WERRIS CREEK COAL COMMUNITY CONSULTATIVE COMMITTEE
49th Meeting of the Committee held on site at the Werris Creek Coal Mine
Wednesday, 13 March 2019 at 9:30am

The normal quarterly meeting will begin at 9:30am, with a site tour following the meeting (weather conditions permitting)

Meeting opened at 9:40am with a presentation being made to both Col Stewart and Jane Bradford by Gae Swain as both received an OAM on Australia Day 2019

1 Record of attendance

Gae Swain	Independent Chairperson
Jane Bradford	Independent Minute Taker
Rod Hicks	Werris Creek Coal (WCC) Operations Manager
Lynden Cini	WCC Environmental Officer
Lindsay Bridge	Community Representative – Phone No. 0431 319 302
Noel Taylor	Community Representative
James O'Brien	Community Representative
Col Stewart	Community Representative
Donna Ausling	Director of Environment – Liverpool Plains Shire Council
Ian Lobsey	Councillor – Liverpool Plains Shire Council

Apologies

Mike Lomax Community Representative

Moved Lindsay Bridge, **seconded** Noel Taylor, THAT the apologies be accepted.

CARRIED

2 Declaration of Pecuniary or Other Interests

a) Gae Swain confirmed – has a son-in-law working for Whitehaven Coal and the Narrabri Underground Mine and a son working at the Maule's Creek Mine – noted

Note Mike Silver is the alternate Chairperson – not required as yet.

3 New Matters for Discussion under General Business today

a) Lindsay Bridge – letter sent to Committee for discussion
b) Lindsay Bridge – note sent to Committee for discussion
C) Noel Taylor – Water
D) Noel Taylor – Fire retardant used in underground workings

4 Minutes of the Previous Meeting

Moved Clr Ian Lobsey, **seconded** Noel Taylor, THAT the Minutes of the previous meeting be accepted as a true and accurate record. CARRIED

5 Matters Arising - Nil

6 Environment Monitoring Report from 1 October 2018 – to 31 January 2019

Lynden Cini provided commentary on each section of the above report

2.1.1 Air quality– Elevated monitoring results during the period were associated with regional dust storms and were reported to the Department of Environment and Planning
2.2.1 Only very slight variation
2.3.1 Train dust minimal over the period
3.1 Noise levels – no issues for the period
4.1 Blasting – within guidelines and will be blasting today at 1:00pm
5.1 Ground Water – General conversation around levels
5.2 Surface Water -as could be expected without further drought relieving rains.
6.0 Very few complaints and all relating to blasting. All blasting was within compliance guidelines

Moved Donna Ausling, **seconded** Col Stewart**, THAT** the Environmental Monitoring Report be accepted. CARRIED

7 General Business

.

Lindsay noted when the mine closed there would be a void left – could this not be another Quipolly Dam concept? We should be making enquiries now so that planning can be in place by the time closure of the mine is approaching. Request that consideration be given to the concept. General discussion within the committee that this request be directed to the Department of Environment and Planning.

Moved Lindsay Bridge**, seconded** James O'Brien **THAT** A letter from the Committee to be sent to Mr O'Donoghue for his comment and to check about the next steps to be taken. CARRIED

Coal dust – The Department of Environment and Planning should be considering a use for coal dust and note the three points raised by Lindsay in his letter outlining the use of coal dust / fines in combustion engines.

Moved Lindsay Bridge, **seconded** Noel Taylor **THAT** a letter be sent to Mr O'Donoghue for his comment. CARRIED

Q – Where is the water for use in the irrigation coming from?

A Lynden advised the water used on the irrigation project is coming from stored, retained water stocks, historically held both in pit and out of pit in storage dams. The surplus water stocks were originally in the underground workings and stored onsite since WCC began working through this area. There is still a slight water surplus, albeit significantly reduced given we are receiving below average rainfall in the region.

Q – If there is a fire in the underground workings, what fire retardant would be used?

A We do not use chemical fire retardant on the underground workings. they are sealed with clay to reduce oxygen ingress and irrigated / flooded to assist in extinguishing hot area.

Lynden Cini confirmed that was his last meeting with this Group as he was being transferred to Gunnedah. Chair Gae wished him well and thanked him for his work with this group.

At the end of the meeting the Chairman informed the Consultative Committee of an independent planning meeting held in Boggabri recently where she was said to have an undeclared pecuniary interest in Whitehaven with the word corrupt being expressed. Mrs Swain declared she has always clearly articulated her pecuniary interest at all meetings and was upset by the inuendo. She expressed extreme concern and disappointment that such comments were allowed and that further comments have been forthcoming in the media re the CCC being merely a "box ticking" exercise. The Chairman was particularly annoyed that such personal attacks and also that further remarks devalue the commitment and dedication of the voluntary work carried out by the committee members.

Next meeting Wednesday, 10 July 2019 at 9:30am – same venue and to include a mine tour of Werris Creek Coal (weather permitting).

Meeting closed at 10:30AM

Copy to all Committee Members
The Minutes will also be posted on the Whitehaven Coal Website

_____ _____

Gae Swain – Independent Chairperson Date

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

October, November, December 2018 and January 2019

This Environmental Monitoring Report covers the period 1st October 2018 to 31st January 2019 for the Werris Creek Coal Mine Community Consultative Committee.

The report includes environmental monitoring results from the on-site Weather Station, Air Quality, Noise, Blasting, Surface Water, Groundwater and Discharge Water Quality together with any community complaints received and general details on site environmental matters.

Note: Elevated monitoring results above the relevant monitoring criteria are highlighted in **yellow**.

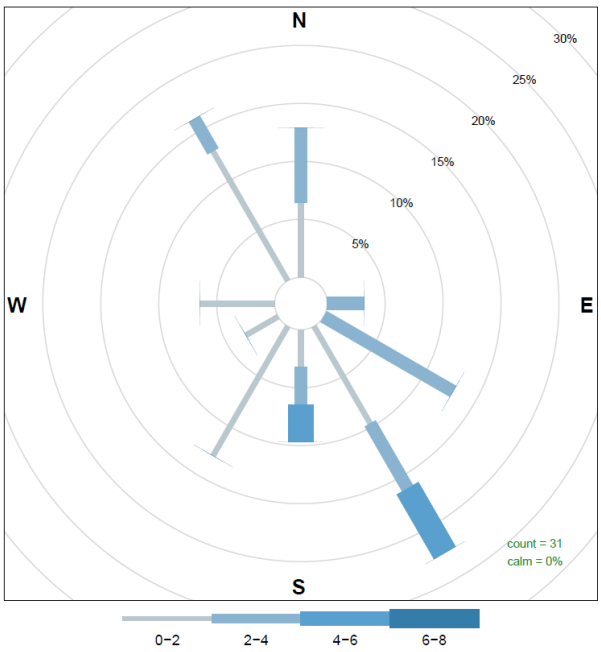
CONTENTS

1.0 METEOROLOGY

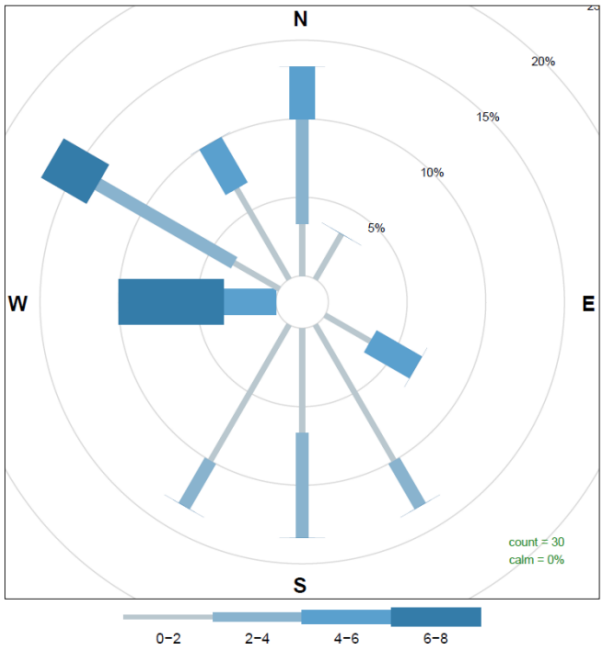
1.1 WEATHER STATION

Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement. The following table summarises rainfall data for the last four months. Monthly totals in October and November 2018 were higher than the historical average and lower in December 2018 and January 2019. Directional wind data, presented in the wind-rose figures below, indicate the prevailing wind direction was predominantly from the south-south-east and north-west in October, north-west and south in November, north and south-south-east in December 2018 and north-north-west in January 2019.

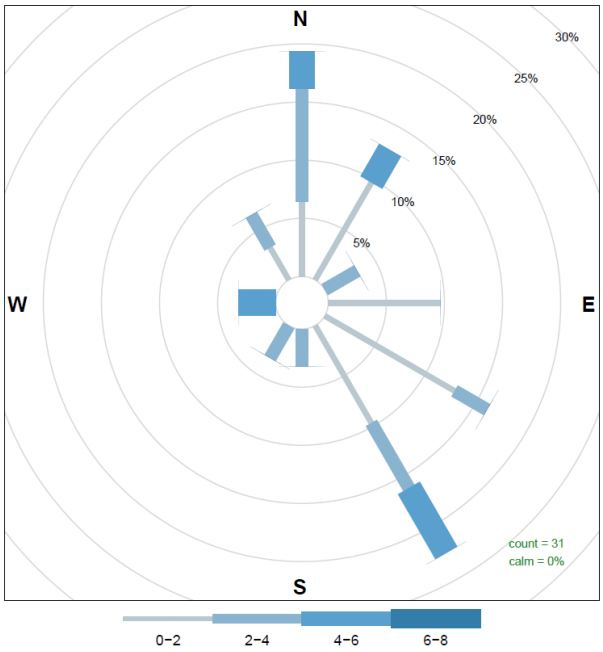
Month	Rainfall *(mm)*			
	Onsite	***Historical Average***	***2018 Total***	***2019 Total***
October 2018	75	52.1	280.6	
November 2018	97.6	85.9	378.2	
December 2018	45.6	92.1	423.8	
January 2019	34	61.7		34



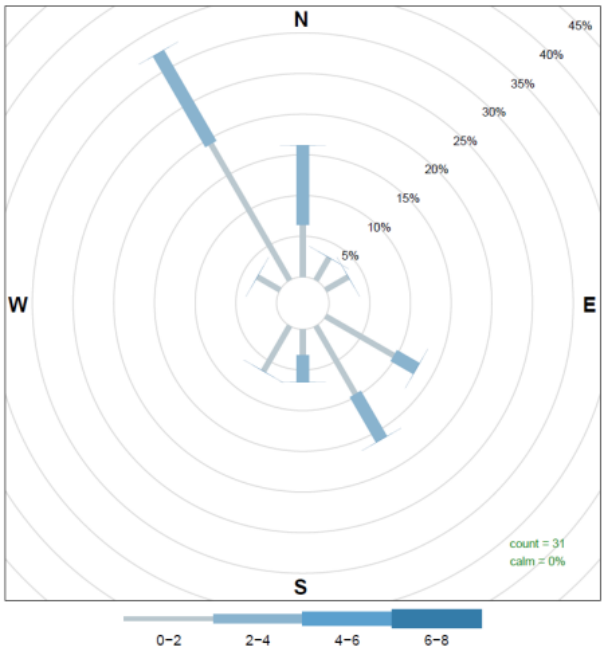
October 2018



November 2018



December 2018



January 2019

2.0 AIR QUALITY

2.1 HVAS (PM_{10}) and TEOM (PM_{10} & $PM_{2.5}$)

WCC operates five High Volume Air Samplers (HVAS) measuring particulate matter less than 10 micron (PM_{10}) and total suspended particulate (TSP) matter at four sites. HVAS sampling is scheduled every 6 days for a 24-hour run period in accordance with Environment Protection Authority (EPA) guidelines. Results are reported in micro grams per cubic metre ($\mu g/m^3$) of air sampled. In addition, WCC operates a Tapered Element Oscillating Microbalance (TEOM) monitor in Werris Creek measuring real time PM_{10} and $PM_{2.5}$ (particulate matter less than 2.5 micron) dust levels. Dust monitoring locations are identified in **Figure 1**.

2.1.1 Monitoring Data Results

The average results for the last four months are provided in the table below.

Monitor Location	Daily Maximum ($\mu g/m^3$)	October 2018 ($\mu g/m^3$)	November 2018 ($\mu g/m^3$)	December 2018 ($\mu g/m^3$)	January 2019 ($\mu g/m^3$)	2018 Average ($g/m^2/month$)	2019 Average ($g/m^2/month$)	Criteria ($\mu g/m^3$)	
								Annual	Daily
$PM_{2.5}$ – TEOM92 "Werris Creek"	20.5	5.7	6.8	10.9	11.9	7.4	11.9	8	25
PM_{10} – TEOM92 "Werris Creek"	**98.0**	11.0	20.7	20.9	29.4	16.1	29.4	30	50
PM_{10} – HVP20 "Tonsley Park"	41.7	24.5	24.7	32.5	28.1	20.6	28.1	30	50
PM_{10} - HVP1 "Escott"	**67.1**	11.5	19.5	28.8	21.0	13.7	21.0	30	50
PM_{10} – HVP11 "Glenara"	49.5	18.2	21.4	35.2	27.8	23.4	27.8	30	50
PM_{10} – HVP98 "Kyooma"	48.9	11.4	18.3	27.4	22.8	14.9	22.8	30	50
TSP – HVT98 "Kyooma"	94.6	23.3	37.1	61.5	52.1	36.7	52.1	90	-

Yellow Bold – Elevated dust level.

2.1.2 Discussion - Compliance / Non Compliance

All TSP, PM_{10} and $PM_{2.5}$ dust results were within criteria during the period with the exception of six PM10 results measured at "TEOM92 "Werris Creek"", on the 22nd and 23rd November 2018, 14 and 15 December 2018 and 29 January 2019 and "HVP1 "Escott" on the 15 December 2018. On all occasions the exceedances were reported with the elevated results were affected high regional elevated dust levels.

2.2 WERRIS CREEK MINE DEPOSITED DUST

Deposited dust monitoring measures particulate matter greater than 30 microns in size that readily settles out of the air related to visual impact. Dust deposition is monitored at 20 locations around WCC. Sampling is scheduled monthly in accordance with EPA guidelines and results are reported as grams per square metre per month ($g/m^2/month$). Dust monitoring locations are identified in **Figure 1**.

2.2.1 Monitoring Data Results

The results for the last four months are provided in the table below.

Monitor Location	October 2018 *(g/m²/month)*	November 2018 *(g/m²/month)*	December2018 *(g/m²/month)*	January 2019 *(g/m²/month)*	2018 Average *(g/m²/month)*	2019 Average *(g/m²/month)*	Annual Criteria *(g/m²/month)*
DG1 "Escott"	0.6	1.6	2.7	1.7	1.1	1.7	4.0
DG2 "Cintra"	4.5	2.8	5.5	3.6	4.2	3.6	4.0
DG3 "Eurunderee"	1.5	3.1	3.9	4.8	2.0	4.8	4.0
DG5 "Railway View"	1.5	3.0	4.5	2.0	2.8	2.0	4.0
DG9 "Marengo"	15.0	6.2	3.5	2.4	4.0	2.4	4.0
DG11 "Glenara"	1.0	2.5	2.9	2.7	1.5	2.7	4.0
DG14 "Greenslopes"	0.9	3.9	3.4	6.3*	1.5	NA	4.0
DG15 "Plain View"	1.0	1.6	3.1	2.4	1.4	2.4	4.0
DG17 "Woodlands"	1.9	1.2	3.5	2.5	1.5	2.5	4.0
DG20 "Tonsley Park"	7.2	1.9	3.7	3.2	2.1	3.2	4.0
DG22 "Mountain View"	2.1	2.6	4.5	4.1	2.0	4.1	4.0
DG24 "Hazeldene"	0.5	1.8	3.3	2.7	1.5	2.7	4.0
DG34 8 Kurrara St	0.7	1.5	23.3	2.3	8.7	2.3	4.0
DG62 Werris Creek South	0.7	1.7	3.2	1.7	2.8	1.7	4.0
DG92 Werris Creek Centre	0.6	1.4	3.2	2.0	1.1	2.0	4.0
DG96 "Talavera"	NS	NS	NS	NS	NA	NA	4.0
DG98 "Kyooma"	0.6	1.4	3.0	1.5	1.1	1.5	4.0
DG101 "Westfall"	1.9	2.6	3.3	3.6	1.5	3.6	4.0
DG103 West Street	1.6	4.5	5.1	2.0	2.0	2.0	4.0

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e. bird droppings and insects); # - indicates sample is contaminated from a Non-Werris Creek Coal dust source; **Yellow Bold** – Elevated dust level; NS – Not Sampled; Broken- Dust bottle broken in transit

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results were below the annual criteria of 4.0g/m^2/month throughout the period with the exception of DG2 (Cintra) which had high results in October and December 2018 and a rolling average above criteria. DG9 (Marengo) had high results in October 2018 however the rolling average remains below criteria.

DG9 (Marengo) in October 2018 and DG34 (8 Kurrara St) in December 2018 had one anomalous high dust deposition measurement, deposited dust levels remained low at nearby gauges, indicating a localised source of dust, unrelated to activities at Werris Creek Coal Mine.

2.3 QUIRINDI TRAIN DUST DEPOSITION

2.3.1 Monitoring Data Results

The results for the last three months are provided in the table below.

Monitor Location	October 2018		November 2018		December 2018		January 2019		2018 Average *(g/m²/month)*	2019 Average *(g/m²/month)*
	g/m²/month	*% Coal*	*g/m²/month*	*% Coal*	*g/m²/month*	*% Coal*	*g/m²/month*	*% Coal*		
DDW30	2.2	20%	2.4	<5%	3.5	<5%	3.3	30%	1.7	3.3
DDW20	1.9	15%	3.2	<5%	4.1	5%	2.4	25%	2.0	2.4
DDW13	3.6	20%	2.4	<5%	3.2	<5%	2.8	30%	1.9	2.8
Train Line										
DDE13	4.9*	5%	2.7	<5%	4.8	5%	2.6	30%	2.2	2.6
DDE20	2.2	15%	2.0	<5%	4.3	<5%	3.2	20%	2.0	3.2
DDE30	1.6	5%	3.5*	<5%	6.3	<5%	4.1	20%	2.5	4.1

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e. bird droppings and insects); NS – Not Sampled, bottle and funnel smashed.

2.3.2 Discussion - Compliance / Non Compliance

Overall, the dust fallout levels adjacent to the train line are low, well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month and comparable to the levels monitored around Werris Creek Coal Mine. Levels were slightly elevated at all sites in December 2018. Coal contributions to the dust fraction remain generally low.

2.4 AIR QUALITY COMPLAINTS

There were no dust complaints recorded during the period.

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 16 properties from 13 monitoring points below. Attended noise monitoring was undertaken twice for either 60 minutes at privately owned properties or 15 minutes at properties with private agreements; representative of the day period and the evening/night period.

3.1.1 Monitoring Data Results

The WCC operations only noise level (not ambient noise) results for the last three months are outlined in the table below. Noise monitoring locations are identified in **Figure 2**.

Monday 29th October 2018

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible	35	Inaudible	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible	40	NM#	40
C	**Central Quipolly**(R10*,R11*)	Inaudible	40	Inaudible	40
D	**"Hazeldene"** R24	Inaudible	37	Inaudible	37
E	**"Railway Cottage"** R12	Inaudible	38	Inaudible	38
F	**"Talavera"** R96	Inaudible	38	Inaudible#	37
H	**"Kyooma"** R98	Inaudible	38	Inaudible	38
I	**Kurrara St, WC** R57	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**Alco Park** (R21*)	Inaudible	40	Inaudible	40
L	**West St, WC** (R103)	Inaudible	35	Inaudible#	35

WC – Werris Creek; * - Private agreement in place with resident; **Yellow Bold** – Elevated noise; # Adverse weather with wind >3m/s, temperature inversions >+12°C/100m or >2m/s and >0°C/100m; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$

NM- Denotes Not Measurable. If site only noise is noted as NM, this means some noise from the source of interest was audible at low-levels, but could not be quantified

Monday 26th November 2018

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible#	35	Inaudible	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible#	40	NM#	40
C	**Central Quipolly**(R10*,R11*)	Inaudible	40	Inaudible#	40
D	**"Hazeldene"** R24	Inaudible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible#	38
F	**"Talavera"** R96	26#	38	Inaudible	37
H	**"Kyooma"** R98	Inaudible	40	26#	40
I	**Kurrara St, WC** R57	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible#	35
K	**Alco Park** (R21*)	Inaudible#	40	Inaudible#	40
L	**West St, WC** (R103)	Inaudible#	35	24	35

WC – Werris Creek; * - Private agreement in place with resident; **Yellow Bold** – Elevated noise; # Adverse weather with wind >3m/s, temperature inversions >+12°C/100m or >2m/s and >0°C/100m; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$

NM- Denotes Not Measurable. If site only noise is noted as NM, this means some noise from the source of interest was audible at low-levels, but could not be quantified

Tuesday 18th December 2018

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible#	35	Inaudible#	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible	40	Inaudible#	40
C	**Central Quipolly**(R10*,R11*)	Inaudible#	40	Inaudible#	40
D	**"Hazeldene"** R24	Inaudible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible	38	Inaudible#	38
F	**"Talavera"** R96	Inaudible	38	Inaudible	37

H	**"Kyooma"** R98	Inaudible#	40	Inaudible#	40
I	**Kurrara St, WC** R57	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible#	35
K	**Alco Park** (R21*)	Inaudible#	40	Inaudible	40
L	**West St, WC** (R103)	Inaudible	35	Inaudible	35

WC – Werris Creek; * - Private agreement in place with resident; **Yellow Bold** – Elevated noise; # Adverse weather with wind >3m/s, temperature inversions >+12°C/100m or >2m/s and >0°C/100m; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$
NM- Denotes Not Measurable. If site only noise is noted as NM, this means some noise from the source of interest was audible at low-levels, but could not be quantified

January 2019

January data has not yet been issued by the noise monitoring consultant at the time of writing this report.

3.1.2 Discussion - Compliance / Non Compliance

Noise from Werris Creek Coal Mine was inaudible at a high percentage of the monitoring sites during the quarter. Throughout the period, Werris Creek Coal Mine adjusted mining operations and shut down equipment at various times to reduce noise generation potential in response to noise levels measured at the real time noise monitors.

3.2 Noise complaints

There were no noise complaints recorded during the period.

4.0 BLASTING

During the reporting period there was a total of forty-one blasts fired by WCC with monitoring of each blast undertaken at "Glenara", "Kyooma", "Werris Creek South" and "Werris Creek Mid". Compliance limits for blasting overpressure is 115dBL (and up to 120dBL for only 5% of blasts) and vibration is 5mm/s (and up to 10mm/s for only 5% of blasts). Blast monitoring locations are identified in **Figure 3**.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

The summary tables of blasting results over the last four months are provided below.

October 2018		**"Glenara" R11**		**"Kyooma" R98**		**Werris Creek South R62**		**Werris Creek Mid R92**	
		mm/s	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*
Monthly Average		0.09	99.61	0.71	102.14	0.33	99.31	0.18	97.17
Monthly Maximum		0.23	107.70	1.87	110.00	0.68	107.70	0.38	104.10
Annual Average		0.10	99.49	0.67	100.89	0.31	99.73	0.20	97.87
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	**Rolling Ave**	0.00%	1.52%	0.00%	0.76%	0.00%	0.76%	0.00%	0.76%
	Reporting Year	0.00%	1.75%	0.00%	0.88%	0.00%	0.88%	0.00%	0.88%

November 2018		**"Glenara" R11**		**"Kyooma" R98**		**Werris Creek South R62**		**Werris Creek Mid R92**	
		mm/s	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*
Monthly Average		0.11	99.97	0.87	103.60	0.53	103.69	0.26	100.24
Monthly Maximum		0.20	105.90	1.59	109.40	0.84	113.80	0.35	108.40
Annual Average		0.10	99.53	0.69	101.13	0.33	100.09	0.20	98.09
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	**Rolling Ave**	0.00%	1.55%	0.00%	0.78%	0.00%	0.78%	0.00%	0.78%
	Reporting Year	0.00%	1.65%	0.00%	0.83%	0.00%	0.83%	0.00%	0.83%

December 2018	**"Glenara" R11**		**"Kyooma" R98**		**Werris Creek South R62**		**Werris Creek Mid R92**	
	mm/s	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*
Monthly Average	0.11	97.64	0.68	94.01	0.35	96.81	0.19	92.94

December 2018		"Glenara" R11		"Kyooma" R98		Werris Creek South R62		Werris Creek Mid R92	
		mm/s	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*
Monthly Maximum		0.16	110.10	1.41	104.80	0.58	105.70	0.29	102.40
Annual Average		0.10	99.38	0.69	100.54	0.33	99.81	0.20	97.66
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	**Rolling Ave**	0.00%	1.55%	0.00%	0.78%	0.00%	0.78%	0.00%	0.78%
	Reporting Year	0.00%	1.55%	0.00%	0.78%	0.00%	0.78%	0.00%	0.78%

January 2019		"Glenara" R11		"Kyooma" R98		Werris Creek South R62		Werris Creek Mid R92	
		mm/s	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*	*mm/s*	*dB(L)*
Monthly Average		0.09	97.3	0.58	97.7	0.36	96.4	0.18	96.2
Monthly Maximum		0.13	99.4	1.56	100.9	0.56	100.4	0.34	100.4
Annual Average		0.09	97.28	0.58	97.67	0.36	96.44	0.18	96.21
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	**Rolling Ave**	0.00%	1.45%	0.00%	0.72%	0.00%	0.72%	0.00%	0.72%
	Reporting Year	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Yellow – overpressure >115dB(L) or Werris Creek vibration >5.0mm/s.

4.1.2 Discussion - Compliance / Non Compliance

All blasts over the period complied with maximum licence limits (120dB(L) and 10mm/s) as well as the 95th percentile limits (115dB(L) and 5mm/s).

4.2 BLAST COMPLAINTS

There were eight blast complaints during the period.

5.0 WATER

The groundwater monitoring program monitors groundwater levels bi-monthly and groundwater quality six monthly. Surface water monitoring is undertaken quarterly.

5.1 GROUND WATER

Groundwater monitoring is undertaken to identify if there are any impacts on groundwater quality and water levels as a result of the mining operations. WCC monitors approximately 38 groundwater wells/bores and piezometers in the key aquifers surrounding WCC including Werrie Basalt (next to WCC and further afield) and Quipolly Creek Alluvium. Groundwater level surveys were completed on the 2, 5 and 6 November 2018 and 8, 9, 10 January 2019. Groundwater monitoring locations are identified in **Figure 4**.

5.1.1 Monitoring Data Results

A summary of groundwater monitoring results has been provided below.

Site		November-18	
		mbgl	%
Werrie Basalt near WCC	**MW1**	Dry	
	MW2	50.93	-2%
	MW3	**20.15**	-1%
	MW4B	**18.03**	-1%
	MW5	**13.18**	-1%
	MW6	**16.24**	0%
	MW27*	53.94	0%
	MW36A	22.7	-3%
	MW36B	22.68	-3%
Werrie Basalt	**MW8***	**20.12**	-1%
	MW10	**14.93**	-2%
	MW14	17.68	-5%
	MW17B*	14.05	-1%
	MW19A*	No access	
	MW20*	**23.05**	-3%
	MW38A	13.69	-3%
	MW38B*	10.26	0%
	MW38C*	23.50	0%
	MW38E*	**11.35**	-1%
	MW41	**9.87**	-2%
	MW43	**8.62**	-2%
#[1]	**MW24A***	16.24	2%
	MW29*	**30.72**	-53%
Quipolly Alluvium	**MW12***	Dry	
	MW13*	Dry	
	MW13B*	**6.26**	-2%
	MW13D*	**6.54**	-6%
	MW15*	No access	
	MW16*	Dry	
	MW17A*	**8.76**	-4%
	MW18A*	Dry	
	MW21A*	Dry	
	MW22A*	Dry	
	MW22B*	Dry	
	MW23A*	**4.54**	-2%
	MW23B*	No access	
	MW26B*	**10.34**	-3%
	MW28A*	**16.92**	-2%
	MW32*	**4.35**	-3%
	MW40	**9.90**	-2%
	MW42	**8.51**	-2%
#[2]	**MW34***	11.4	1%

Site		January-19	
		mbgl	%
Werrie Basalt near WCC	**MW1**	Dry	
	MW2	52.18	-2%
	MW3	20.29	-1%
	MW4B	18.35	-2%
	MW5	13.32	-1%
	MW6	16.24	0%
	MW36A*	17.52	0%
	MW36A	17.52	30%
	MW36B	17.48	30%
Werrie Basalt	**MW8***	20.33	-1%
	MW10	14.72	1%
	MW14	13.26	0%
	MW17B*	14.26	-1%
	MW19A*	No sample	
	MW20*	22.62	2%
	MW38A	12.68	8%
	MW38B*	10.20	1%
	MW38C*	24.12	0%
	MW38E*	11.70	-3%
	MW41	10.05	-2%
	MW43	8.80	-2%
#[1]	**MW24A***	16.89	-4%
	MW29*	15.97	92%
Quipolly Alluvium	**MW12***	Dry	
	MW13*	Dry	
	MW13B*	6.38	-2%
	MW13D*	6.52	0%
	MW15*	No access	
	MW16*	Dry	
	MW17A*	8.95	-2%
	MW18A*	Dry	
	MW21A*	Dry	
	MW22A*	Dry	
	MW22B*	Dry	
	MW23A*	4.72	-4%
	MW23B*	4.63	-8%
	MW26B*	10.52	-2%
	MW28A*	17.28	-2%
	MW32*	4.51	-4%
	MW40	10.13	-2%
	MW42	8.69	-2%
#[2]	**MW34***	11.62	-2%

mbgl – meters below ground level is the distance in meters from top of bore to groundwater surface; Orange – Change decrease; Green – change increase or no change; * - Indicates bore is used for water extraction unrelated to WCC (i.e. stock and domestic or irrigation). #[1] – Werrie Basalt in the Black Soil Gully valley to east of Werris Creek Mine. #[2] - Werris Creek Alluvium.

5.1.2 Discussion - Compliance / Non Compliance

Measured groundwater levels in the Werrie Basalt and Quipolly Alluvium aquifer indicate general sustained or decreased water levels during November 2018 and January 2019 with the exception of changes in depth at MW29 due to the windmill running in November 2018 and increases in depth at MW36A and MW36B in January 2019.

5.2 SURFACE WATER

Surface water monitoring is undertaken in local creeks offsite as well as from discharge point dirty water dams to monitor for potential water quality issues. Quarterly surface water monitoring was undertaken on the 27 November 2018. Surface water monitoring locations are identified in **Figure 5**.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results has been provided below.

27th November 2018

Site	pH	EC	TSS	O&G	Change from Previous Quarter or General Comments
ONSITE					
SB2	Dry	Dry	Dry	Dry	Dry- just grass at bottom
SB9	Dry	Dry	Dry	Dry	Dry
SB10	7.41	191	168	<5	Dry previous quarter. Low water level.
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry. Gravel bed.
QCD	7.93	1090	9	<5	pH and EC slightly decreased, TSS slight increased and O&G unchanged. Gently flowing.
WCU	7.34	156	16	<5	Dry previous quarter. Pools
WCD	7.83	947	27	<5	pH and EC slightly decreased, TSS slightly increased and O&G unchanged. Flowing.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 27 November 2018 with all onsite and offsite sampling undertaken in dry conditions represented by low or dry pools, which reflected on water quality. All water quality results were within long-term averages and the Site Water Management Plan trigger values.

5.3 SURFACE WATER DISCHARGES

There were no discharge events in October, November, December 2018 and January 2019.

5.3 WATER COMPLAINTS

There were no water release complaints during the period.

6.0 COMPLAINTS SUMMARY

There were thirteen complaints received during the period, which are summarised below.

#	Date	Issue	Complaint	Investigation	Action Taken
596	6/10/2018	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	EO advised blast was within compliance limits and emailed a copy of the results to the complainant.
597	16/11/2018	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	No further follow-up actions
598	16/11/2018	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	EO advised blast was within compliance limits and emailed a copy of the results to the complainant.
599	16/11/2018	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	No further follow-up actions
600	30/11/2018	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	EO advised blast was within compliance limits and emailed a copy of the results to the complainant.
601	16/1/2019	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	EO advised blast was within compliance limits and emailed a copy of the results to the complainant.
602	27/1/2019	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	EO advised blast was within compliance limits and emailed a copy of the results to the complainant.
603	27/1/2019	Blast	Complainant advised they felt the blast at their residence.	EO explained that all monitors indicated the blast was within compliance limits.	No further follow- up actions

7.0 GENERAL

Please feel free to ask any questions in relation to the information contained within this document during Item 7 of the meeting agenda.

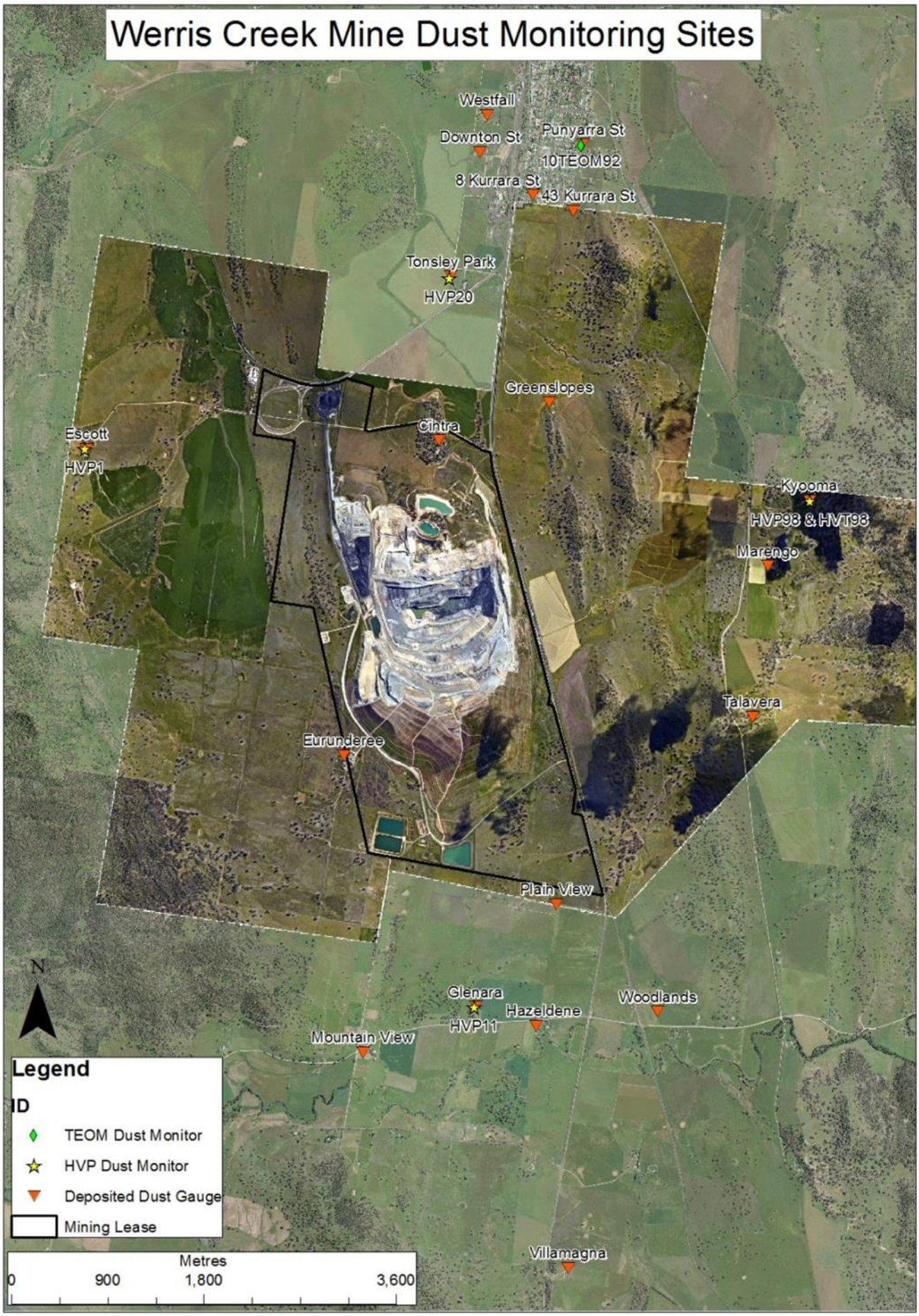


Figure 1 – WCC Dust Monitoring Locations

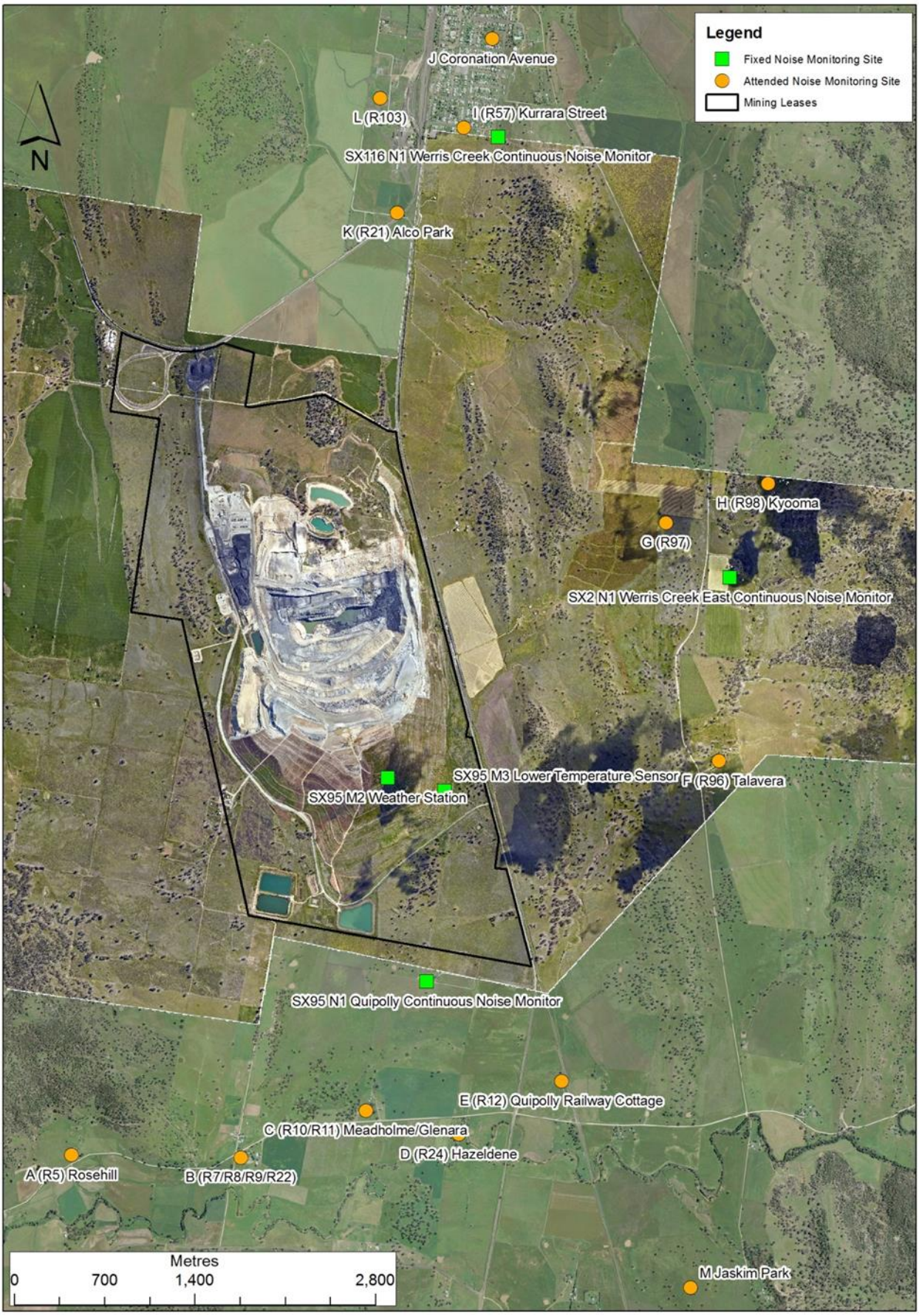


Figure 2 – WCC Noise Monitoring Locations

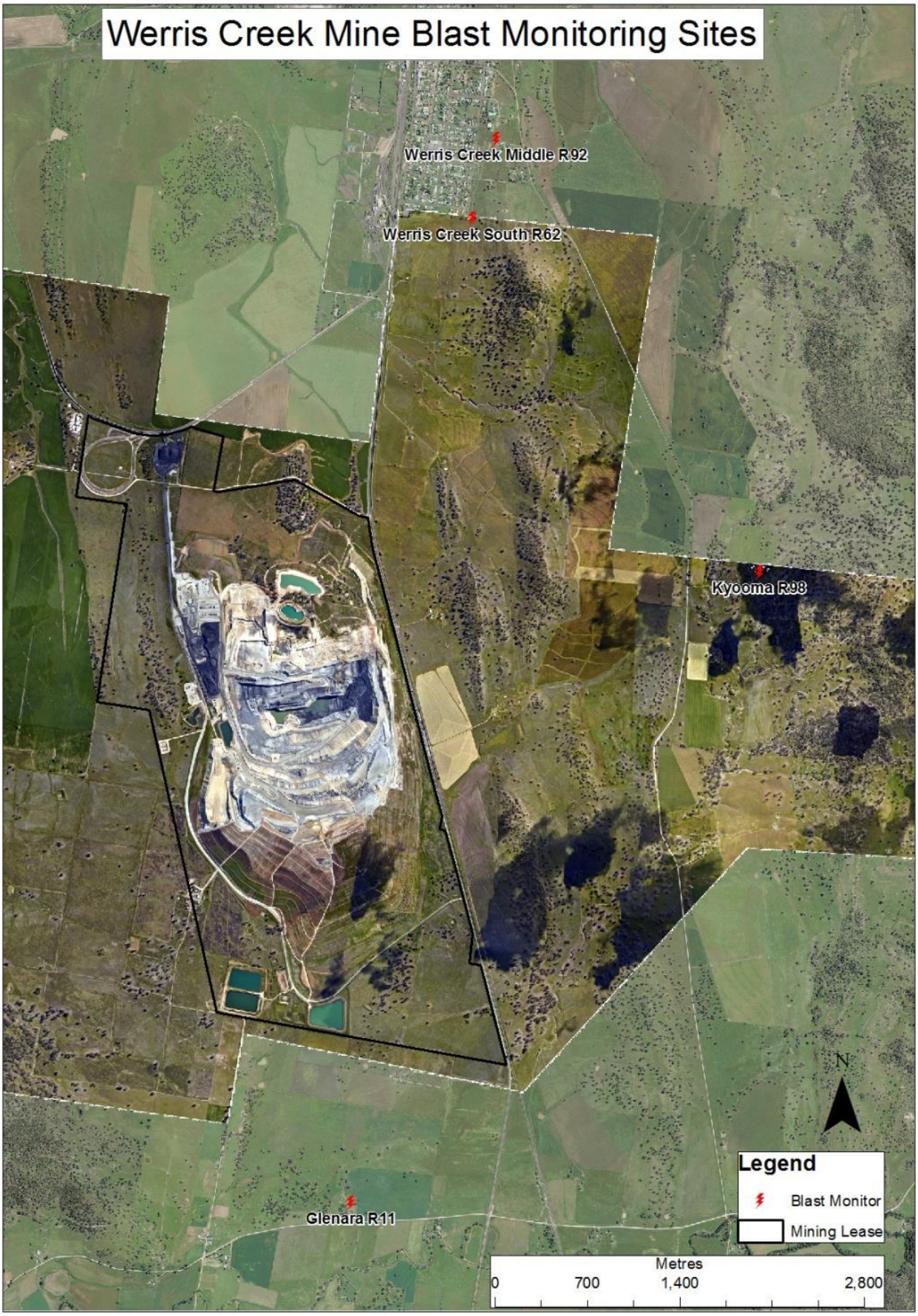


Figure 3 – WCC Blast Monitoring Locations

Figure 4 – WCC Groundwater Monitoring Locations

Figure 5 – WCC Surface Water Monitoring Locations