 2018	12:59:11	06/06/2018	20/06/2018	5	115	0.10	97.5	
858-14	Monday, 21 May 2018	12:31:37	06/06/2018	20/06/2018	5	115	0.10	91.5	
858-19	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.09	91.5	
867-34	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.09	91.5	
849-513	Monday, 28 May 2018	12:26:52	06/06/2018	20/06/2018	5	115	0.10	88.0	
849-512	Wednesday, 30 May 2018	11:30:22	06/06/2018	20/06/2018	5	115	0.10	91.5	
June									
849-510	Friday, 1 June 2018	12:30:50	04/07/2018	20/07/2018	5	115	0.10	88.0	
858-15	Sunday, 3 June 2018	12:31:13	04/07/2018	20/07/2018	1	95	0.10	103.5	Local Environmental Factor
1137-83	Monday, 4 June 2018	12:29:26	04/07/2018	20/07/2018	5	115	0.10	88.0	
858-16-17	Tuesday, 5 June 2018	15:10:04	04/07/2018	20/07/2018	5	115	0.10	101.9	
1137-85	Wednesday, 6 June 2018	12:33:38	04/07/2018	20/07/2018	5	115	0.11	95.9	
849-514	Thursday, 7 June 2018	12:32:46	04/07/2018	20/07/2018	5	115	0.10	97.5	
1137-87	Thursday, 7 June 2018	12:58:09	04/07/2018	20/07/2018	5	115	0.10	95.9	

August													
849-7-8	Friday, 3 August 2018	12:25:23	11/09/2018	20/09/2018	5	115	0.10	111.2					
1119-132	Sunday, 5 August 2018	12:28:22	11/09/2018	20/09/2018	1	95	0.12	100.0					Local Environmental Factors
1119-125	Sunday, 5 August 2018	12:48:15	11/09/2018	20/09/2018	1	95	0.10	100.0					Local Environmental Factors
849-19	Monday, 6 August 2018	12:31:48	11/09/2018	20/09/2018	1	95	0.11	104.9					Local Environmental Factors
1191-27	Wednesday, 8 August 2018	12:35:23	11/09/2018	20/09/2018	5	115	0.10	100.0					
1119-178	Thursday, 9 August 2018	12:36:04	11/09/2018	20/09/2018	5	115	0.10	101.5					
840-1	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.10	91.5					
849-9	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.10	91.5					
1191-26	Monday, 13 August 2018	12:33:29	11/09/2018	20/09/2018	5	115	0.10	97.5					
849-10	Tuesday, 14 August 2018	12:23:43	11/09/2018	20/09/2018	5	115	0.10	88.0					
1182-42	Wednesday, 15 August 2018	12:04:53	11/09/2018	20/09/2018	5	115	0.10	98.8					
840-2	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.10	88.0					
840-502	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.10	88.0					
1182-43-44	Saturday, 18 August 2018	12:49:29	11/09/2018	20/09/2018	5	115	0.10	109.5					
849-20	Monday, 20 August 2018	12:42:18	11/09/2018	20/09/2018	5	115	0.10	91.5					
849-12	Tuesday, 21 August 2018	12:27:52	11/09/2018	20/09/2018	5	115	0.10	88.0					
1182-40-41	Wednesday, 22 August 2018	12:28:59	11/09/2018	20/09/2018	5	115	0.10	91.5					
840-514-515	Thursday, 23 August 2018	12:43:13	11/09/2018	20/09/2018	5	115	0.14	88.0					
849-13	Sunday, 26 August 2018	12:45:41	11/09/2018	20/09/2018	1	95	0.10	88.0					
840-503-504A	Wednesday, 29 August 2018	12:30:09	11/09/2018	20/09/2018	5	115	0.10	88.0					
September													
1110-133	Sunday, 2 September 2018	12:46:52	05/10/2018	19/10/2018	1	95	0.11	91.5					
840-3	Monday, 3 September 2018	12:26:21	05/10/2018	19/10/2018	5	115	0.10	88.0					
1110-134	Tuesday, 4 September 2018	12:39:05	05/10/2018	19/10/2018	5	115							Unit not operational
840-11	Wednesday, 5 September 2018	12:18:54	05/10/2018	19/10/2018	5	115	0.07	81.9					
849-21	Wednesday, 5 September 2018	12:21:44	05/10/2018	19/10/2018	5	115	0.07	81.9					
840-504B-505	Thursday, 6 September 2018	12:31:38	05/10/2018	19/10/2018	5	115	0.08	100.0					
1110-135	Saturday, 8 September 2018	12:32:51	05/10/2018	19/10/2018	5	115	0.08	94.0					
849-22	Sunday, 9 September 2018	12:32:03	05/10/2018	19/10/2018	1	95	0.08	91.5					
1173-70	Monday, 10 September 2018	12:29:53	05/10/2018	19/10/2018	5	115	0.09	91.0					
849-23	Wednesday, 12 September 2018	12:27:19	05/10/2018	19/10/2018	5	115	0.07	81.9					
840-506	Thursday, 13 September 2018	12:52:55	05/10/2018	19/10/2018	5	115	0.08	81.9					
840-12-13	Thursday, 13 September 2018	12:56:42	05/10/2018	19/10/2018	5	115	0.09	81.9					
1101-117	Friday, 14 September 2018	12:32:41	05/10/2018	19/10/2018	5	115	0.08	91.5					
1173-72	Saturday, 15 September 2018	12:33:17	05/10/2018	19/10/2018	5	115	0.08	98.8					
1173-68	Sunday, 16 September 2018	12:23:05	05/10/2018	19/10/2018	5	115	0.07	88.0					
1101-118	Monday, 17 September 2018	12:33:50	05/10/2018	19/10/2018	5	115	0.08	88.0					
840-14	Tuesday, 18 September 2018	12:29:54	05/10/2018	19/10/2018	5	115	0.09	91.5					
1173-74	Wednesday, 19 September 2018	12:25:30	05/10/2018	19/10/2018	5	115	0.09	91.5					
840-15-16	Thursday, 20 September 2018	12:28:17	05/10/2018	19/10/2018	5	115	0.09	88.0					
1101-119B-120A	Friday, 21 September 2018	12:33:42	05/10/2018	19/10/2018	5	115	0.08	88.0					
840-7-8	Tuesday, 25 September 2018	12:36:09	05/10/2018	19/10/2018	5	115	0.07	88.0					
1164-65	Tuesday, 25 September 2018	12:25:36	05/10/2018	19/10/2018	5	115	0.08	88.0					
1173-67	Tuesday, 25 September 2018	12:25:36	05/10/2018	19/10/2018	5	115	0.08	88.0					
840-10	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.08	97.5					
840-513	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.08	97.5					
1101-121	Friday, 28 September 2018	12:27:58	05/10/2018	19/10/2018	5	115	0.07	97.5					
840-4-5	Saturday, 29 September 2018	12:16:55	05/10/2018	19/10/2018	5	115	0.09						
October													
1173-71-73	Monday, 1 October 2018	12:40:44	06/11/2018	19/11/2018	1	95	0.08	88.0					
1173-69	Wednesday, 3 October 2018	12:57:03	06/11/2018	19/11/2018	5	115	0.07	81.9					
840-311-512	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.07	81.9					
1101-119B-120B	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.07	81.9					
840-21	Friday, 5 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.07	91.5					
840-9	Saturday, 6 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.07	91.5					
1164-67-68	Monday, 8 October 2018	12:39:07	06/11/2018	19/11/2018	5	115	0.07	88.0					
840-23-24	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.07	81.9					
840-510	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.07	81.9					
1164-74	Thursday, 11 October 2018	13:28:02	06/11/2018	19/11/2018	5	115	0.08	88.0					
840-6	Friday, 12 October 2018	12:11:13	06/11/2018	19/11/2018	5	115	0.09	91.5					
1164-66	Saturday, 13 October 2018	12:30:47	06/11/2018	19/11/2018	5	115	0.08	88.0					
1164-73	Monday, 15 October 2018	12:35:27	06/11/2018	19/11/2018	5	115	0.07	91.5					
831-1	Tuesday, 16 October 2018	12:38:21	06/11/2018	19/11/2018	5	115	0.08	97.5					
1119-133	Tuesday, 16 October 2018	12:56:52	06/11/2018	19/11/2018	5	115	0.07	95.9					
1164-72	Saturday, 20 October 2018	13:15:27	06/11/2018	19/11/2018	5	115	0.09	100.0					
831-2	Sunday, 21 October 2018	12:23:45	06/11/2018	19/11/2018	1	95	0.09	88.0					
840-24-25	Monday, 22 October 2018	12:28:20	06/11/2018	19/11/2018	5	115	0.08	81.9					
840-17	Monday, 22 October 2018	12:32:53	06/11/2018	19/11/2018	5	115	0.08	81.9					
1164-69-70	Wednesday, 24 October 2018	12:50:46	06/11/2018	19/11/2018	5	115	0.07	88.0					
1164-84	Thursday, 25 October 2018	12:26:43	06/11/2018	19/11/2018	5	115	0.09	91.5					
840-19-20	Friday, 26 October 2018	12:35:00	06/11/2018	19/11/2018	5	115	0.08	81.9					
1119-134	Friday, 26 October 2018	12:51:45	06/11/2018	19/11/2018	5	115	0.08	91.5					
1083-549	Saturday, 27 October 2018	12:29:10	06/11/2018	19/11/2018	5	115	0.07	91.5					
840-26	Sunday, 28 October 2018	09:47:37	06/11/2018	19/11/2018	1	95	0.08	81.9					
831-5	Monday, 29 October 2018	12:38:51	06/11/2018	19/11/2018	5	115	0.07	91.5					
1164-83	Tuesday, 30 October 2018	12:40:25	06/11/2018	19/11/2018	5	115	0.08	95.9					
831-4	Wednesday, 31 October 2018	09:50:25	06/11/2018	19/11/2018	5	115	0.07	81.9					
November													
1092-128	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.08	108.0					
1083-550	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.08	108.0					
1164-82	Saturday, 3 November 2018	10:08:45	06/12/2018	18/12/2018	5	115	0.07	91.5					
1164-80-81	Sunday, 4 November 2018	12:31:24	06/12/2018	18/12/2018	1	95	0.07	88.0					
1164-79	Monday, 5 November 2018	12:29:47	06/12/2018	18/12/2018	5	115	0.07	91.5					
831-1	Tuesday, 6 November 2018	12:30:26	06/12/2018	18/12/2018	5	115	0.08	91.5					
1164-76-77-78	Wednesday, 7 November 2018	12:32:17	06/12/2018	18/12/2018	5	115	0.08	91.5					
1092-129-130	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.09	94.0					
1083-551	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.09	94.0					
1155-60	Saturday, 1												

Monitoring Point: BM02

Blast monitoring. Airblast overpressure and ground vibration peak particle velocity recorded to the south of ML1535 boundary

Blast Number	Day/Date	Time	Date Obtained	Date Published	Trigger Threshold		BM02 at Blast Time		Comments
					Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	
JANUARY									
876-30	Wednesday, 3 January 2018	12:25:51	05/02/2018	20/02/2018	5	115	0.12	88.0	
876-32	Thursday, 4 January 2018	15:07:17	05/02/2018	20/02/2018	5	115	0.10	95.9	
876-33	Monday, 8 January 2018	10:19:38	05/02/2018	20/02/2018	5	115	1.24	113.8	
876-34	Tuesday, 9 January 2018	12:37:00	05/02/2018	20/02/2018	5	115	0.20	102.0	
876-35	Wednesday, 10 January 2018	12:39:50	05/02/2018	20/02/2018	5	115	0.12	97.5	
876-40	Thursday, 11 January 2018	12:31:52	05/02/2018	20/02/2018	5	115	0.12	98.8	
876-29	Saturday, 13 January 2018	12:35:54	05/02/2018	20/02/2018	5	115	0.12	101.0	
867-7	Tuesday, 16 January 2018	15:13:29	05/02/2018	20/02/2018	5	115	0.15	91.5	
876-28	Tuesday, 16 January 2018	15:18:42	05/02/2018	20/02/2018	5	115	0.10	88.0	
867-12	Friday, 19 January 2018	12:30:10	05/02/2018	20/02/2018	5	115	0.14	88.0	
867-13	Monday, 22 January 2018	12:32:33	05/02/2018	20/02/2018	5	115	0.13	95.9	
867-513	Wednesday, 24 January 2018	12:56:24	05/02/2018	20/02/2018	5	115	0.12	97.5	
867-14	Thursday, 25 January 2018	12:30:28	05/02/2018	20/02/2018	5	115	0.13	95.9	
867-15	Sunday, 28 January 2018	12:28:39	05/02/2018	20/02/2018	1	95	0.11	88.0	
867-517	Tuesday, 30 January 2018	12:28:30	05/02/2018	20/02/2018	5	115	0.14	91.5	
867-16	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.14	91.5	
FEBRUARY									
867-509	Thursday, 1 February 2018	12:24:54	06/03/2018	20/03/2018	5	115	0.12	95.9	
867-17	Friday, 2 February 2018	12:31:37	06/03/2018	20/03/2018	5	115	0.15	88.0	
867-510a	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-511a	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-4	Tuesday, 6 February 2018	12:38:58	06/03/2018	20/03/2018	5	115	0.11	91.5	
867-27	Thursday, 8 February 2018	12:26:37	06/03/2018	20/03/2018	5	115	0.12	101.0	
867-516	Saturday, 10 February 2018	12:31:30	06/03/2018	20/03/2018	5	115	0.09	91.5	
867-4	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.11	94.0	
867-515	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.11	94.0	
867-18	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.10	94.0	
867-514	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.12	94.0	
867-7-13	Thursday, 15 February 2018	12:54:32	06/03/2018	20/03/2018	5	115	0.11	95.9	
867-26	Saturday, 17 February 2018	12:28:04	06/03/2018	20/03/2018	5	115	0.11	94.0	
867-25	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	1	115	0.14	97.5	
867-508	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	5	115	0.15	91.5	
867-10-11	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.13	98.8	
867-502	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.13	98.8	
867-503	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.13	98.8	
867-504	Friday, 23 February 2018	12:21:36	06/03/2018	20/03/2018	5	115	0.17	98.8	
867-28	Saturday, 24 February 2018	12:19:44	06/03/2018	20/03/2018	5	115	0.11	95.9	
867-24	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.12	105.5	
867-507	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.12	105.5	
867-501	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.10	101.9	
867-5	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.10	101.9	
MARCH									
867-23	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.11	91.5	
867-506	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.11	91.5	
867-9	Saturday, 3 March 2018	12:23:01	09/04/2018	19/04/2018	5	115	0.11	91.5	
867-9	Saturday, 3 March 2018	12:23:14	09/04/2018	19/04/2018	5	115	0.12	94.0	
867-19	Monday, 5 March 2018	12:21:18	09/04/2018	19/04/2018	5	115	0.11	94.0	
867-21	Wednesday, 7 March 2018	12:30:12	09/04/2018	19/04/2018	5	115	0.12	100.0	
867-8a	Thursday, 8 March 2018	12:39:11	09/04/2018	19/04/2018	5	115	0.12	97.5	
867-22	Friday, 9 March 2018	12:30:01	09/04/2018	19/04/2018	5	115	0.10	91.5	
867-20	Monday, 12 March 2018	12:33:16	09/04/2018	19/04/2018	5	115	0.12	95.9	
858-1	Tuesday, 13 March 2018	12:32:15	09/04/2018	19/04/2018	5	115	0.16	88.0	
867-39	Friday, 16 March 2018	12:35:04	09/04/2018	19/04/2018	5	115	0.10	88.0	
867-511b	Tuesday, 20 March 2018	12:30:55	09/04/2018	19/04/2018	5	115	0.12	88.0	
858-2	Wednesday, 21 March 2018	12:28:59	09/04/2018	19/04/2018	5	115	0.14	105.5	
867-40	Friday, 23 March 2018	12:36:04	09/04/2018	19/04/2018	5	115	0.12	95.9	
858-5	Thursday, 29 March 2018	12:28:04	09/04/2018	19/04/2018	5	115	0.12	88.0	
867-41	Saturday, 31 March 2018	12:23:50	09/04/2018	19/04/2018	5	115	0.10	88.0	
APRIL									
867-38	Tuesday, 3 April 2018	12:28:28	04/05/2018	21/05/2018	5	115	0.10	97.5	
867-36-37	Tuesday, 10 April 2018	12:28:06	04/05/2018	21/05/2018	5	115	0.11	88.0	
858-3	Tuesday, 10 April 2018	12:28:08	04/05/2018	21/05/2018	5	115	0.11	88.0	
867-42	Thursday, 12 April 2018	12:33:45	04/05/2018	21/05/2018	5	115	0.10	106.0	
858-4	Saturday, 14 April 2018	12:24:17	04/05/2018	21/05/2018	5	115	0.16	111.2	
867-40b	Monday, 16 April 2018	12:32:17	04/05/2018	21/05/2018	5	115	0.15	100.0	
867-29	Tuesday, 17 April 2018	12:33:35	04/05/2018	21/05/2018	5	115	0.12	88.0	
858-7-8	Monday, 9 April 2018	12:36:35	04/05/2018	21/05/2018	5	115	0.16	91.5	
867-30	Tuesday, 10 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.11	88.0	
849-515	Tuesday, 10 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.11	88.0	
867-35	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.13	97.5	
858-6	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.13	97.5	
858-9	Saturday, 28 April 2018	12:28:22	04/05/2018	21/05/2018	5	115	0.13	88.0	
MAY									
858-10	Tuesday, 1 May 2018	12:27:50	06/06/2018	20/06/2018	5	115	0.11	88.0	
867-511	Tuesday, 1 May 2018	12:31:31	06/06/2018	20/06/2018	5	115	0.11	88.0	
1155-58	Wednesday, 2 May 2018	12:38:49	06/06/2018	20/06/2018	5	115	0.13	97.5	
867-42	Friday, 4 May 2018	12:30:46	06/06/2018	20/06/2018	5	115	0.13	103.5	
858-10	Sunday, 6 May 2018	12:30:14	06/06/2018	20/06/2018	1	95	0.13	88.0	
849-511	Monday, 7 May 2018	12:56:35	06/06/2018	20/06/2018	5	115	0.12	101.0	
849-515	Tuesday, 8 May 2018	12:25:37	06/06/2018	20/06/2018	5	115	0.13	91.5	
858-11-12	Wednesday, 9 May 2018	15:06:40	06/06/2018	20/06/2018	5	115	0.11	88.0	
858-11-12	Friday, 11 May 2018	15:11:16	06/06/2018	20/06/2018	5	115	0.12	101.0	
1146-84	Saturday, 12 May 2018	12:46:38	06/06/2018	20/06/2018	5	115	0.14	101.9	
867-23	Monday, 14 May 2018	12:38:43	06/06/2018	20/06/2018	5	115	0.13	91.5	
1146-85	Tuesday, 15 May 2018	12:45:48	06/06/2018	20/06/2018	5	115	0.14	91.5	
1146-86	Thursday, 17 May 2018	12:27:58	06/06/2018	20/06/2018	5	115	0.12	88.0	
858-13	Friday, 18 May 2018	12:30:28	06/06/2018	20/06/2018	5	115	0.15	91.5	
1146-87	Saturday, 19 May 2018	12:59:11	06/06/2018	20/06/2018	5	115	0.15	88.0	
858-14	Monday, 21 May 2018	12:31:37	06/06/2018	20/06/2018	5	115	0.14	98.8	
858-19	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.14	104.9	
867-34	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.14	104.9	
849-513	Monday, 28 May 2018	12:26:52	06/06/2018	20/06/2018	5	115	0.13	106.0	
849-512	Wednesday, 30 May 2018	11:30:22	06/06/2018	20/06/2018	5	115	0.15	91.5	
JUNE									
858-10	Friday, 1 June 2018	12:30:50	04/07/2018	20/07/2018	5	115	0.13	88.0	
858-15	Sunday, 3 June 2018	12:31:13	04/07/2018	20/07/2018	1	95	0.13	97.5	Local Environmental Factor
1137-83	Monday, 4 June 2018	12:29:26	04/07/2018	20/07/2018	5	115	0.13	88.0	
858-16-17	Tuesday, 5 June 2018	15:10:04	04/07/2018	20/07/2018	5	115	0.15	88.0	
1137-85	Wednesday, 6 June 2018	12:33:38	04/07/2018	20/07/2018	5	115	0.13	88.0	
849-514	Thursday, 7 June 2018	12:32:46	04/07/2018	20/07/2018	5	115	0.13	101.0	
1137-87	Thursday, 7 June 2018	12:58:09	04/07/2018	20/07/2018	5	115	0.18	97.5	
858-18	Friday, 8 June 2018	12:32:15							

August										
849-7-8	Friday, 3 August 2018	12:25:23	11/09/2018	20/09/2018	5	115	0.19	122.2	Local Environmental Factors	
1119-132	Sunday, 5 August 2018	12:28:22	11/09/2018	20/09/2018	1	95	0.13	103.5	Local Environmental Factors	
1119-125	Sunday, 5 August 2018	12:48:15	11/09/2018	20/09/2018	1	95	0.15	102.0	Local Environmental Factors	
849-19	Monday, 6 August 2018	12:31:48	11/09/2018	20/09/2018	1	95	0.15	112.6	Local Environmental Factors	
1191-27	Wednesday, 8 August 2018	12:35:23	11/09/2018	20/09/2018	5	115	0.14	97.5		
1119-178	Thursday, 9 August 2018	12:46:51	11/09/2018	20/09/2018	5	115	0.12	98.8		
840-1	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.18	102.8	Local Environmental Factors	
849-9	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.18	102.8	Local Environmental Factors	
1191-26	Monday, 13 August 2018	12:33:29	11/09/2018	20/09/2018	5	115	0.15	94.0		
849-10	Tuesday, 14 August 2018	12:24:43	11/09/2018	20/09/2018	5	115	0.15	94.0		
1182-42	Wednesday, 15 August 2018	12:04:53	11/09/2018	20/09/2018	5	115	0.14	106.0		
840-2	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.15	91.5		
840-501-502	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.15	91.5		
1182-43-44	Saturday, 18 August 2018	12:49:29	11/09/2018	20/09/2018	5	115	0.14	108.4		
849-20	Monday, 20 August 2018	12:42:18	11/09/2018	20/09/2018	5	115	0.13	98.8		
849-12	Tuesday, 21 August 2018	12:27:52	11/09/2018	20/09/2018	5	115	0.15	94.0		
1182-40-41	Wednesday, 22 August 2018	12:28:59	11/09/2018	20/09/2018	5	115	0.18	91.5		
840-514-515	Thursday, 23 August 2018	12:43:13	11/09/2018	20/09/2018	5	115	0.13	88.0		
849-13	Sunday, 26 August 2018	12:45:41	11/09/2018	20/09/2018	1	95	0.13	88.0		
840-103-104A	Wednesday, 29 August 2018	12:30:09	11/09/2018	20/09/2018	5	115	0.13	91.5		
September										
1110-133	Sunday, 2 September 2018	12:46:52	05/10/2018	19/10/2018	1	95	0.13	91.5		
840-3	Monday, 3 September 2018	12:26:21	05/10/2018	19/10/2018	5	115	0.17	89.0		
1110-134	Tuesday, 4 September 2018	12:39:05	05/10/2018	19/10/2018	5	115	0.14	94.0		
840-11	Wednesday, 5 September 2018	12:18:54	05/10/2018	19/10/2018	5	115	0.14	97.5		
849-21	Wednesday, 5 September 2018	12:24:44	05/10/2018	19/10/2018	5	115	0.13	101.0		
840-504B-505	Thursday, 6 September 2018	12:31:38	05/10/2018	19/10/2018	5	115	0.13	102.8		
1110-135	Saturday, 8 September 2018	12:32:51	05/10/2018	19/10/2018	5	115	0.13	91.5		
849-22	Sunday, 9 September 2018	12:32:03	05/10/2018	19/10/2018	1	95	0.15	101.9		
1173-70	Monday, 10 September 2018	12:29:53	05/10/2018	19/10/2018	5	115	0.12	93.9		
849-23	Wednesday, 12 September 2018	12:27:19	05/10/2018	19/10/2018	5	115	0.13	91.5		
840-506	Thursday, 13 September 2018	12:52:55	05/10/2018	19/10/2018	5	115	0.12	97.5		
840-12-13	Thursday, 13 September 2018	12:56:42	05/10/2018	19/10/2018	5	115	0.14	91.5		
1101-117	Friday, 14 September 2018	12:32:41	05/10/2018	19/10/2018	5	115	0.15	84.0		
1173-72	Saturday, 15 September 2018	12:33:17	05/10/2018	19/10/2018	5	115	0.12	104.2		
1173-68	Sunday, 16 September 2018	12:23:05	05/10/2018	19/10/2018	5	115	0.13	97.5		
1101-118	Monday, 17 September 2018	12:33:50	05/10/2018	19/10/2018	5	115	0.13	91.5		
840-14	Tuesday, 18 September 2018	12:29:54	05/10/2018	19/10/2018	5	115	0.13	102.8		
1173-74	Wednesday, 19 September 2018	12:25:30	05/10/2018	19/10/2018	5	115	0.13	97.5		
840-15-16	Thursday, 20 September 2018	12:28:17	05/10/2018	19/10/2018	5	115	0.17	95.9		
1101-119B-120A	Friday, 21 September 2018	12:33:47	05/10/2018	19/10/2018	5	115	0.13	91.5		
840-7-8	Tuesday, 25 September 2018	12:36:09	05/10/2018	19/10/2018	5	115	0.19	91.5		
1164-65	Tuesday, 25 September 2018	12:35:36	05/10/2018	19/10/2018	5	115	0.15	91.5		
1173-67	Tuesday, 25 September 2018	12:35:36	05/10/2018	19/10/2018	5	115	0.15	91.5		
840-10	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.12	100.0		
840-513	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.12	100.0		
1101-121	Friday, 28 September 2018	12:22:58	05/10/2018	19/10/2018	5	115	0.13	94.0		
840-4-5	Saturday, 29 September 2018	12:16:55	05/10/2018	19/10/2018	5	115	0.18	98.8		
October										
1173-71-73	Monday, 1 October 2018	12:40:44	06/11/2018	19/11/2018	1	95	0.13	95.9	Local Environmental Factors	
1173-69	Wednesday, 3 October 2018	12:57:03	06/11/2018	19/11/2018	5	115	0.13	94.0		
840-111-512	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.14	91.5		
1101-119B-120B	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.14	91.5		
840-21	Friday, 5 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.14	91.5		
840-9	Saturday, 6 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.14	91.5		
1164-67-68	Monday, 8 October 2018	12:39:07	06/11/2018	19/11/2018	5	115	0.13	88.0		
840-2-23	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.13	88.0		
840-510	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.13	88.0		
1164-74	Thursday, 11 October 2018	13:28:02	06/11/2018	19/11/2018	5	115	0.12	91.5		
840-6	Friday, 12 October 2018	12:11:13	06/11/2018	19/11/2018	5	115	0.15	91.5		
1164-66	Saturday, 13 October 2018	12:30:47	06/11/2018	19/11/2018	5	115	0.16	91.5		
1164-73	Monday, 15 October 2018	12:35:27	06/11/2018	19/11/2018	5	115	0.12	106.0		
831-1	Tuesday, 16 October 2018	12:38:21	06/11/2018	19/11/2018	5	115	0.17	101.9		
1119-133	Tuesday, 16 October 2018	12:56:52	06/11/2018	19/11/2018	5	115	0.12	95.9		
1164-72	Saturday, 20 October 2018	13:15:27	06/11/2018	19/11/2018	5	115	0.13	104.9		
831-2	Sunday, 21 October 2018	12:23:45	06/11/2018	19/11/2018	1	95	0.14	91.5		
840-24-25	Monday, 22 October 2018	12:28:20	06/11/2018	19/11/2018	5	115	0.13	91.5		
840-17	Tuesday, 23 October 2018	12:32:53	06/11/2018	19/11/2018	5	115	0.13	101.9		
1164-69-70	Wednesday, 24 October 2018	12:50:46	06/11/2018	19/11/2018	5	115	0.12	88.0		
1164-84	Thursday, 25 October 2018	12:26:43	06/11/2018	19/11/2018	5	115	0.14	91.5		
840-19-20	Friday, 26 October 2018	12:35:00	06/11/2018	19/11/2018	5	115	0.12	91.5		
1119-134	Friday, 26 October 2018	12:51:45	06/11/2018	19/11/2018	5	115	0.13	91.5		
1083-549	Saturday, 27 October 2018	12:29:10	06/11/2018	19/11/2018	5	115	0.13	101.9		
840-26	Sunday, 28 October 2018	09:47:37	06/11/2018	19/11/2018	1	95	0.13	88.0		
831-5	Monday, 29 October 2018	12:38:51	06/11/2018	19/11/2018	5	115	0.15	88.0		
1164-83	Tuesday, 30 October 2018	12:40:25	06/11/2018	19/11/2018	5	115	0.14	100.0		
831-4	Wednesday, 31 October 2018	09:50:25	06/11/2018	19/11/2018	5	115	0.14	91.5		
November										
1092-128	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.16	109.2		
1083-550	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.16	109.2		
1164-82	Saturday, 3 November 2018	10:08:45	06/12/2018	18/12/2018	5	115	0.12	95.9		
1164-80-81	Sunday, 4 November 2018	12:31:24	06/12/2018	18/12/2018	1	95	0.12	88.0		
1164-79	Monday, 5 November 2018	12:29:47	06/12/2018	18/12/2018	5	115	0.12	106.5		
831-1	Tuesday, 6 November 2018	12:30:26	06/12/2018	18/12/2018	5	115	0.15	91.5		
1164-76-77-78	Wednesday, 7 November 2018	12:32:17	06/12/2018	18/12/2018	5	115	0.14	94.0		
1092-129-130	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.18	91.5		
1083-551	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.18	91.5		
1155-60	Saturday, 10 November 2018	12:25:01	06/12/2018	18/12/2018	5	115	0.13	91.5		
1155-71-72	Monday, 12 November 2018	09:50:46	06/12/2018	18/12/2018	5	115	0.15	97.5		
1155-61-62	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.12	100.0		
840-508A-509	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.12	100.0		
831-3	Thursday, 15 November 2018	11:51:50	06/12/2018	18/12/2018	5	115	0.13	95.9		
840-29	Saturday, 17 November 2018	09:17:25	06/12/2018	18/12/2018	5	115	0.16	88.0		
1155-69-70	Sunday, 18 November 2018	12:25:36	06/12/2018	18/12/2018	1	95	0.14	97.5	Local Environmental Factors	
1155-69	Monday, 19 November 2018	12:33:55	06/12/2018	18/12/2018	5	115	0.13	94.0		
1155-66-67	Tuesday, 20 November 2018	15:06:09	06/12/2018	18/12/2018	5	115	0.14	94.0		
831-16-17A	Wednesday, 21 November 2018	12:32:44	06/12/2018	18/12/						

Monitoring Point: BM03
 Blast monitoring, Airblast overpressure and ground vibration peak particle velocity recorded at private residence to the north of ML1535 boundary

Blast Number	Day/Date	Time	Date Obtained	Date Published	Trigger Threshold		BM03 at Blast Time		Comments
					Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	
JANUARY									
876-30	Wednesday, 3 January 2018	12:25:51	05/02/2018	20/02/2018	5	115	0.12	88.0	
876-32	Thursday, 4 January 2018	15:02:17	05/02/2018	20/02/2018	5	115	0.13	91.5	
876-33	Monday, 8 January 2018	12:35:38	05/02/2018	20/02/2018	5	115	0.14	91.5	
876-34	Tuesday, 9 January 2018	12:27:08	05/02/2018	20/02/2018	5	115	0.13	91.5	
876-35	Wednesday, 10 January 2018	12:29:00	05/02/2018	20/02/2018	5	115	0.12	88.0	
876-40	Thursday, 11 January 2018	12:33:52	05/02/2018	20/02/2018	5	115	0.13	94.0	
876-29	Saturday, 13 January 2018	12:35:54	05/02/2018	20/02/2018	5	115	0.12	91.5	
867-2	Tuesday, 16 January 2018	15:13:29	05/02/2018	20/02/2018	5	115	0.15	91.5	
876-28	Tuesday, 16 January 2018	15:18:42	05/02/2018	20/02/2018	5	115	0.12	94.0	
867-12	Friday, 19 January 2018	12:30:00	05/02/2018	20/02/2018	5	115	0.17	91.5	
867-3	Monday, 22 January 2018	12:23:32	05/02/2018	20/02/2018	5	115	0.16	91.5	
867-213	Wednesday, 24 January 2018	12:56:24	05/02/2018	20/02/2018	5	115	0.13	95.9	
867-14	Thursday, 25 January 2018	12:30:28	05/02/2018	20/02/2018	5	115	0.12	88.0	
867-15	Sunday, 28 January 2018	12:29:39	05/02/2018	20/02/2018	1	95	0.14	91.5	
867-512	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.18	91.5	
867-16	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.18	91.5	
FEBRUARY									
867-509	Thursday, 1 February 2018	12:24:54	06/03/2018	20/03/2018	5	115	0.11	104.2	
867-17	Friday, 2 February 2018	12:31:37	06/03/2018	20/03/2018	5	115	0.17	91.5	
867-510	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-511	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-4	Tuesday, 6 February 2018	12:38:58	06/03/2018	20/03/2018	5	115	0.15	88.0	
867-17	Thursday, 8 February 2018	12:32:07	06/03/2018	20/03/2018	5	115	0.15	88.0	
867-516	Saturday, 10 February 2018	12:31:30	06/03/2018	20/03/2018	5	115	0.13	88.0	
867-6	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.13	101.9	
867-415	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.13	101.9	
867-18	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-514	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-7-13	Thursday, 15 February 2018	12:54:32	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-35	Saturday, 17 February 2018	12:26:27	06/03/2018	20/03/2018	5	115	0.15	88.0	
867-25	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	1	115	0.12	102.8	
867-508	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	5	115	0.12	102.8	
867-10-11	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-502	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-503	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.14	91.5	
867-504	Friday, 23 February 2018	12:21:36	06/03/2018	20/03/2018	5	115	0.13	88.0	
867-19	Saturday, 24 February 2018	12:24:04	06/03/2018	20/03/2018	5	115	0.14	88.0	
867-24	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.12	102.8	
867-507	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.12	102.8	
867-401	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.13	91.5	
867-5	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.13	91.5	
MARCH									
867-13	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.13	91.5	
867-506	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.13	91.5	
867-505	Saturday, 3 March 2018	12:23:00	09/04/2018	19/04/2018	5	115	0.12	88.0	
867-4	Saturday, 3 March 2018	12:23:14	09/04/2018	19/04/2018	5	115	0.13	91.5	
867-19	Monday, 5 March 2018	12:21:18	09/04/2018	19/04/2018	5	115	0.14	91.5	
867-21	Wednesday, 7 March 2018	12:20:12	09/04/2018	19/04/2018	5	115	0.11	88.0	
867-8a	Thursday, 8 March 2018	12:39:11	09/04/2018	19/04/2018	5	115	0.13	88.0	
867-22	Friday, 9 March 2018	12:30:41	09/04/2018	19/04/2018	5	115	0.17	88.0	
867-20	Monday, 12 March 2018	12:33:16	09/04/2018	19/04/2018	5	115	0.16	91.5	
858-1	Tuesday, 13 March 2018	12:32:15	09/04/2018	19/04/2018	5	115	0.15	88.0	
867-39	Friday, 16 March 2018	12:35:04	09/04/2018	19/04/2018	5	115	0.12	88.0	
867-511b	Tuesday, 20 March 2018	12:30:55	09/04/2018	19/04/2018	5	115	0.17	101.0	
858-2	Wednesday, 21 March 2018	12:24:59	09/04/2018	19/04/2018	5	115	0.15	101.0	
867-40	Friday, 23 March 2018	12:26:24	09/04/2018	19/04/2018	5	115	0.12	91.5	
858-5	Thursday, 29 March 2018	12:28:04	09/04/2018	19/04/2018	5	115	0.13	91.5	
867-41	Saturday, 31 March 2018	12:23:50	09/04/2018	19/04/2018	5	115	0.13	88.0	
APRIL									
867-18	Tuesday, 3 April 2018	12:28:28	04/05/2018	21/05/2018	5	115	0.12	88.0	
867-16-17	Tuesday, 10 April 2018	12:28:06	04/05/2018	21/05/2018	5	115	0.18	88.0	
858-3	Tuesday, 10 April 2018	12:28:08	04/05/2018	21/05/2018	5	115	0.18	88.0	
867-42	Thursday, 12 April 2018	12:33:45	04/05/2018	21/05/2018	5	115	0.13	98.8	
858-4	Saturday, 14 April 2018	12:24:17	04/05/2018	21/05/2018	5	115	0.16	91.5	
867-8b	Monday, 16 April 2018	12:29:27	04/05/2018	21/05/2018	5	115	0.13	91.5	
867-29	Tuesday, 17 April 2018	12:33:35	04/05/2018	21/05/2018	5	115	0.12	88.0	
867-8	Monday, 19 April 2018	12:36:25	04/05/2018	21/05/2018	5	115	0.16	88.0	
867-30	Tuesday, 24 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.13	88.0	
849-516	Tuesday, 24 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.13	88.0	
867-45	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.12	97.5	
858-6	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.12	97.5	
858-9	Saturday, 28 April 2018	12:28:22	04/05/2018	21/05/2018	5	115	0.15	94.0	
May									
858-10	Tuesday, 1 May 2018	12:27:50	06/06/2018	20/06/2018	5	115	0.13	88.0	
867-31	Tuesday, 1 May 2018	12:31:31	06/06/2018	20/06/2018	5	115	0.12	88.0	
1135-58	Wednesday, 2 May 2018	12:38:49	06/06/2018	20/06/2018	5	115	0.12	97.5	
867-12	Friday, 4 May 2018	12:30:49	06/06/2018	20/06/2018	5	115	0.11	88.0	
858-20	Sunday, 6 May 2018	12:30:24	06/06/2018	20/06/2018	1	95	0.12	97.5	Local Environmental Factor
849-511	Monday, 7 May 2018	12:56:35	06/06/2018	20/06/2018	5	115	0.12	88.0	
849-515	Tuesday, 8 May 2018	12:53:37	06/06/2018	20/06/2018	5	115	0.11	88.0	
858-21	Wednesday, 9 May 2018	15:06:40	06/06/2018	20/06/2018	5	115	0.12	88.0	
858-11-12	Friday, 11 May 2018	15:11:16	06/06/2018	20/06/2018	5	115	0.15	88.0	
1146-84	Saturday, 12 May 2018	12:46:38	06/06/2018	20/06/2018	5	115	0.12	106.0	
867-13	Monday, 14 May 2018	12:38:43	06/06/2018	20/06/2018	5	115	0.17	88.0	
1146-85	Tuesday, 15 May 2018	12:45:48	06/06/2018	20/06/2018	5	115	0.13	88.0	
1146-86	Thursday, 17 May 2018	12:27:58	06/06/2018	20/06/2018	5	115	0.12	91.5	
858-13	Friday, 18 May 2018	12:30:28	06/06/2018	20/06/2018	5	115	0.13	88.0	
1146-87	Saturday, 19 May 2018	12:59:11	06/06/2018	20/06/2018	5	115	0.12	91.5	
858-14	Monday, 21 May 2018	12:31:37	06/06/2018	20/06/2018	5	115	0.12	91.5	
858-19	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.12	91.5	
867-14	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.12	91.5	
849-513	Monday, 28 May 2018	12:26:52	06/06/2018	20/06/2018	5	115	0.12	97.5	
849-512	Wednesday, 30 May 2018	11:30:22	06/06/2018	20/06/2018	5	115	0.12	101.0	
June									
849-510	Friday, 1 June 2018	12:30:50	04/07/2018	20/07/2018	5	115	0.11	88.0	
868-15	Sunday, 3 June 2018	12:31:13	04/07/2018	20/07/2018	1	95	0.12	91.5	
1137-83	Monday, 4 June 2018	12:32:16	04/07/2018	20/07/2018	5	115	0.11	91.5	
868-16-17	Tuesday, 5 June 2018	15:10:04	04/07/2018	20/07/2018	5	115	0.12	91.5	
1137-85	Wednesday, 6 June 2018	12:33:38	04/07/2018	20/07/2018	5	115	0.11	88.0	
849-514	Thursday, 7 June 2018	12:32:46	04/07/2018	20/07/2018	5	115	0.12	94.0	
1137-87	Thursday, 7 June 2018	12:38:09	04/07/2018	20/07/2018	5	115	0.11	91.5	
858-18	Friday, 8 June 2018	12:23:15	04/07/2018	20/07/2018	5	1			

August									
849-7-8	Friday, 3 August 2018	12:25:23	11/09/2018	20/09/2018	5	115	0.16	109.9	
1119-132	Sunday, 5 August 2018	12:28:22	11/09/2018	20/09/2018	1	95	0.12	91.5	
1119-125	Sunday, 5 August 2018	12:48:15	11/09/2018	20/09/2018	1	95	0.11	98.8	Local Environmental Factors
849-19	Monday, 6 August 2018	12:31:48	11/09/2018	20/09/2018	1	95	0.12	95.9	Local Environmental Factors
1191-27	Wednesday, 8 August 2018	12:35:23	11/09/2018	20/09/2018	5	115	0.14	91.5	
1119-178	Thursday, 9 August 2018	12:36:04	11/09/2018	20/09/2018	5	115	0.11	91.5	
840-1	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.26	97.5	Local Environmental Factors
849-9	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.26	97.5	Local Environmental Factors
1191-26	Monday, 13 August 2018	12:33:29	11/09/2018	20/09/2018	5	115	0.12	98.8	
849-10	Tuesday, 14 August 2018	12:23:43	11/09/2018	20/09/2018	5	115	0.14	89.0	
1182-42	Wednesday, 15 August 2018	12:04:53	11/09/2018	20/09/2018	5	115	0.13	101.0	
840-2	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.17	88.0	
840-501-502	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.17	88.0	
1182-43-44	Saturday, 18 August 2018	12:49:20	11/09/2018	20/09/2018	5	115	0.14	94.0	
849-20	Monday, 20 August 2018	12:42:18	11/09/2018	20/09/2018	5	115	0.11	94.0	
849-12	Tuesday, 21 August 2018	12:27:52	11/09/2018	20/09/2018	5	115	0.12	88.0	
1182-40-41	Wednesday, 22 August 2018	12:28:59	11/09/2018	20/09/2018	5	115	0.14	91.5	
840-514-515	Thursday, 23 August 2018	12:43:13	11/09/2018	20/09/2018	5	115	0.11	91.5	
849-13	Sunday, 26 August 2018	12:45:41	11/09/2018	20/09/2018	1	95	0.13	88.0	
840-103-104A	Wednesday, 29 August 2018	12:30:09	11/09/2018	20/09/2018	5	115	0.12	88.0	
September									
1110-133	Sunday, 2 September 2018	12:46:52	05/10/2018	19/10/2018	1	95	0.12	91.5	
840-3	Monday, 3 September 2018	12:26:21	05/10/2018	19/10/2018	5	115	0.13	89.0	
1110-134	Tuesday, 4 September 2018	12:39:05	05/10/2018	19/10/2018	5	115	0.10	94.0	
840-11	Wednesday, 5 September 2018	12:18:54	05/10/2018	19/10/2018	5	115	0.15	91.5	
849-21	Wednesday, 5 September 2018	12:21:44	05/10/2018	19/10/2018	5	115	0.09	88.0	
840-504B-505	Thursday, 6 September 2018	12:31:38	05/10/2018	19/10/2018	5	115	0.09	89.0	
1110-135	Saturday, 8 September 2018	12:32:51	05/10/2018	19/10/2018	5	115	0.12	98.8	
849-22	Sunday, 9 September 2018	12:32:03	05/10/2018	19/10/2018	1	95	0.09	91.5	
1173-70	Monday, 10 September 2018	12:39:53	05/10/2018	19/10/2018	5	115	0.09	91.5	
849-23	Wednesday, 12 September 2018	12:27:19	05/10/2018	19/10/2018	5	115	0.11	94.0	
840-506	Thursday, 13 September 2018	12:52:55	05/10/2018	19/10/2018	5	115	0.07	98.8	
840-12-13	Thursday, 13 September 2018	12:56:42	05/10/2018	19/10/2018	5	115	0.13	91.5	
1101-117	Friday, 14 September 2018	12:32:41	05/10/2018	19/10/2018	5	115	0.08	89.0	
1173-72	Saturday, 15 September 2018	12:33:17	05/10/2018	19/10/2018	5	115	0.09	95.9	
1173-68	Sunday, 16 September 2018	12:23:05	05/10/2018	19/10/2018	5	115	0.11	100.0	
1101-118	Monday, 17 September 2018	15:02:47	05/10/2018	19/10/2018	5	115	0.09	91.5	
840-14	Tuesday, 18 September 2018	12:29:54	05/10/2018	19/10/2018	5	115	0.09	95.9	
1173-74	Wednesday, 19 September 2018	12:25:30	05/10/2018	19/10/2018	5	115	0.09	94.0	
840-15-16	Thursday, 20 September 2018	12:28:17	05/10/2018	19/10/2018	5	115	0.12	91.5	
840-119B-120A	Friday, 21 September 2018	12:33:42	05/10/2018	19/10/2018	5	115	0.13	94.0	
840-7-8	Tuesday, 25 September 2018	12:36:09	05/10/2018	19/10/2018	5	115	0.13	91.5	
1164-65	Tuesday, 25 September 2018	12:25:36	05/10/2018	19/10/2018	5	115	0.09	94.0	
1173-67	Tuesday, 25 September 2018	12:25:36	05/10/2018	19/10/2018	5	115	0.09	94.0	
840-10	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.09	88.0	
840-513	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.09	88.0	
1101-121	Friday, 28 September 2018	12:22:58	05/10/2018	19/10/2018	5	115	0.11	95.9	
849-4-5	Saturday, 29 September 2018	12:16:55	05/10/2018	19/10/2018	5	115	0.12	94.0	
October									
1173-71-73	Monday, 1 October 2018	12:40:44	06/11/2018	19/11/2018	1	95	0.09	91.5	
1173-69	Wednesday, 3 October 2018	12:57:03	06/11/2018	19/11/2018	5	115	0.11	91.5	
840-111-112	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.11	94.0	
1101-119B-120B	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.11	94.0	
840-21	Friday, 5 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.10	91.5	
840-9	Saturday, 6 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.10	91.5	
1164-67-68	Monday, 8 October 2018	12:39:07	06/11/2018	19/11/2018	5	115	0.09	91.5	
840-12-23	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.09	89.0	
840-510	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.09	88.0	
1164-74	Thursday, 11 October 2018	13:28:02	06/11/2018	19/11/2018	5	115	0.10	95.9	
840-6	Friday, 12 October 2018	12:11:13	06/11/2018	19/11/2018	5	115	0.10	95.9	
1164-66	Saturday, 13 October 2018	12:30:47	06/11/2018	19/11/2018	5	115	0.13	94.0	
1164-73	Monday, 15 October 2018	12:35:27	06/11/2018	19/11/2018	5	115	0.09	91.5	
831-1	Tuesday, 16 October 2018	12:38:21	06/11/2018	19/11/2018	5	115	0.13	91.5	
1119-133	Tuesday, 16 October 2018	12:56:52	06/11/2018	19/11/2018	5	115	0.07	91.5	
1164-72	Saturday, 20 October 2018	13:15:27	06/11/2018	19/11/2018	5	115	0.09	89.0	
831-2	Sunday, 21 October 2018	12:23:45	06/11/2018	19/11/2018	1	95	0.12	91.5	
840-24-25	Monday, 22 October 2018	12:28:20	06/11/2018	19/11/2018	5	115	0.07	88.0	
840-17	Tuesday, 23 October 2018	12:32:53	06/11/2018	19/11/2018	5	115	0.13	94.0	
1164-69-70	Wednesday, 24 October 2018	12:50:46	06/11/2018	19/11/2018	5	115	0.08	91.5	
1164-84	Thursday, 25 October 2018	12:26:43	06/11/2018	19/11/2018	5	115	0.11	91.5	
840-19-20	Friday, 26 October 2018	12:35:00	06/11/2018	19/11/2018	5	115	0.08	88.0	
1119-134	Friday, 26 October 2018	12:51:45	06/11/2018	19/11/2018	5	115	0.13	94.0	
1083-549	Saturday, 27 October 2018	12:29:10	06/11/2018	19/11/2018	5	115	0.07	94.0	
840-26	Sunday, 28 October 2018	09:47:37	06/11/2018	19/11/2018	1	95	0.10	88.0	
831-5	Monday, 29 October 2018	12:38:01	06/11/2018	19/11/2018	5	115	0.09	91.5	
1164-83	Tuesday, 30 October 2018	12:40:25	06/11/2018	19/11/2018	5	115	0.09	91.5	
831-4	Wednesday, 31 October 2018	09:50:25	06/11/2018	19/11/2018	5	115	0.12	88.0	
November									
1092-128	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.10	95.9	
1083-550	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.10	95.9	
1164-82	Saturday, 3 November 2018	12:38:45	06/12/2018	18/12/2018	5	115	0.13	94.0	
1164-80-81	Sunday, 4 November 2018	12:31:24	06/12/2018	18/12/2018	1	95	0.08	91.5	
1164-79	Monday, 5 November 2018	12:29:47	06/12/2018	18/12/2018	5	115	0.08	97.5	
831-1	Tuesday, 6 November 2018	12:30:26	06/12/2018	18/12/2018	5	115	0.09	91.5	
1164-76-77-78	Wednesday, 7 November 2018	12:32:17	06/12/2018	18/12/2018	5	115	0.10	89.0	
1092-129-130	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.14	91.5	
1083-551	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.14	91.5	
1155-60	Saturday, 10 November 2018	12:25:01	06/12/2018	18/12/2018	5	115	0.09	91.5	
1155-71-72	Monday, 12 November 2018	09:50:46	06/12/2018	18/12/2018	5	115	0.10	88.0	
1155-61-62	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.08	91.5	
840-508A-509	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.08	91.5	
831-3	Thursday, 15 November 2018	10:11:50	06/12/2018	18/12/2018	5	115	0.13	91.5	
840-29	Saturday, 17 November 2018	09:17:25	06/12/2018	18/12/2018	5	115	0.09	88.0	
1155-69-70	Sunday, 18 November 2018	12:25:36	06/12/2018	18/12/2018	1	95	0.10	91.5	
1155-69	Monday, 19 November 2018	12:33:55	06/12/2018	18/12/2018	5	115	0.07	88.0	
1155-66-67	Tuesday, 20 November 2018	15:06:09	06/12/2018	18/12/2018	5	115	0.13	91.5	
831-16-17A	Wednesday, 21 November 2018	12:32:44	06/12/2018	18/12/2018	5	115	0.11	88.0	
1161-178	Friday, 23 November 2018	12:36:44	06/12/2018	18/12/2018	5	115	0.21	88.0	
1155-68	Saturday, 24 November 2018	12:39:01	06/12/2018	18/12/2018	5	115	0.08	91.5	
840-18	Monday, 26 November 2018	09:27:34	06/12/2018	18/12/2018	5	115	0.09	88.0	
840-27-28	Tuesday, 27 November 2018	12:39:06	06/12/2018	18/12/2018	5				

Monitoring Point: BM08.1 <Cowl North>
 Blast monitoring, Airblast overpressure and ground vibration peak particle velocity recorded at private residence to the north, north east of ML1535 boundary

Blast Number	Day/Date	Time	Date Obtained	Date Published	Trigger Threshold		BM08.1 at Blast Time		Comments
					Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Airblast Overpressure (dB(L))	
JANUARY									
876-30	Wednesday, 3 January 2018	12:25:51	05/02/2018	20/02/2018	5	115	0.02	91.5	
876-32	Thursday, 4 January 2018	15:07:17	05/02/2018	20/02/2018	5	115	0.03	91.5	
876-33	Monday, 8 January 2018	10:18:38	05/02/2018	20/02/2018	5	115	0.03	94.0	
876-34	Tuesday, 9 January 2018	12:27:08	05/02/2018	20/02/2018	5	115	0.03	91.5	
876-35	Wednesday, 10 January 2018	12:29:00	05/02/2018	20/02/2018	5	115	0.03	91.5	
876-36	Thursday, 11 January 2018	12:35:52	05/02/2018	20/02/2018	5	115	0.04	94.0	
876-29	Saturday, 13 January 2018	12:35:54	05/02/2018	20/02/2018	5	115	0.03	100.0	
867-2	Tuesday, 16 January 2018	15:13:29	05/02/2018	20/02/2018	5	115	0.07	91.5	
876-28	Tuesday, 16 January 2018	15:18:47	05/02/2018	20/02/2018	5	115	0.02	91.5	
867-12	Friday, 19 January 2018	12:28:32	05/02/2018	20/02/2018	5	115	0.05	91.5	
867-3	Monday, 22 January 2018	12:28:32	05/02/2018	20/02/2018	5	115	0.05	94.0	
867-213	Wednesday, 24 January 2018	12:26:24	05/02/2018	20/02/2018	5	115	0.07	101.0	
867-14	Thursday, 25 January 2018	12:30:28	05/02/2018	20/02/2018	5	115	0.03	88.0	
867-15	Sunday, 28 January 2018	12:29:39	05/02/2018	20/02/2018	1	95	0.03	91.5	
867-512	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.08	91.5	
867-10	Tuesday, 30 January 2018	12:25:32	05/02/2018	20/02/2018	5	115	0.08	91.5	
FEBRUARY									
867-509	Thursday, 1 February 2018	12:24:54	06/03/2018	20/03/2018	5	115	0.02	91.5	
867-17	Friday, 2 February 2018	12:31:37	06/03/2018	20/03/2018	5	115	0.07	88.0	
867-510a	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.01	88.0	
867-511a	Tuesday, 6 February 2018	12:35:33	06/03/2018	20/03/2018	5	115	0.01	88.0	
867-4	Tuesday, 6 February 2018	12:38:58	06/03/2018	20/03/2018	5	115	0.06	88.0	
867-27	Thursday, 8 February 2018	12:26:37	06/03/2018	20/03/2018	5	115	0.06	101.9	
867-516	Saturday, 10 February 2018	12:26:20	06/03/2018	20/03/2018	5	115	0.02	94.0	
867-6	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.05	98.8	
867-515	Monday, 12 February 2018	12:26:56	06/03/2018	20/03/2018	5	115	0.05	98.8	
867-18	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.06	95.9	
867-514	Tuesday, 13 February 2018	12:31:42	06/03/2018	20/03/2018	5	115	0.05	95.9	
867-2-13	Thursday, 15 February 2018	12:54:32	06/03/2018	20/03/2018	5	115	0.06	91.5	
867-26	Saturday, 17 February 2018	12:28:04	06/03/2018	20/03/2018	5	115	0.05	91.5	
867-25	Tuesday, 20 February 2018	12:26:20	06/03/2018	20/03/2018	5	115	0.02	94.0	
867-508	Tuesday, 20 February 2018	12:36:18	06/03/2018	20/03/2018	5	115	0.05	94.0	
867-10-11	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.03	94.0	
867-502	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.03	94.0	
867-503	Thursday, 22 February 2018	12:34:02	06/03/2018	20/03/2018	5	115	0.03	94.0	
867-504	Friday, 23 February 2018	12:21:36	06/03/2018	20/03/2018	5	115	0.03	94.0	
867-28	Saturday, 24 February 2018	12:19:44	06/03/2018	20/03/2018	5	115	0.04	100.0	
867-34	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.05	91.5	
867-507	Monday, 26 February 2018	12:31:13	06/03/2018	20/03/2018	5	115	0.04	97.5	
867-501	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.04	105.5	
867-5	Wednesday, 28 February 2018	12:29:42	06/03/2018	20/03/2018	5	115	0.04	105.5	
MARCH									
867-23	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.02	88.0	
867-505	Friday, 2 March 2018	12:30:28	09/04/2018	19/04/2018	5	115	0.03	88.0	
867-505	Saturday, 3 March 2018	12:23:00	09/04/2018	19/04/2018	5	115	0.01	88.0	
867-9	Saturday, 3 March 2018	12:23:14	09/04/2018	19/04/2018	5	115	0.05	88.0	
867-19	Monday, 5 March 2018	12:21:18	09/04/2018	19/04/2018	5	115	0.03	94.0	
867-21	Wednesday, 7 March 2018	12:20:12	09/04/2018	19/04/2018	5	115	0.03	94.0	
867-8a	Thursday, 8 March 2018	12:39:11	09/04/2018	19/04/2018	5	115	0.04	94.0	
867-22	Friday, 9 March 2018	12:30:01	09/04/2018	19/04/2018	5	115	0.02	94.0	
867-20	Monday, 12 March 2018	12:33:16	09/04/2018	19/04/2018	5	115	0.03	91.5	
858-1	Monday, 12 March 2018	12:31:15	09/04/2018	19/04/2018	5	115	0.09	94.0	
867-39	Friday, 16 March 2018	12:35:04	09/04/2018	19/04/2018	5	115	0.03	94.0	
867-11b	Tuesday, 20 March 2018	12:30:55	09/04/2018	19/04/2018	5	115	0.02	95.9	
858-2	Wednesday, 21 March 2018	12:24:59	09/04/2018	19/04/2018	5	115	0.07	101.9	
867-40	Friday, 23 March 2018	12:26:24	09/04/2018	19/04/2018	5	115	0.03	95.9	
858-5	Thursday, 29 March 2018	12:28:04	09/04/2018	19/04/2018	5	115	0.04	94.0	
867-41	Saturday, 31 March 2018	12:23:50	09/04/2018	19/04/2018	5	115	0.03	94.0	
APRIL									
867-38	Tuesday, 3 April 2018	12:28:28	04/05/2018	21/05/2018	5	115	0.02	94.0	
867-36-27	Tuesday, 10 April 2018	12:28:08	04/05/2018	21/05/2018	5	115	0.06	94.0	
858-3	Tuesday, 10 April 2018	12:28:08	04/05/2018	21/05/2018	5	115	0.06	94.0	
867-42	Thursday, 12 April 2018	12:33:45	04/05/2018	21/05/2018	5	115	0.06	103.5	
858-4	Saturday, 14 April 2018	12:24:17	04/05/2018	21/05/2018	5	115	0.07	94.0	
867-8b	Monday, 16 April 2018	12:29:27	04/05/2018	21/05/2018	5	115	0.05	100.0	
867-29	Tuesday, 17 April 2018	12:33:35	04/05/2018	21/05/2018	5	115	0.26	94.0	
858-7-8	Monday, 9 April 2018	12:36:35	04/05/2018	21/05/2018	5	115	0.07	91.5	
867-30	Tuesday, 14 April 2018	12:27:20	04/05/2018	21/05/2018	5	115	0.04	94.0	
849-516	Tuesday, 24 April 2018	12:27:30	04/05/2018	21/05/2018	5	115	0.04	94.0	
867-35	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.04	94.0	
858-6	Thursday, 26 April 2018	12:31:08	04/05/2018	21/05/2018	5	115	0.04	94.0	
858-9	Saturday, 28 April 2018	12:28:22	04/05/2018	21/05/2018	5	115	0.05	94.0	
May									
858-10	Tuesday, 1 May 2018	12:27:50	06/06/2018	20/06/2018	5	115	0.07	94.0	
867-11	Tuesday, 1 May 2018	12:31:21	06/06/2018	20/06/2018	5	115	0.04	94.0	
1155-58	Wednesday, 2 May 2018	12:38:49	06/06/2018	20/06/2018	5	115	0.05	91.5	
867-32	Friday, 4 May 2018	12:30:46	06/06/2018	20/06/2018	5	115	0.07	102.8	
858-20	Sunday, 6 May 2018	12:30:24	06/06/2018	20/06/2018	1	95	0.06	97.5	Local Environmental Factor
849-511	Monday, 7 May 2018	12:56:35	06/06/2018	20/06/2018	5	115	0.03	94.0	
849-515	Tuesday, 8 May 2018	12:25:37	06/06/2018	20/06/2018	5	115	0.02	94.0	
858-21	Wednesday, 9 May 2018	15:06:40	06/06/2018	20/06/2018	5	115	0.04	88.0	
858-16-17	Friday, 11 May 2018	15:11:16	06/06/2018	20/06/2018	5	115	0.11	98.8	
1146-84	Saturday, 12 May 2018	12:46:38	06/06/2018	20/06/2018	5	115	0.03	101.9	
867-33	Monday, 14 May 2018	12:38:43	06/06/2018	20/06/2018	5	115	0.02	95.9	
1146-85	Tuesday, 15 May 2018	12:45:48	06/06/2018	20/06/2018	5	115	0.03	94.0	
1146-86	Thursday, 17 May 2018	12:27:52	06/06/2018	20/06/2018	5	115	0.04	94.0	
858-13	Friday, 18 May 2018	12:30:28	06/06/2018	20/06/2018	5	115	0.06	94.0	
1146-87	Saturday, 19 May 2018	12:59:11	06/06/2018	20/06/2018	5	115	0.02	94.0	
858-14	Monday, 21 May 2018	12:31:37	06/06/2018	20/06/2018	5	115	0.05	101.9	
858-19	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.04	100.0	
867-34	Tuesday, 22 May 2018	15:20:03	06/06/2018	20/06/2018	5	115	0.04	100.0	
849-513	Monday, 28 May 2018	12:26:52	06/06/2018	20/06/2018	5	115	0.02	88.0	
849-512	Wednesday, 30 May 2018	11:30:22	06/06/2018	20/06/2018	5	115	0.03	95.9	
June									
849-510	Friday, 1 June 2018	12:30:50	04/07/2018	20/07/2018	5	115	0.01	95.9	Local Environmental Factors
849-1	Tuesday, 3 June 2018	12:31:13	04/07/2018	20/07/2018	1	95	0.04	102.8	Local Environmental Factor
1137-83	Monday, 4 June 2018	12:29:26	04/07/2018	20/07/2018	5	115	0.02	91.5	
858-16-17	Tuesday, 5 June 2018	15:10:04	04/07/2018	20/07/2018	5	115	0.04	97.5	
1137-85	Wednesday, 6 June 2018	12:32:38	04/07/2018	20/07/2018	5	115	0.02	95.9	
849-514	Thursday, 7 June 2018	12:32:46	04/07/2018	20/07/2018	5	115	0.02	95.9	
1137-87	Thursday, 7 June 2018	12:58:09	04/07/2018	20/07/2018	5	115	0.02	95.9	
858-18	Friday, 8 June 2018	12:23:35	04/07/2018	20/07/2018					

Blow ID	Date	Time	Pressure (bar)	Duration (s)	Distance (m)	Frequency (Hz)	Velocity (m/s)	Acceleration (m/s²)	Notes
August									
849-7-8	Friday, 3 August 2018	12:25:23	11/09/2018	20/09/2018	5	115	0.08	110.2	
1119-132	Sunday, 5 August 2018	12:28:22	11/09/2018	20/09/2018	1	95	0.05	94.0	
1119-125	Sunday, 5 August 2018	12:48:15	11/09/2018	20/09/2018	1	95	0.03	95.9	Local Environmental Factors
849-19	Monday, 6 August 2018	12:31:48	11/09/2018	20/09/2018	1	95	0.05	114.0	Local Environmental Factors
1191-27	Wednesday, 8 August 2018	12:35:23	11/09/2018	20/09/2018	5	115	0.03	95.9	
1119-178	Thursday, 9 August 2018	12:38:31	11/09/2018	20/09/2018	5	115	0.02	104.0	
840-1	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.10	95.9	Local Environmental Factors
849-9	Sunday, 12 August 2018	12:38:31	11/09/2018	20/09/2018	1	95	0.10	95.9	Local Environmental Factors
1191-26	Monday, 13 August 2018	12:33:29	11/09/2018	20/09/2018	5	115	0.03	103.5	
849-10	Tuesday, 14 August 2018	12:24:43	11/09/2018	20/09/2018	5	115	0.05	98.0	
1182-42	Wednesday, 15 August 2018	12:04:53	11/09/2018	20/09/2018	5	115	0.03	100.0	
840-2	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.06	95.9	
840-501-502	Friday, 17 August 2018	12:35:04	11/09/2018	20/09/2018	5	115	0.06	95.9	
1182-43-44	Saturday, 18 August 2018	12:49:29	11/09/2018	20/09/2018	5	115	0.06	116.3	Local Environmental Factors
849-20	Monday, 20 August 2018	12:42:18	11/09/2018	20/09/2018	5	115	0.03	95.9	
849-12	Tuesday, 21 August 2018	12:27:52	11/09/2018	20/09/2018	5	115	0.03	98.8	
1182-40-41	Wednesday, 22 August 2018	12:28:59	11/09/2018	20/09/2018	5	115	0.06	91.5	
840-514-515	Thursday, 23 August 2018	12:43:13	11/09/2018	20/09/2018	5	115	0.04	88.0	
849-13	Sunday, 26 August 2018	12:45:41	11/09/2018	20/09/2018	1	95	0.03	88.0	
840-503-504A	Wednesday, 29 August 2018	12:30:09	11/09/2018	20/09/2018	5	115	0.02	95.9	
September									
1110-133	Sunday, 2 September 2018	12:46:52	05/10/2018	19/10/2018	1	95	0.06	94.0	
840-3	Monday, 3 September 2018	12:26:21	05/10/2018	19/10/2018	5	115	0.05	89.0	
1110-134	Tuesday, 4 September 2018	12:39:05	05/10/2018	19/10/2018	5	115	0.03	98.8	
840-11	Wednesday, 5 September 2018	12:18:54	05/10/2018	19/10/2018	5	115	0.09	97.5	
849-21	Wednesday, 5 September 2018	12:24:44	05/10/2018	19/10/2018	5	115	0.03	91.5	
840-504B-505	Thursday, 6 September 2018	12:31:38	05/10/2018	19/10/2018	5	115	0.05	105.5	
1110-135	Saturday, 8 September 2018	12:32:51	05/10/2018	19/10/2018	5	115	0.06	100.0	
849-22	Sunday, 9 September 2018	12:32:03	05/10/2018	19/10/2018	1	95	0.08	105.5	
1173-70	Monday, 10 September 2018	12:39:53	05/10/2018	19/10/2018	5	115	0.02	97.5	
849-23	Wednesday, 12 September 2018	12:27:19	05/10/2018	19/10/2018	5	115	0.03	95.9	
840-506	Thursday, 13 September 2018	12:52:55	05/10/2018	19/10/2018	5	115	0.03	97.5	
840-12-13	Thursday, 13 September 2018	12:56:42	05/10/2018	19/10/2018	5	115	0.05	107.0	
1101-117	Friday, 14 September 2018	12:32:41	05/10/2018	19/10/2018	5	115	0.06	97.5	
1173-72	Saturday, 15 September 2018	12:33:17	05/10/2018	19/10/2018	5	115	0.07	107.0	
1173-68	Sunday, 16 September 2018	12:23:05	05/10/2018	19/10/2018	5	115	0.03	97.5	
1101-118	Monday, 17 September 2018	12:33:50	05/10/2018	19/10/2018	5	115	0.05	95.9	
840-14	Tuesday, 18 September 2018	12:29:54	05/10/2018	19/10/2018	5	115	0.07	105.5	
1173-74	Wednesday, 19 September 2018	12:25:30	05/10/2018	19/10/2018	5	115	0.04	107.0	
840-15-16	Thursday, 20 September 2018	12:28:17	05/10/2018	19/10/2018	5	115	0.06	102.8	
840-119B-120A	Friday, 21 September 2018	12:33:42	05/10/2018	19/10/2018	5	115	0.04	109.2	
840-7-8	Tuesday, 25 September 2018	12:36:09	05/10/2018	19/10/2018	5	115	0.06	94.0	
1164-65	Tuesday, 25 September 2018	12:35:36	05/10/2018	19/10/2018	5	115	0.04	97.5	
1173-67	Thursday, 25 September 2018	12:35:26	05/10/2018	19/10/2018	5	115	0.05	97.5	
840-10	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.03	95.9	
840-513	Thursday, 27 September 2018	12:26:29	05/10/2018	19/10/2018	5	115	0.03	95.9	
1101-121	Friday, 28 September 2018	12:22:58	05/10/2018	19/10/2018	5	115	0.08	98.8	
849-4-5	Saturday, 29 September 2018	12:16:55	05/10/2018	19/10/2018	5	115	0.07	100.0	
October									
1173-71-73	Monday, 1 October 2018	12:40:44	06/11/2018	19/11/2018	1	95	0.03	95.9	Local Environmental Factors
1173-69	Wednesday, 3 October 2018	12:57:03	06/11/2018	19/11/2018	5	115	0.03	97.5	
840-511-512	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.05	91.5	
1101-119B-120B	Thursday, 4 October 2018	12:49:25	06/11/2018	19/11/2018	5	115	0.05	91.5	
840-21	Friday, 5 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.03	109.2	
840-9	Saturday, 6 October 2018	12:30:07	06/11/2018	19/11/2018	5	115	0.05	97.5	
1164-67-68	Monday, 8 October 2018	12:39:07	06/11/2018	19/11/2018	5	115	0.04	97.5	
840-23-24	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.03	91.5	
840-510	Tuesday, 9 October 2018	12:33:15	06/11/2018	19/11/2018	5	115	0.03	91.5	
1164-74	Thursday, 11 October 2018	12:38:02	06/11/2018	19/11/2018	5	115	0.02	91.5	
840-6	Friday, 12 October 2018	12:11:13	06/11/2018	19/11/2018	5	115	0.04	98.8	
1164-66	Saturday, 13 October 2018	12:30:47	06/11/2018	19/11/2018	5	115	0.05	95.9	
1164-73	Monday, 15 October 2018	12:35:27	06/11/2018	19/11/2018	5	115	0.19	97.5	
831-1	Tuesday, 16 October 2018	12:38:21	06/11/2018	19/11/2018	5	115	0.16	106.5	
1119-133	Tuesday, 16 October 2018	12:56:52	06/11/2018	19/11/2018	5	115	0.41	107.0	
1164-72	Saturday, 20 October 2018	13:15:27	06/11/2018	19/11/2018	5	115	0.04	109.2	
831-2	Sunday, 21 October 2018	12:23:45	06/11/2018	19/11/2018	1	95	0.07	95.9	Local Environmental Factors
840-24-25	Monday, 22 October 2018	12:28:20	06/11/2018	19/11/2018	5	115	0.02	95.9	
840-17	Tuesday, 23 October 2018	12:32:53	06/11/2018	19/11/2018	5	115	0.03	109.2	
1164-69-70	Wednesday, 24 October 2018	12:50:46	06/11/2018	19/11/2018	5	115	0.03	97.5	
1164-84	Thursday, 25 October 2018	12:26:43	06/11/2018	19/11/2018	5	115	0.03	97.5	
840-19-20	Friday, 26 October 2018	12:35:00	06/11/2018	19/11/2018	5	115	0.03	97.5	
1119-134	Friday, 26 October 2018	12:51:45	06/11/2018	19/11/2018	5	115	0.03	97.5	
1083-549	Saturday, 27 October 2018	12:29:10	06/11/2018	19/11/2018	5	115	0.06	97.5	
840-26	Sunday, 28 October 2018	09:47:37	06/11/2018	19/11/2018	1	95	0.01	91.5	
831-5	Monday, 29 October 2018	12:38:51	06/11/2018	19/11/2018	5	115	0.02	97.5	
1164-83	Tuesday, 30 October 2018	12:40:25	06/11/2018	19/11/2018	5	115	0.02	98.8	
831-4	Wednesday, 31 October 2018	09:50:25	06/11/2018	19/11/2018	5	115	0.06	91.5	
November									
1092-128	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.11	94.0	
1083-550	Friday, 2 November 2018	16:19:54	06/12/2018	18/12/2018	5	115	0.11	94.0	
1164-82	Saturday, 3 November 2018	12:38:45	06/12/2018	18/12/2018	5	115	0.05	95.9	
1164-80-81	Sunday, 4 November 2018	12:31:24	06/12/2018	18/12/2018	1	95	0.02	95.9	Local Environmental Factors
1164-79	Monday, 5 November 2018	12:29:47	06/12/2018	18/12/2018	5	115	0.07	116.6	Local Environmental Factors
831-7	Tuesday, 6 November 2018	12:30:26	06/12/2018	18/12/2018	5	115	0.05	95.9	
1164-76-77-78	Wednesday, 7 November 2018	12:32:17	06/12/2018	18/12/2018	5	115	0.04	97.5	
1092-129-130	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.12	97.5	
1083-551	Friday, 9 November 2018	14:59:17	06/12/2018	18/12/2018	5	115	0.12	97.5	
1155-60	Saturday, 10 November 2018	12:25:01	06/12/2018	18/12/2018	5	115	0.04	97.5	
1155-71-72	Monday, 12 November 2018	09:50:46	06/12/2018	18/12/2018	5	115	0.04	91.5	
1155-61-62	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.03	94.0	
840-508-509	Tuesday, 13 November 2018	12:03:58	06/12/2018	18/12/2018	5	115	0.03	88.0	
831-3	Thursday, 15 November 2018	11:51:50	06/12/2018	18/12/2018	5	115	0.02	94.0	
840-29	Saturday, 17 November 2018	09:17:25	06/12/2018	18/12/2018	5	115	0.04	94.0	
1155-69-70	Sunday, 18 November 2018	12:25:36	06/12/2018	18/12/2018	1	95	0.05	97.5	Local Environmental Factors
1155-69	Monday, 19 November 2018	12:33:55	06/12/2018	18/12/2018	5	115	0.02	97.5	
1155-66-67	Tuesday, 20 November 2018	15:06:09	06/12/2018	18/12/2018	5	115	0.05	95.9	
831-16-17A	Wednesday, 21 November 2018	12:32:44	06/12/2018	18/12/2018	5	115	0.07	95.9	
831-16-17B	Friday, 23 November 2018	12:36:44	06/12/2018	18/12/2018	5	115	0.11	104.2	
1155-68	Saturday, 24 November 2018	12:39:01	06/12/2018	18/12/2018	5				



Cyanide

Monitoring Point: 48
Water quality monitoring, automated sampler located at the processing plant

Frequency	Month	No Sampled during Month	Total Cyanide (mg/L)				Comments
			Minimum	Mean	Median	Maximum	
Weekly	January	5	15.1	45.7	49.9	63.7	
Weekly	February	4	12.8	31.4	32.9	46.9	
Weekly	March	4	24.1	33.2	31.7	45.3	
Weekly	April	5	8.9	31.4	33.6	50.0	
Weekly	May	4	22.9	31.4	33.7	35.1	
Weekly	June	3	14.0	29.2	35.1	38.9	
Weekly	July	4	26.1	30.0	28.3	35.4	
Weekly	August	4	16.2	25.7	26.8	33.2	
Weekly	September	4	22.4	26.0	25.7	30.2	
Weekly	October	5	21.5	28.4	30.5	33.3	
Weekly	November	4	1.87	30.17	37.04	44.75	
Weekly	December	4	31.27	35.88	36.85	38.55	

Frequency	Month	No Sampled during Month	WAD Cyanide (mg/L)		Concentration Limits		Comments
			Minimum	Maximum	90th Percentile	100th Percentile	
Twice daily	January	62	1.2	13.8	20ppm	30ppm	
Twice daily	February	56	1.1	10.6	20ppm	30ppm	
Twice daily	March	49	0.3	14.0	20ppm	30ppm	Samples were not collected due to mill shutdown between: 03/03/17 (Evening) and the 07/03/17 (Evening)
Twice daily	April	58	1.1	11.2	20ppm	30ppm	Samples were not collected due to mill shutdown between: 21/04/17 (Evening) and the 22/04/17 (Day)
Twice daily	May	58	1.1	11.2	20ppm	30ppm	
Twice daily	June	49	0.2	5.5	20ppm	30ppm	Samples were not collected due to mill shutdown between: 03/06/17 (Morning) and the 06/06/17 (Evening)
Twice daily	July	62	1.3	6.8	20ppm	30ppm	
Twice daily	August	54	0.6	9.8	20ppm	30ppm	Samples were not collected due to mill shutdown between: 07/08/17 (Morning) and the 10/08/17 (Evening)
Twice daily	September	60	2.0	6.7	20ppm	30ppm	
Twice daily	October	62	0.5	12.8	20ppm	30ppm	
Twice daily	November	60	1.3	11.0	20ppm	30ppm	
Twice daily	December	50	0	9.6	20ppm	30ppm	Samples were not collected due to mill shutdown between: 04/12 (Morning) and the 06/12 (Morning) as well as 14/12 (Morning) and the 17/12 (Morning)



EPL Exceedances

