



Centennial Coal



Charbon Coal
Environmental Monitoring Data

December 2018



TABLE OF CONTENTS

Introduction.....	4
Surface water quality.....	4
Water volume	8
Air Quality Monitoring.....	9
Noise Monitoring	14
Complaints Register.....	18
Weather	18
Waste	19
APPENDIX 1: CHARBON COLLIERY SENSITIVE RECEIVER AND MONITORING LOCATIONS.....	20

TABLES

Table 1 – Colliery Information	4
Table 2 –Daily Sampling Results.....	4
Table 3 – Depositional Dust.....	9
Table 4 – HVAS TSP Nioka.....	10
Table 5 – HVAS PM10 Nioka	12
Table 6 – August Day Noise Monitoring	15
Table 7 – August Evening Noise Monitoring.....	16
Table 8 – August Night Noise Monitoring.....	17
Table 9 – Complaints Register for Charbon Colliery 2018.....	18
Table 10 – Meteorological Data for Charbon Colliery.....	18
Table 11 – Drilling Mud Received at Charbon Colliery.....	19

FIGURES

Figure 1 – Surface Water pH Results	6
Figure 2 – Surface Water Total Suspended Solids (TSS) Results.....	6
Figure 3 – Surface Water Oil & Grease Results	7
Figure 4 – Surface Water Electrical Conductivity (EC) Results.....	7
Figure 5 – Surface Water Turbidity Results	8
Figure 6 – Discharged Water Volume (ML) 2018.....	8
Figure 7 – Monthly Depositional Dust 2018.....	10
Figure 8 – HVAS TSP Nioka	12
Figure 9 – HVAS PM10 Nioka.....	14
Figure 10 – August Day Noise Monitoring.....	15
Figure 11 – August Evening Noise Monitoring	16
Figure 12 – August Night Noise Monitoring	17
Figure 13 – Charbon Colliery Meteorological Data.....	19
Figure 14 – Charbon Colliery Sensitive Receiver and Monitoring Locations	21

INTRODUCTION

This monitoring report is to satisfy the requirements under the *Protection of the Environment Legislation Amendment Act 2011 (POELA Act)* to publish or make pollution monitoring data available to members of the public.

This report summarises environmental monitoring results for Charbon Colliery for the period of December 2018.

Table 1 – Colliery Information

Colliery Information	
Premises Details	Charbon Colliery
Address	Charbon Rd Charbon NSW 2848
Licensee	Charbon Coal Pty Ltd
EPL no	528
EPL location	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=32415&SYSUID=1&LICID=528

SURFACE WATER QUALITY

The following parameters are monitored at Licenced Discharge Points (LDP) LDP002, LDP003, LDP004, LDP005 and LDP006 daily during discharge in accordance with the requirements of Environmental Protection Licence Number 528 (EPL 528).

Table 2 shows a summary of the monitoring results.

Table 2 –Daily Sampling Results

Data Published:	Jan 2019	Licensee:	Charbon Coal Pty Ltd			
Data Sampled:	Dec 2018	Address:	Charbon Rd Charbon NSW 2848			
Data Obtained:	01/01/2019	EPL No.	528			
LDP002						
Date	pH	EC (µS/cm)	Turbidity (NTU)	TSS (mg/L)	Oil & Grease (mg/L)	Compliant
Limit	6.5 - 8.5	Monitor Only	50	50	10	
No Discharge						
LDP003						
Date	pH	EC (µS/cm)	Turbidity (NTU)	TSS (mg/L)	Oil & Grease (mg/L)	Compliant
Limit	6.5 - 8.5	Monitor Only	50	50	10	
No Discharge						

LDP004						
Date	pH	EC (μ S/cm)	Turbidity (NTU)	TSS (mg/L)	Oil & Grease (mg/L)	Compliant
Limit	6.5 - 8.5	Monitor Only	50	50	10	
No Discharge						
LDP005						
Date	pH	EC (μ S/cm)	Turbidity (NTU)	TSS (mg/L)	Oil & Grease (mg/L)	Compliant
Limit	6.5 - 8.5	Monitor Only	50	50	10	
No Discharge						
LDP006						
Date	pH	EC (μ S/cm)	Turbidity (NTU)	TSS (mg/L)	Oil & Grease (mg/L)	Compliant
Limit	6.5 - 8.5	Monitor Only	50	50	10	
No Discharge						

There were no discharges of water from licensed discharge points during the reporting period.

Figures 1 - 5 below show a summary of the surface water monitoring results from January to December 2018 for LDP002, LDP003, LDP004, LDP005 and LDP006.

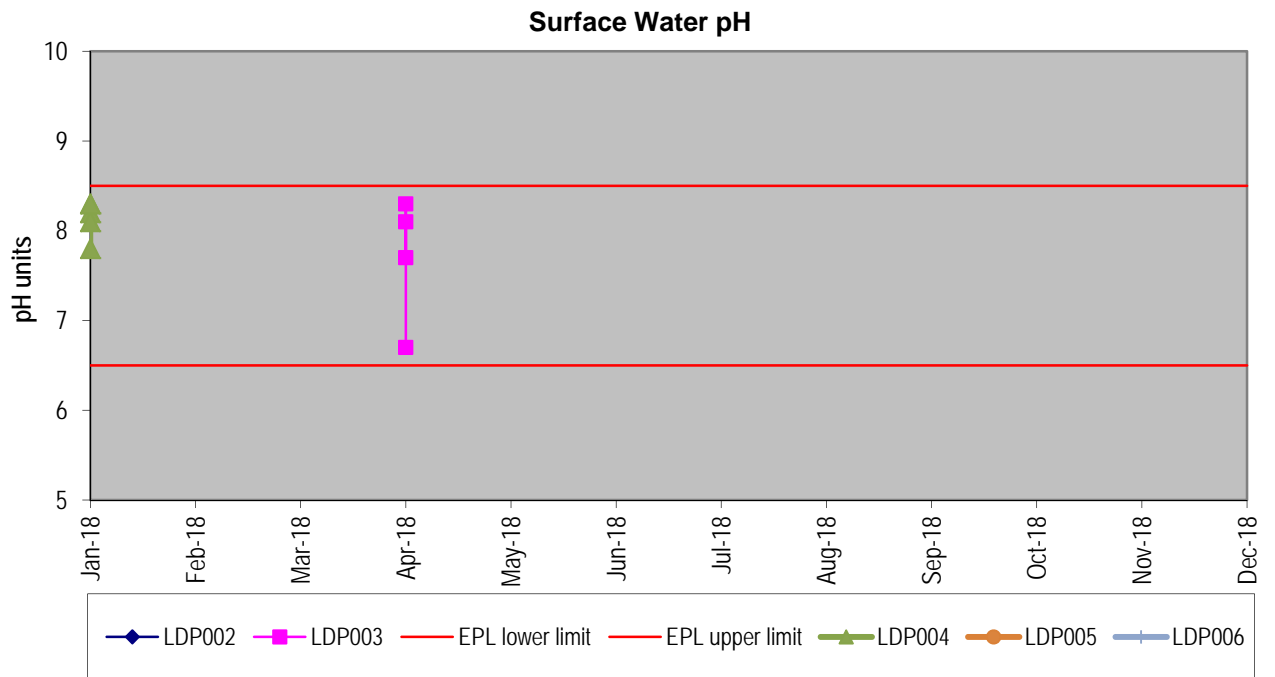


Figure 1 – Surface Water pH Results

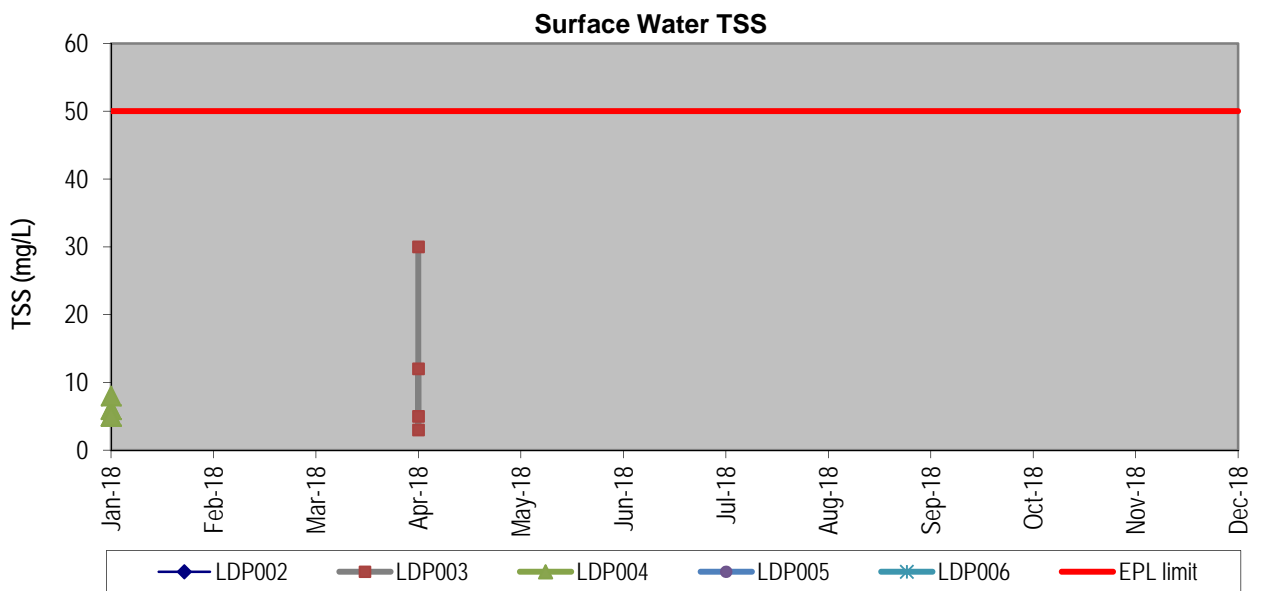


Figure 2 – Surface Water Total Suspended Solids (TSS) Results

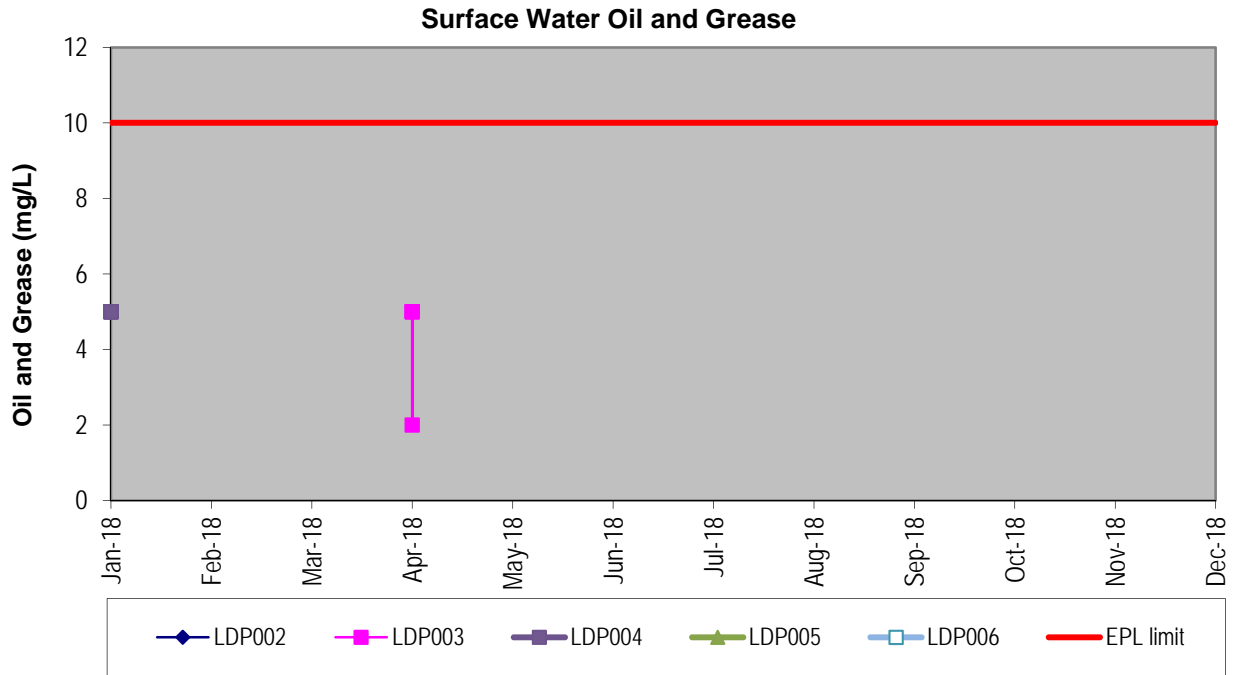


Figure 3 – Surface Water Oil & Grease Results

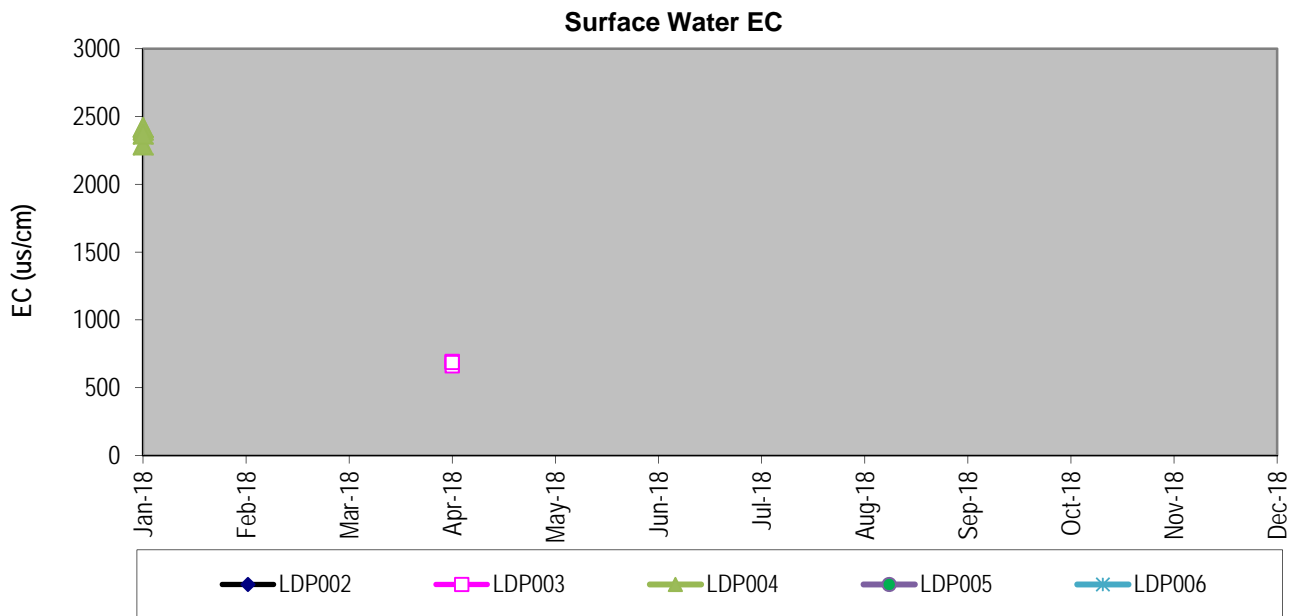


Figure 4 – Surface Water Electrical Conductivity (EC) Results

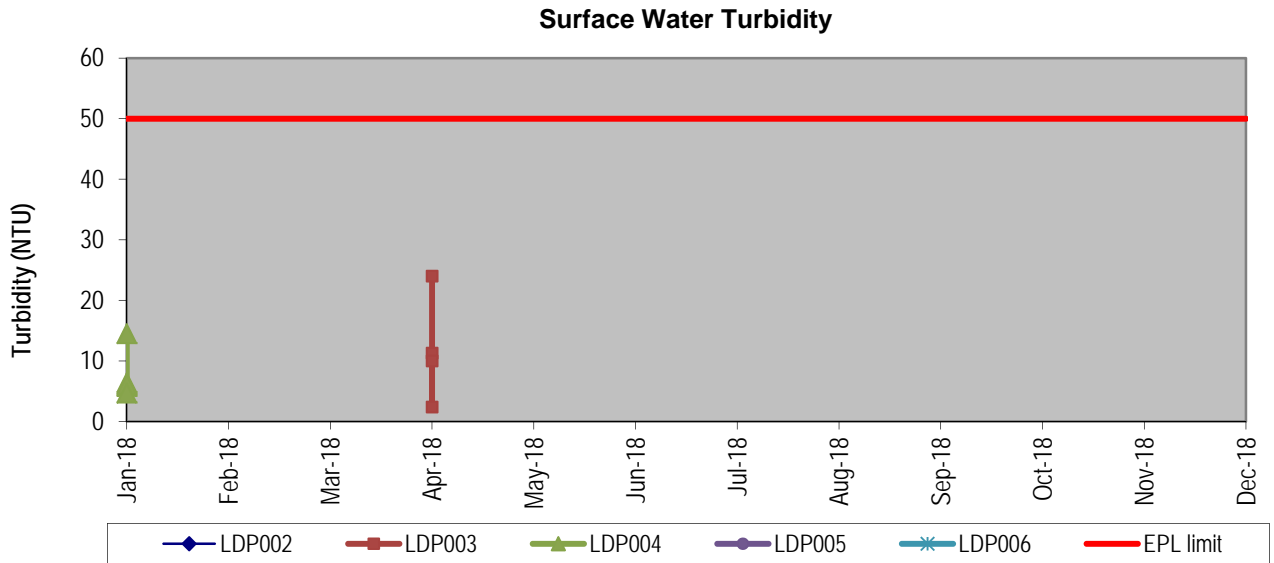


Figure 5 – Surface Water Turbidity Results

WATER VOLUME

The volume of water discharged off site is measured through licensed discharge points (LDPs). EPL 528 sets limits on the maximum volume of water to be discharged for a given period. There were no discharges of water from licensed discharge points during the reporting period.

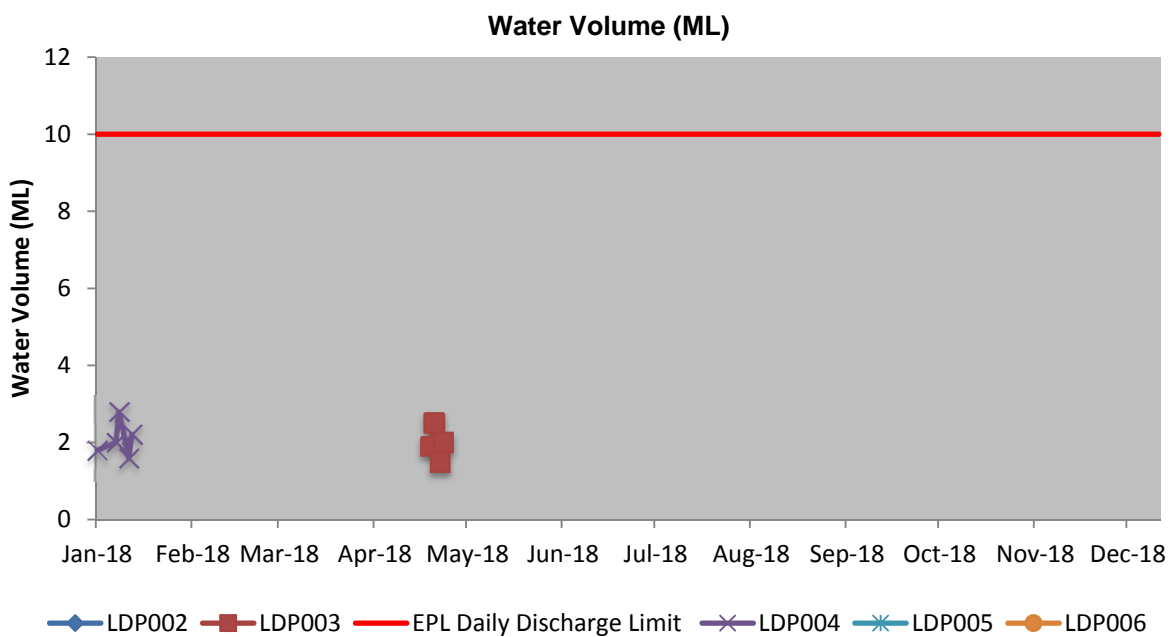


Figure 6 – Discharged Water Volume (ML) 2018

AIR QUALITY MONITORING

The air quality monitoring results for the reporting period are summarised in Table 3, Table 4 and Table 5 below.

Depositional Dust

Depositional dust (g/m²/mth) results (insoluble solids) for the reporting period are shown in Table 3. Monthly depositional dust (g/m²/mth) results for January to December 2018 are shown graphically in Figure 7.

Table 3 – Depositional Dust

Colliery Name	Dust Gauge No	Date Sampled	Insoluble Solids ^{1,2}
Charbon	DM - South	12/11/2018 - 11/12/2018	*
Charbon	DM - West	12/11/2018 - 11/12/2018	2.4
Charbon	Nioka	12/11/2018 - 11/12/2018	2.6
Charbon	Pit Top	12/11/2018 - 11/12/2018	3.5

DM – Dust Gauge

1. Annual Average Limit (4 g/m²/mth)
 2. Maximum increase in deposited dust level (2 g/m²/mth) (annual average limit)
- * Funnel on dust gauge broken

The Air Quality Management Plan at Charbon Colliery was reviewed during 2018 and was approved by the Department of Planning and Environment on 29 June 2018. The revised air quality monitoring program requires depositional dust gauge monitoring to be undertaken at the DM-South, DM-West, Nioka and Pit Top monitoring locations.

Depositional dust gauge (DDG) monitoring data indicated that dust deposition results for December 2018 ranged from 2.4 g/m²/mth to 3.5 g/m²/mth. EPL 528 does not include a license limit for depositional dust; however, a maximum total deposited dust level of 4 g/m²/mth and a maximum increase in deposited dust level (2 g/m²/mth) is set by conditions included in Charbon's Project Approval. The depositional dust levels recorded complied with the limits prescribed in the Project Approval during the reporting period.

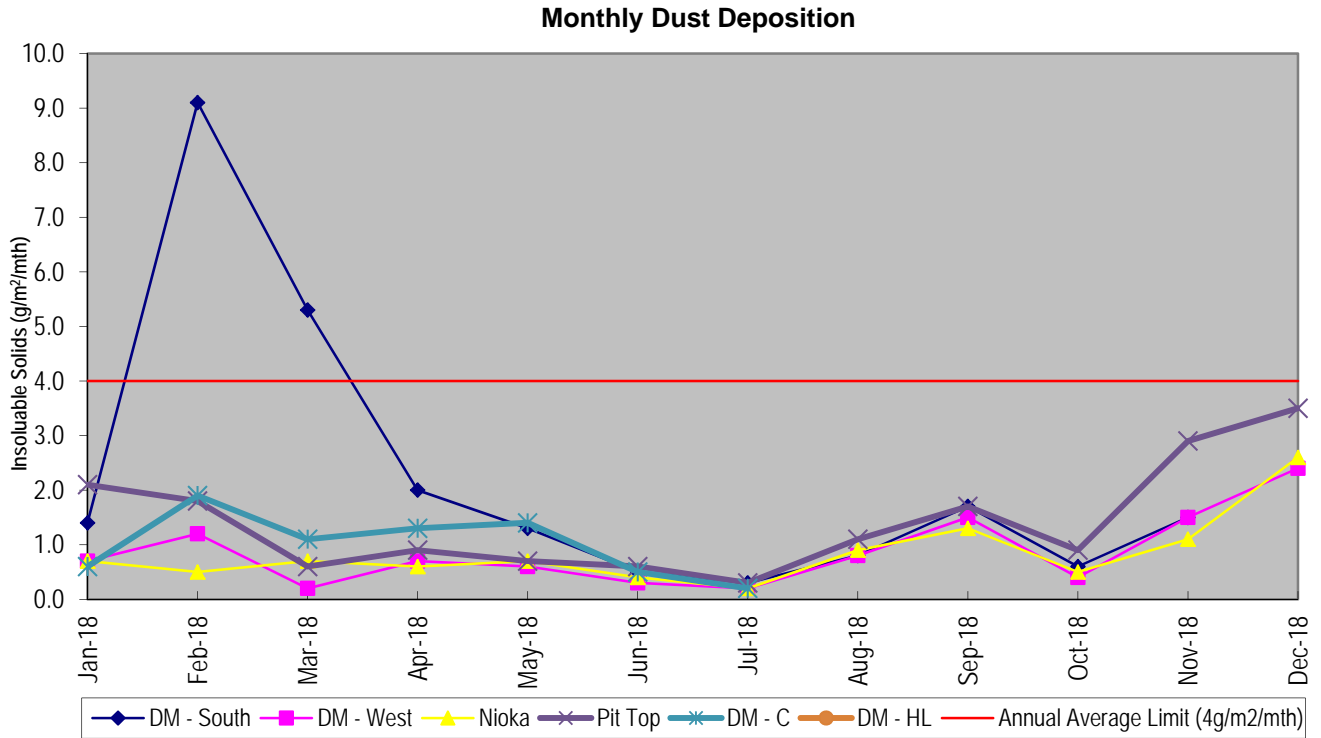


Figure 7 – Monthly Depositional Dust 2018

High Volume Air Sampling (HVAS)

High volume air samplers monitored Particulate Matter (PM) concentrations (less than 10 micrometres in size) and Total Suspended Particulates (TSP) during the reporting period. A summary of monitoring results is provided in Table 4 and Table 5 and shown graphically in Figure 8 and Figure 9, below.

Table 4 – HVAS TSP Nioka

Data Published:	January 2019				Licensee:		Charbon Coal Pty Ltd				
Data Sampled:	January – December 2018				Address:		Charbon Rd Charbon NSW 2848				
Data Obtained:	08/01/2019				EPL No.		528				
Date	01/01/2018	07/01/2018	13/01/2018	19/01/2018	25/01/2018	31/01/2018	06/02/2018	12/02/2018	18/02/2018	24/02/2018	02/03/2018
TSP (ug/m ³) 24 hr concentration	*	36.6	35.8	26.6	28.6	16.9	16.4	34.2	57.9	21.1	20.2
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90	90	90	90	90	90	90
Date	08/03/2018	14/03/2018	20/03/2018	26/03/2018	01/04/2018	07/04/2018	13/04/2018	19/04/2018	25/04/2018	01/05/2018	07/05/2018
TSP (ug/m ³) 24 hr concentration	11.3	25.5	54.9	18.2	29.7	29.4	45.8	17.8	31.1	10.2	21.4
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90	90	90	90	90	90	90

Date	13/05/2018	19/05/2018	25/05/2018	31/05/2018	06/06/2018	12/06/2018	18/06/2018	24/06/2018	30/06/2018	06/07/2018	12/07/2018
TSP (ug/m ³) 24 hr concentration	7.5	12.8	18.2	8.4	3.1	10.8	4.6	6.5	7.5	14.8	13.5
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90	90	90	90	90	90	90
Date	18/07/2018	24/07/2018	30/07/2018	05/08/2018	11/08/2018	17/08/2018	23/08/2018	29/08/2018	04/09/2018	10/09/2018	16/09/2018
TSP (ug/m ³) 24 hr concentration	140	29.3	17.3	26.1	31.0	21.7	17.0	11.2	4.9	11.4	8.7
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90	90	90	90	90	90	90
Date	22/09/2018	28/09/2018	04/10/2018	10/10/2018	16/10/2018	22/10/2018	28/10/2018	03/11/2018	09/11/2018	15/11/2018	21/11/2018
TSP (ug/m ³) 24 hr concentration	23.8	27.5	28.6	11.5	7.0	17.5	25.4	37.1	23.2	22.1	106
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90	90	90	90	90	90	90
Date	27/11/2018	03/12/2018	09/12/2018	15/12/2018	21/12/2018						
TSP (ug/m ³) 24 hr concentration	40.2	47.8	45.5	222	44.6						
Annual Average TSP Limit (90ug/m ³)	90	90	90	90	90						

*Power supply to units is intermittent and run times and flow could not be determined.

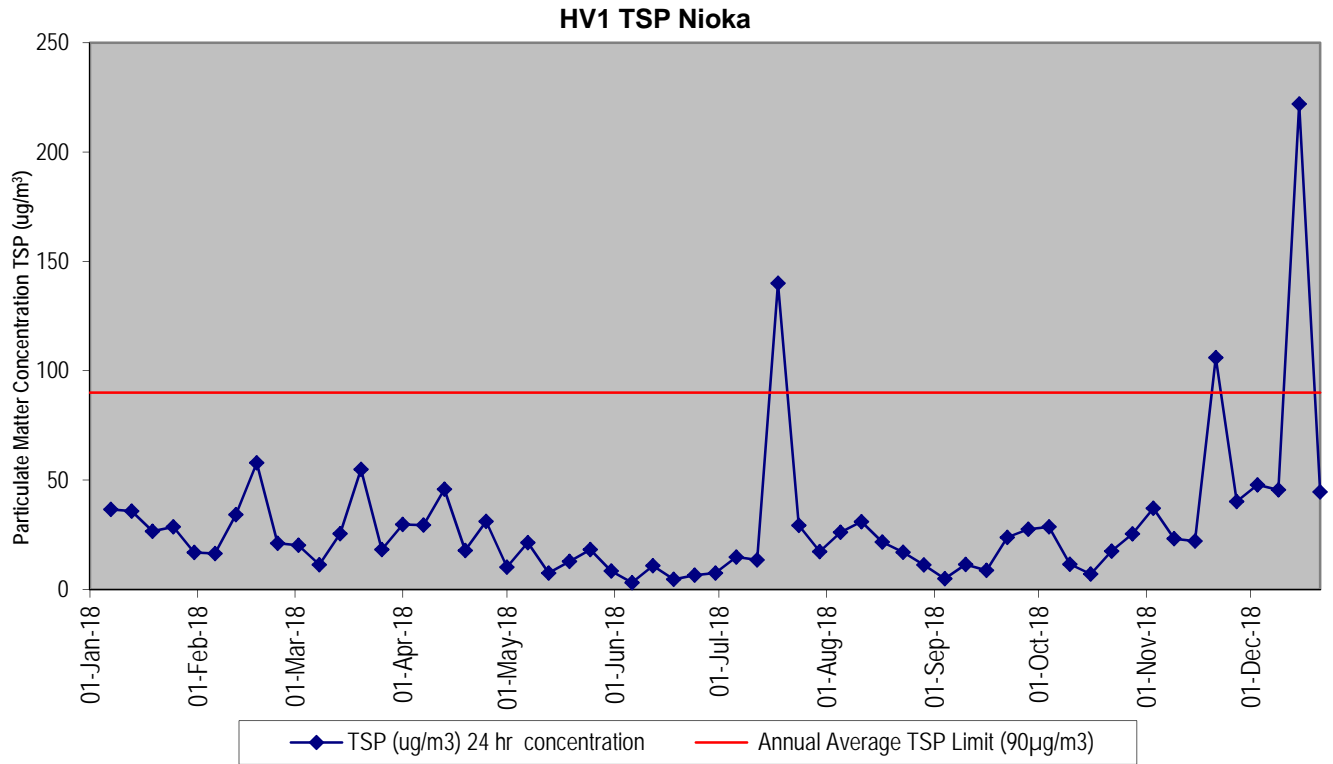


Figure 8 – HVAS TSP Nioka

Table 5 – HVAS PM10 Nioka

Data Published:	January 2019					Licensee:		Charbon Coal Pty Ltd			
Data Sampled:	January – December 2018					Address:		Charbon Rd Charbon NSW 2848			
Data Obtained:	08/01/2019					EPL No.		528			
Date	01/01/2018	07/01/2018	13/01/2018	19/01/2018	25/01/2018	31/01/2018	06/02/2018	12/02/2018	18/02/2018	24/02/2018	02/03/2018
PM10 (ug/m ³) 24 hr concentration	13.7	17.0	18.9	16.6	22.6	10.8	10.1	20.2	40.2	20.6	14.3
24 hr PM10 limit	50	50	50	50	50	50	50	50	50	50	50
12 month average PM10 limit	30	30	30	30	30	30	30	30	30	30	30
Date	08/03/2018	14/03/2018	20/03/2018	26/03/2018	01/04/2018	07/04/2018	13/04/2018	19/04/2018	25/04/2018	01/05/2018	07/05/2018
PM10 (ug/m ³) 24 hr concentration	7.4	15.4	28.2	11.6	17.5	20.6	19.3	10.7	23.8	7.6	10.3
24 hr PM10 limit	50	50	50	50	50	50	50	50	50	50	50
12 month average PM10 limit	30	30	30	30	30	30	30	30	30	30	30

Date	13/05/2018	19/05/2018	25/05/2018	31/05/2018	06/06/2018	12/06/2018	18/06/2018	24/06/2018	30/06/2018	06/07/2018	12/07/2018
PM10 (ug/m ³) 24 hr concentration	4.8	5.7	13.7	5.2	2.7	4.9	4.2	4.2	6.1	6.7	9.6
24 hr PM10 limit	50	50	50	50	50	50	50	50	50	50	50
12 month average PM10 limit	30	30	30	30	30	30	30	30	30	30	30
Date	18/07/2018	24/07/2018	30/07/2018	05/08/2018	11/08/2018	17/08/2018	23/08/2018	29/08/2018	04/09/2018	10/09/2018	16/09/2018
PM10 (ug/m ³) 24 hr concentration	68.6	14.1	8.8	17.2	13.8	11.5	10.4	7.4	2.1	13.6	30.0
24 hr PM10 limit	50	50	50	50	50	50	50	50	50	50	50
12 month average PM10 limit	30	30	30	30	30	30	30	30	30	30	30
Date	22/09/2018	28/09/2018	04/10/2018	10/10/2018	16/10/2018	22/10/2018	28/10/2018	03/11/2018	09/11/2018	15/11/2018	21/11/2018
PM10 (ug/m ³) 24 hr concentration	12.3	12.4	11.5	6.7	5.7	11.5	16.4	17.3	13.2	10.0	73.8
24 hr PM10 limit	50	50	50	50	50	50	50	50	50	50	50
12 month average PM10 limit	30	30	30	30	30	30	30	30	30	30	30
Date	27/11/2018	03/12/2018	09/12/2018	15/12/2018	21/12/2018						
PM10 (ug/m ³) 24 hr concentration	14.2	21.4	24.9	138	13.7						
24 hr PM10 limit	50	50	50	50	50						
12 month average PM10 limit	30	30	30	30	30						

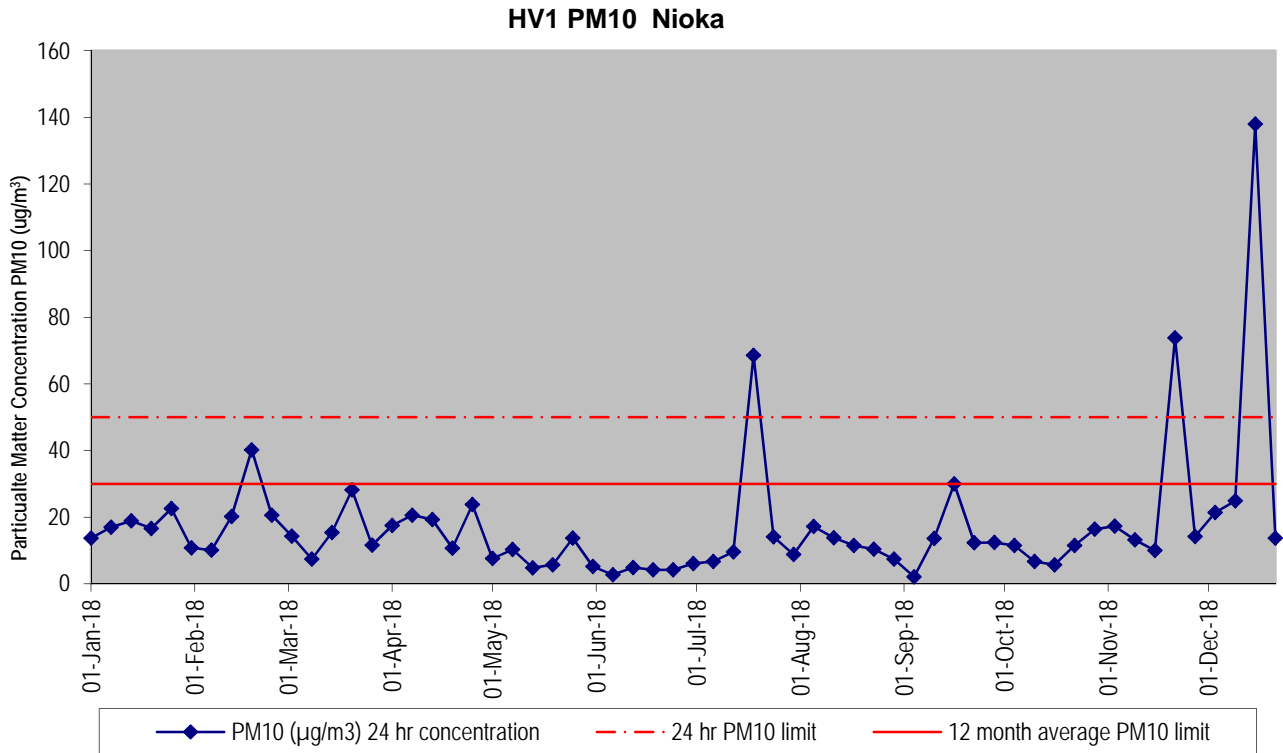


Figure 9 – HVAS PM10 Nioka

In accordance with Condition 19 of Schedule 3 in Project Approval 08_0211, TSP have an annual average limit of 90 µg/m³, whilst particulate matter less than PM₁₀ have a 24 hour limit of 50 µg/m³ and an annual average limit of 30 µg/m³. Although a result of 222 µg/m³ for TSP was recorded on the 15th December 2018, the annual average TSP level of 29.6 µg/m³ remained below the annual average limit for TSP during the reporting period. However, whilst a result of 138 µg/m³ for PM₁₀ was recorded on the 15th December 2018 and the annual average PM₁₀ level of 17.4 µg/m³ remained below the annual average limit for PM₁₀ during the reporting period, the result did exceed the 24 hour limit of 50 µg/m³ for PM₁₀. The monitoring result for the 15th December 2018 was recorded on a day when a regional dust event was reported in the media.

NOISE MONITORING

The Noise Management Plan at Charbon Colliery was reviewed during 2018 and was approved by the Department of Planning and Environment on 29 June 2018. The revised noise monitoring program requires monitoring to be undertaken annually at location H, location L, location P and location Q.

The noise monitoring comprises of operator attended monitoring in 15 minute intervals coinciding with day, evening and night periods. Statistical indices recorded include L_{Amax}, L_{A1}, L_{A10}, L_{A90} and L_{Aeq}. The results of noise monitoring conducted on the 23rd of August 2018 can be seen in Tables 6, 7 and 8 and shown graphically in Figures 10, 11 and 12 below. All locations at all times were compliant with the conditions in the Project Approval. The location of the focus receptors is provided in Figure 14 in Appendix 1.

Table 6 – August Day Noise Monitoring

Data Published:	November 2018	Licensee:	Charbon Coal Pty Ltd						
Data Sampled:	23/08/18	Address:	Charbon Rd Charbon NSW 2848						
Data Obtained:	23/10/18	EPL No.	528						
Measured Noise Levels dB(A)									
Day	LA _{max}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}	Estimated Mine Contribution LA _{eq} (15 minute)	Consent Noise Limits LA _{eq} (15 minute)	Description of Noise Emissions	Date/Start Time/Weather
Location H	48	42	36	26	33	<30	35	Birds=up to 48 dB Aircraft=up to 40 dB Breeze=up to 46 dB Charbon=up to 29 dB	23/08/2018 14:43 W = 2.8m/s Temp = 13°C VTG = -2.0°C/100m
Location L	53	46	40	27	37	<25	35	Birds=up to 45 dB Traffic=up to 35 dB Breeze=up to 53 dB Charbon=up to 32 dB	23/08/2018 14:21 W = 2.8m/s Temp = 13°C VTG = -2.0°C/100m
Location P	62	47	39	30	38	IA	35	Industrial continuum = up to 36 dB Birds=up to 62 dB Breeze=up to 43 dB Traffic=up to 39 dB	23/08/2018 13:57 W = 2.2m/s Temp = 12°C VTG = -2.0°C/100m
Location Q	61	54	46	37	43	IA	38	Industrial continuum = up to 51 dB Birds=up to 50 dB Breeze=up to 45 dB Aircraft=up to 61 dB	23/08/2018 13:33 W = 2.5m/s Temp = 12°C VTG = -2.0°C/100m

Day Noise Monitoring, Charbon Colliery, 23/08/2018

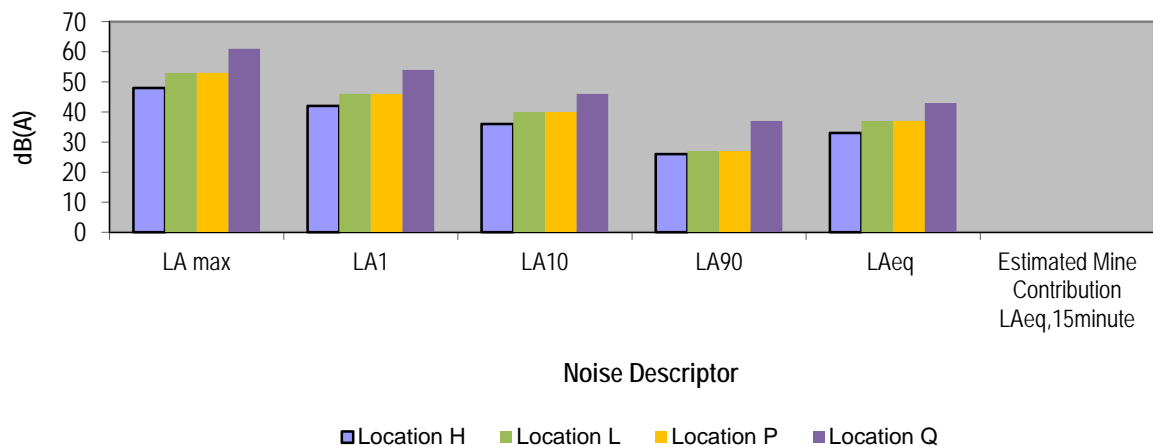


Figure 10 – August Day Noise Monitoring

Table 7 – August Evening Noise Monitoring

Data Published:	November 2018	Licensee:	Charbon Coal Pty Ltd						
Data Sampled:	23/08/18	Address:	Charbon Rd Charbon NSW 2848						
Data Obtained:	23/10/18	EPL No.	528						
Measured Noise Levels dB(A)									
Day	LA _{max}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}	Estimated Mine Contribution LA _{eq} (15 minute)	Consent Noise Limits LA _{eq} (15 minute)	Description of Noise Emissions	Date/Start Time/Weather
Location H	52	45	39	30	36	IA	35	Aircraft=up to 52 dB Breeze=up to 42 dB	23/08/2018 21:13 W = 4.6m/s Temp = 8°C VTG = -1.0°C/100m
Location L	49	40	34	25	31	IA	35	Birds=up to 49 dB Breeze=up to 43 dB Frogs=up to 34 dB	23/08/2018 20:53 W = 3.6m/s Temp = 8°C VTG = -1.0°C/100m
Location P	43	38	35	31	33	IA	39	Industrial continuum = up to 40 dB Traffic=up to 43 dB	23/08/2018 20:29 W = 2.8m/s Temp = 8°C VTG = 3.0°C/100m
Location Q	55	50	46	39	43	IA	38	Industrial continuum = up to 55 dB Breeze=up to 45 dB	23/08/2018 20:07 W = 3.3m/s Temp = 8°C VTG = 0.5°C/100m

Evening Noise Monitoring, Charbon Colliery, 23/08/2018

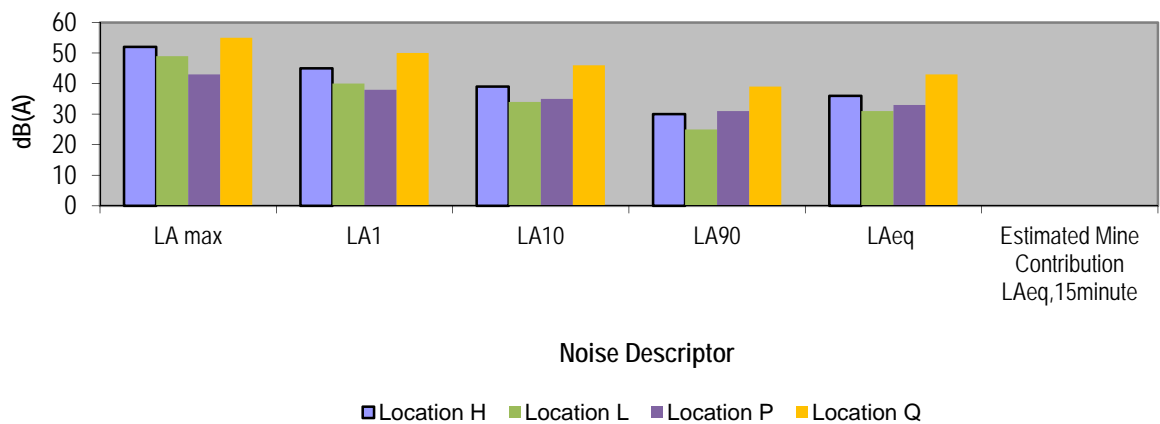


Figure 11 – August Evening Noise Monitoring

Table 8 – August Night Noise Monitoring

Data Published:	November 2018	Licensee:	Charbon Coal Pty Ltd						
Data Sampled:	23/08/18	Address:	Charbon Rd Charbon NSW 2848						
Data Obtained:	23/10/18	EPL No.	528						
Measured Noise Levels dB(A)									
Day	LA _{max}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}	Estimated Mine Contribution LA _{eq} (15 minute)	Consent Noise Limits LA _{eq} (15 minute)	Description of Noise Emissions	Date/Start Time/Weather
Location H	42	36	29	23	27	IA	35	Breeze=up to 42 dB	23/08/2018 22:00 W = 3.9m/s Temp = 7°C VTG = -1.0°C/100m
Location L	44	39	29	19	27	IA	35	Aircraft=up to 44 dB Breeze=up to 21 dB	23/08/2018 22:21 W = 3.9m/s Temp = 7°C VTG = -1.0°C/100m
Location P	45	38	34	30	32	IA	39	Industrial continuum = up to 33 dB Breeze=up to 45 dB	23/08/2018 22:44 W = 1.3m/s Temp = 7°C VTG = 3.0°C/100m
Location Q	62	51	47	40	45	IA	38	Industrial continuum = up to 53 dB Breeze=up to 53 dB Local impact = up to 62 dB	23/08/2018 23:07 W = 1.3m/s Temp = 7°C VTG = 3.0°C/100m

Night Noise Monitoring, Charbon Colliery, 23/08/2018

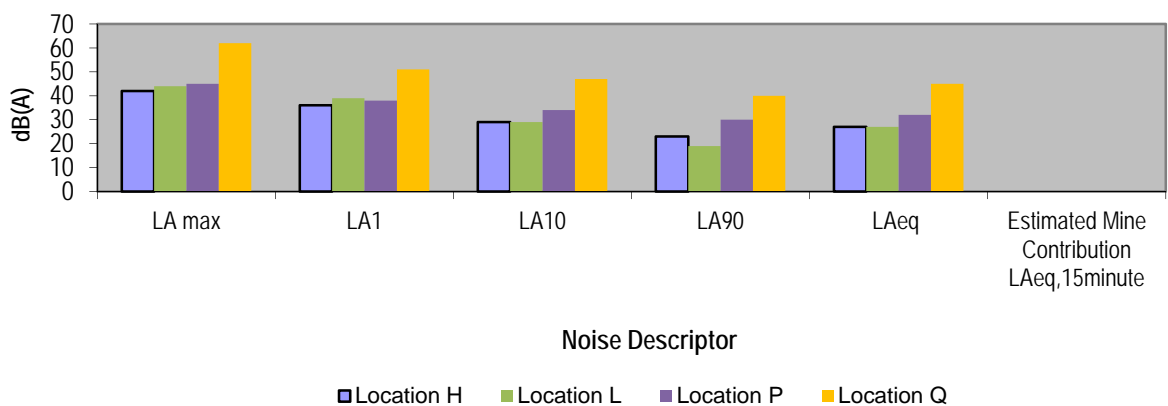


Figure 12 – August Night Noise Monitoring

COMPLAINTS REGISTER

There were no complaints made to Charbon Colliery during the December 2018 reporting period. Table 9 below, shows a summary of the complaints received by Charbon Colliery for 2018. Complaints are also listed on the Complaints Register on the Centennial Coal - Charbon website.

Table 9 – Complaints Register for Charbon Colliery 2018

Data Published:		January 2019					Licensee:			Charbon Coal Pty Ltd				
Data Sampled:		Jan – Dec 2018					Address:			Charbon Rd Charbon NSW 2848				
Data Obtained:		01/01/2019					EPL No.			528				
	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Annual Total	
Air	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Noise	0	0	0	0	0	0	0	0	0	0	0	0	0	
Flora & Fauna	0	0	0	0	0	0	0	0	0	0	0	0	0	
Subsidence	0	0	0	0	0	0	0	0	0	0	0	0	0	
Waste	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	1	0	0	0	0	1	
													1	

WEATHER

A summary of temperature and rainfall data recorded at the on-site meteorological monitoring station during the reporting period is shown in Table 10 below, and graphically in Figure 13.

Table 10 – Meteorological Data for Charbon Colliery

Data Published:		January 2019		Licensee:		Charbon Coal Pty Ltd	
Data Sampled:		Jan – Dec 2018		Address:		Charbon Rd Charbon NSW 2848	
Data Obtained:		08/01/2019		EPL No.		528	
Month	Total Rainfall (mm)	Minimum Temperature (°C)	Maximum Temperature (°C)	Average Temperature (°C)			
Jan-18	39.6	9.7	37.7	22.8			
Feb-18	64.8	10.3	35.9	20.6			
Mar-18	27.6	5.0	32.9	19.0			
Apr-18	24.2	6.8	30.4	16.9			
May-18	15.6	0.1	22.2	10.6			
Jun-18	41.4	-3.1	16.2	7.8			
Jul-18	10.0	-4.8	18.1	7.5			

Aug-18	54.2	-3.4	18.5	7.8
Sep-18	43.0	0.0	25.4	11.2
Oct-18	69.8	5.1	29.1	14.5
Nov-18	74.6	5.2	29.9	16.8
Dec-18	46.8	7.8	36.4	21.1

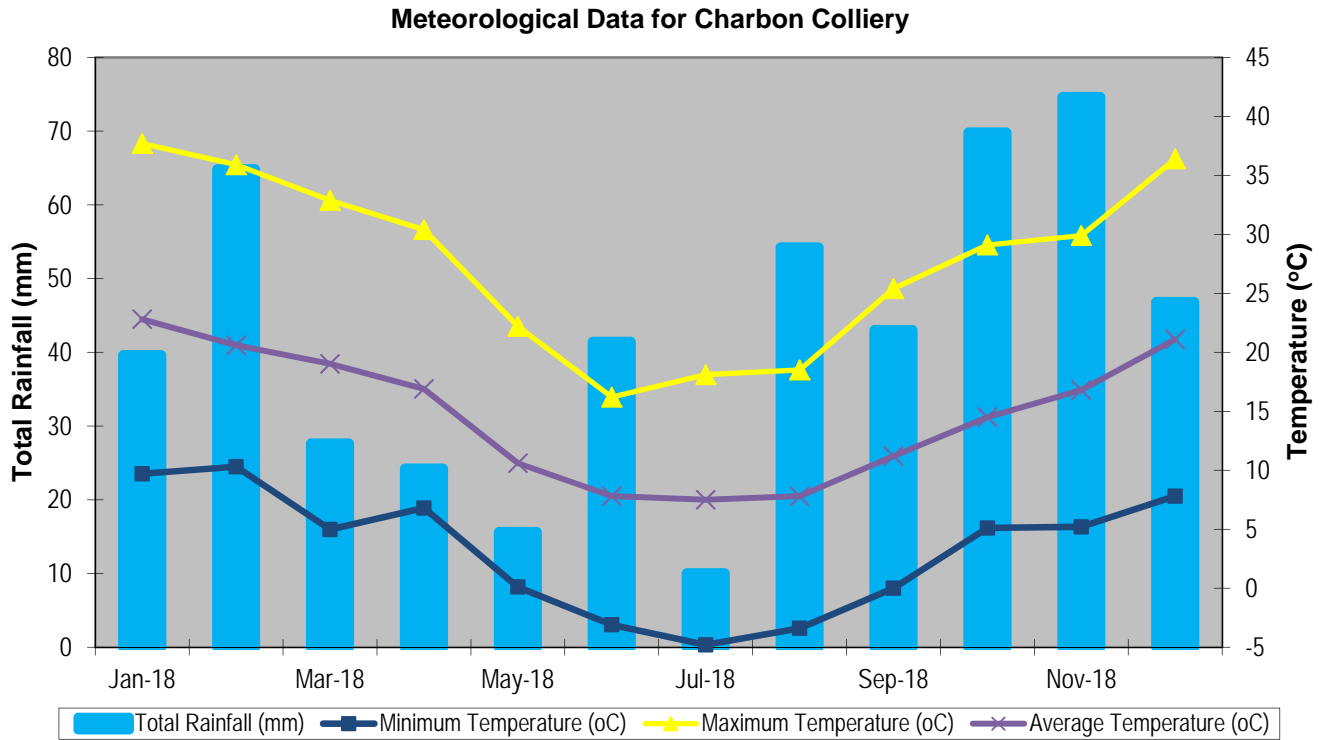


Figure 13 – Charbon Colliery Meteorological Data

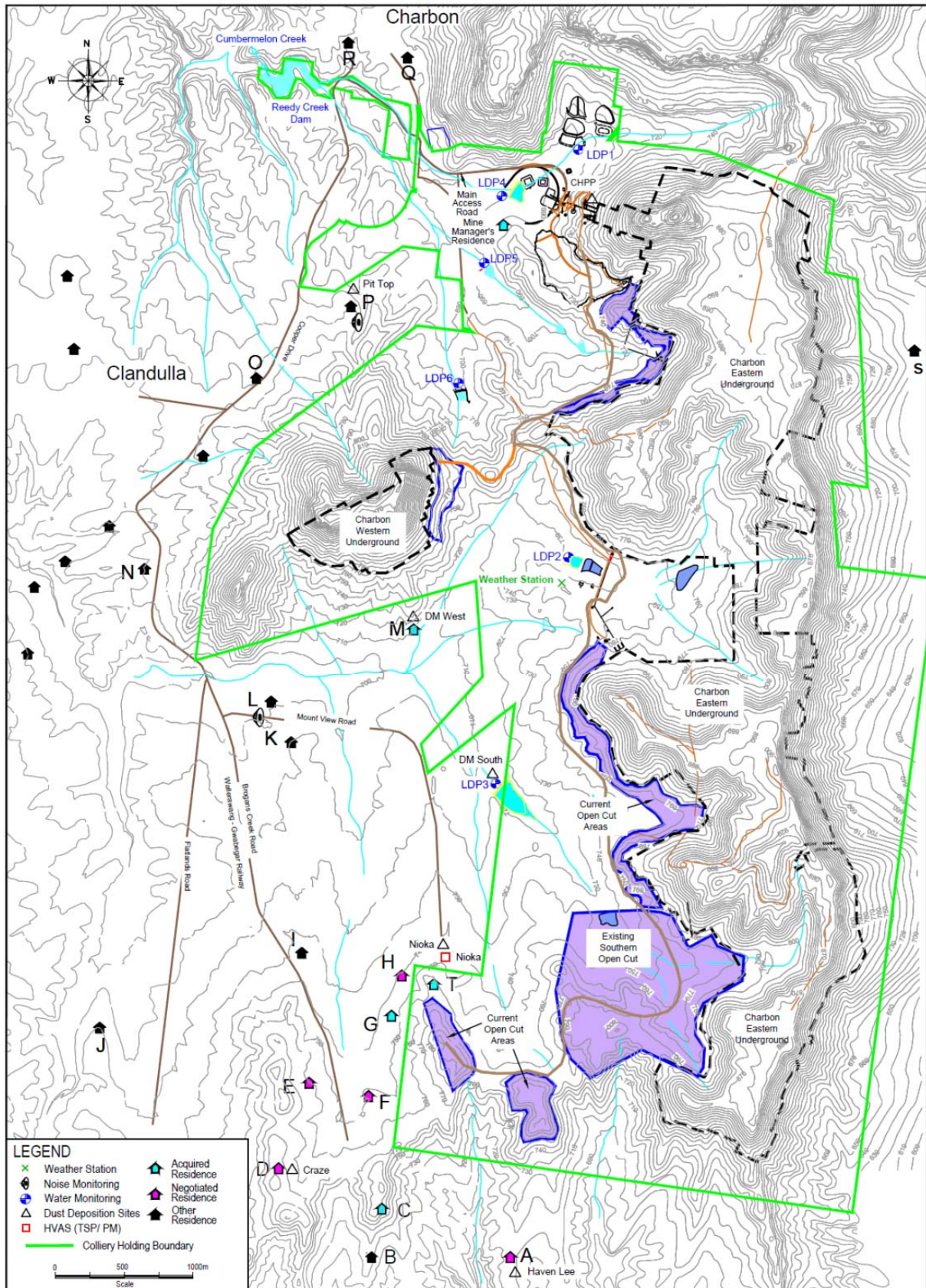
WASTE

The volume of drilling mud and/or muddy waters from drilling operations received at Charbon Colliery is monitored weekly in accordance with the requirements of Environmental Protection Licence Number 528 (EPL 528). Table 11 shows a summary of the drilling mud received at Charbon Colliery from exploration boreholes drilled during 2018. There was no drilling mud received at Charbon Colliery during the reporting period.

Table 11 – Drilling Mud Received at Charbon Colliery

Data Published:	July 2018	Licensee:	Charbon Coal Pty Ltd
Data Sampled:	May 2018	Address:	Charbon Rd Charbon NSW 2848
Data Obtained:	30/05/2018	EPL No.	528
Date	Volume of Drilling Mud		Volume Limit
30/05/2018	4500L		6000L/week

APPENDIX 1: CHARBON COLLIERY SENSITIVE RECEIVER AND MONITORING LOCATIONS



To be printed A4

Charbon 2013 AEMR
Sensitive Receiver and Monitoring Locations

Figure 14 – Charbon Colliery Sensitive Receiver and Monitoring Locations

Centennial Coal Company Limited

P O Box 1000

Toronto NSW 2283

www.centennialcoal.com.au

