Werris Creek Coal Community Consultative Committee

Thirty Eighth Meeting of the Committee

Meeting Room, Werris Creek Coal

9:30am Thursday 25th February 2016

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am for the quarterly meeting followed by a pit tour of the mine site inspecting operations from the southern lookout.

Meeting Opened at 9:55am

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Col Stewart (Liverpool Plains Shire Council (LPSC) – Councilor); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Dave Goldman (Community Representative); Mike Lomax (Community Representative); Donna Ausling (LPSC – Acting Director Environmental Services); Rod Hicks (WCC – Operations Manager); Lexie Frankham (Whitehaven Coal – Environmental Superintendent); and Mark Hammond (WCC – Environmental Officer and Minute Taker)

Apologies: Nil

2. Declaration of Pecuniary or Other Interests

Gae Swain declared that her son-in-law is an employee for Whitehaven Coal at Narrabri Coal.

3. Minutes of Previous Meeting

Minutes of the previous meeting on the 26th November 2015 were reviewed by the committee.

Motion moved to accept the meeting minutes on the 26th November 2015 as a true and accurate representation of business conducted on that day.

Moved: Noel Taylor. Seconded: Lindsay Bridge. Motion carried.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. New Matters for Discussion under General Business

Seven new items of business were:

a) Community Enhancement Fund (CEF) update;
b) Recent media enquiries regarding water;
c) WCC Project Approval Modification Update;
d) Werris Creek Coal Newsletter
e) Draft changes to the Guidelines for Establishing and Operating CCC;

f) Letter from Lindsay Bridge re. uses of coal dust
g) Replacement CCC community representative

6. Environmental Monitoring Report: November, December 2015, and January 2016

Meteorology – November 2015 through January 2016 were characterized by warm to hot temperatures with winds predominantly south to southeast with lesser north to northwest winds. November 2015 had below average rainfall while December 2015 and January 2016 had slightly above average rainfall.

Air Quality – All TSP, PM10 and PM2.5 dust results were within criteria during the period. All monthly dust deposition gauge results were below the annual criteria of 4.0g/m^2/month except for DG5 ("Railway View"), DG20 ("Tonsley Park") and DG34 (8 Kurrara St). DG5 was affected by one anomalous spike in deposited dust in January, which has skewed the results at this depositional dust gauge. Annual averages for both DG20 and DG34 have continued to decline during the quarter, however DG34 continues to regularly record depositional dust levels above the annual criteria, which appears to be unrelated to Werris Creek Mine, as other depositional gauges between Werris Creek Mine and DG34 do now show a similar exceedance.

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 for all samples except one furthest from the railway line on the eastern side in January 2016) and comparable to the levels monitored around WCC.

There were no dust complaints recorded during the reporting period.

Noise – Noise from Werris Creek Mine was inaudible at most of the monitoring sites during the quarter. This is largely the result of mining operations progressing deeper within the pit during the quarter (especially December and January), and due to milder night time inversion conditions during the summer months, with no strong temperature inversions present during the quarter.

There were no noise complaints during the reporting period.

Blasting – During the reporting period a total of thirty one blasts were fired by WCC. All blasts over the period complied with maximum license limits (120dB(L) and 10mm/s) as well as the 95th percentile limits (115dB(L) and 5mm/s).

There was one blast complaint during the period from a blast event on the 6th January 2016. This blast was in compliance with license conditions. The blast complaint was related to vibration impacts from blasting in the western area near the natural surface of the mine.

Groundwater – Below average rain fell during November 2015 followed by above average rainfall for December 2015 and January 2016. However this wasn't sufficient to recharge aquifers during the period, with a significant cumulative rainfall deficit continuing. All groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced due to the dry conditions.

Surface Water – Quarterly surface water monitoring was undertaken on 16th November 2016 with all onsite and offsite sampling undertaken in dry conditions represented by low or dry pools, which reflected on water quality. Most water quality results were within longer term averages and the Site Water Management Plan trigger values, except for EC at SB9 above the longer term average for this site, and Total Oil and Grease at the Werris Creek and Quipolly Creek downstream sites above the EPL criteria value (which apply to the discharge point only), however these latter values are unlikely to represent impacts from Werris Creek Mine, as there have been no overflows from Sediment Basins since December 2013, and on site O&G concentrations remain low.

Surface Water Discharges – There were no discharge events during the period. There were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the dirty water discharge events.

Complaints – There was one complaint received during the period related to blasting from a Werris Creek resident.

Mike Lomax requested greater detail to be provided in the groundwater section to show pumping or other relevant items impacting on groundwater levels; in addition, where there is missing data, provide comments explaining why it is missing (eg MW7). Mark Hammond

suggested the inclusion of new piezometer data from some bores that can be used to show shorter term trends such as pumping drawdown and recovery.

Motion moved to accept the Environmental Monitoring Report for November, December 2015, and January 2016.

Moved: Donna Ausling. Seconded: Col Stewart. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Donna Ausling provided an update on the two projects underway. Werris Creek Single Street Playground – LPSC Engineering department reviewing the design to bring it into budget with a planned completion date of the end of April 2016. Further advice on progress to be provided next meeting. 2nd project is for the playground augmentation at Spring Ridge. Liaison with community has been positive. Coordinating development applications at the moment, with project expected to start soon. Good community engagement and buy-in to project to date.

Noel Taylor raised the issue that parts of the community are unhappy that money is being spent at Spring Ridge, as this should be the responsibility of BHP Billiton or Shenhua who have projects in that area, and the WCC money should be spent in the town of Werris Creek. Mark Hammond stated that the original objectives of the CEF were for the expenditure of $200,000 in Werris Creek, $50,000 in Quirindi, and the remaining $50,000 to be spent on other areas within the wider Liverpool Plains Shire. This portion of the funding represents the spending in the wider Shire, which was based on consultation with the CCC, the LPSC and the Spring Ridge progress association. Rod Hicks raised the issue of local sports teams that are struggling to get funding. It was also stated that the focus of the CEF should be on building community infrastructure that provides benefits to the whole community, rather than just one-off donations to individuals or small groups within the community.

b. Update on Recent Community/Media speculation on groundwater

Mark Hammond provided an overview of the progress of dealings with the Department of Primary Industries – Water (DPI-W) regarding perceived mining-related impacts on groundwater in the area. Key progress since the last CCC meeting is as follows:

- DPI-W commissioned an independent hydrogeologist (Noel Merrick) to peer review the memo from UNSW Water Research Laboratory titled “Groundwater Declines at Quipolly Creek – Overview”.
- Peer review commissioned by DPI-W concluded that there is “no case for the conclusion of the UNSW reviewer that *it is likely that coal mining operations at WCC’s Werris Creek Mine are contributing to the impacts currently being observed at landholder bores*”.
- DPI-W published a fact sheet in late December 2015 outlining the findings from their investigations. This fact sheet re-stated the independent hydrogeologists review that there is no evidence that the declines in groundwater levels in the Quipolly Creek alluvium are due to the mine, and point to climatic conditions as the likely cause for the drops.
- DPI-W brought together the independent hydrogeologist and the UNSW WRL hydrogeologist in January 2016 to form a consensus view of the cause of the groundwater level declines in the Quipolly alluvial aquifer. The memo from this meeting is currently in draft format, and has been provided to WCC and Quipolly landholders for review.

Noel Taylor contested the view that the mine has not contributed to groundwater level declines in the Quipolly aquifer, highlighting that several bores throughout the area are now dry. Noel also contested the data provided by WCC, that only about 100ML had been pumped from the pit. Mark Hammond clarified that the 100ML figure is the volume of groundwater intercepted by the pit. More water than this had been pumped from the pit, primarily due to rainfall runoff and

water recirculated for managing the spontaneous combustion of the underground workings. Mark highlighted that surface runoff in the mine is much higher than surface runoff in the vegetated land around the mine due to the hard compacted surfaces, with a significant increase in water in the pit following the rainfall events in December and January.

All committee members asked to update the CCC if they identify or come across something new that may be relevant to this issue of groundwater level decline.

c. Update on Project Approval Modification and water supply options

Mark Hammond provided an update on the current approval status of the pre-requisites for the supply of water for agricultural purposes:

- Modification to Project Approval which provides the framework for offsite water supply approved early November 2015.
- Following this approval, a revised Water Management Plan including Irrigation Management Plan was provided to the Department of Planning and Environment (DPE) for approval, and DPI-W and EPA for comment. Comments have been received from the DPE and DPI-W, and are currently being addressed by WCC. Approval of this plan forms a prerequisite to the offsite supply of void water for irrigation.
- WCC applied to the EPA for a modification to Environmental Protection License (EPL) conditions in December 2015. WCC are still waiting for approval of this EPL variation, which is also required prior to providing any void water to third parties.

As well as progressing water supply options for irrigation, Mark outlined a plan to utilize the public access on Wadwell's Lane to provide void water to interested parties via a truck fill point or similar. This option may allow third parties to use void water for stock watering or similar uses under an agreement with WCC.
Mark stated that the negotiations with the DPE and DPI-W are continuing at this stage, with WCC seeking to ensure that there is nil or minimal obligation on the part of WCC once this water has been accepted by the third party. It is WCC's intention to only progress with any water supply option where there is no WCC liability for the use or management of the water once it has been accepted by the third party, as it is beyond the direct control of WCC once it has been provided to the third party.

d. Werris Creek Coal Newsletter

Mark Hammond indicated that WCC plans to publish a new newsletter to provide an update on the mine in the near future, and requested the CCC representatives identify any areas that they recommend including in the newsletter. Ideas for content from CCC representatives included the proposed Werris Creek and Spring Ridge playground improvements, groundwater investigations, agricultural water supply options and progress, Life of Mine progress and general mining developments, and numbers of mine employees from Quirindi and Werris Creek.

e. Draft changes to the Guidelines for Establishing and Operating CCC;

Gae Swain tabled the draft Community Consultative Committee Guidelines, which are to replace the existing 2007 guidelines. CCC representatives were subsequently provided with a copy for their review. CCC representatives were requested to provide dot point feedback on this draft guideline to Mark Hammond by the 15th March, who will then collate responses and provide to the DPE for their review on behalf of the WCC CCC.
Mark also raised that Whitehaven Coal would be making a submission as part of this process, and Donna Ausling highlighted that the LPSC would also be making a submission.

f. Letter from Lindsay Bridge re. uses of coal dust

Lindsay Bridge tabled a letter he authored outlining potential uses for coal dust. CCC indicated interest in the projects, with a request to be informed of future progress.

g. Replacement CCC community representative

Following Geoff Dunn's resignation at the last CCC meeting, WCC has advertised the vacancy in the local media for a replacement community representative. One application was received which has been submitted to the DPE for their approval (or otherwise). WCC will provide a further update to the CCC once a response is received from the DPE.

Meeting Closed 11:30am.

Next Meeting scheduled for Thursday 26th May 2016.

Copy to:

Gae Swain	Independent Chairperson		
Noel Taylor	Community Representative		
Lindsay Bridge	Community Representative		
Mike Lomax	Community Representative		
Dave Goldman	Community Representative		
Donna Ausling	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Mark Hammond	Werris Creek Coal
Wayne Jones	DPE		
John Trotter	DRE		
Elliot Picone	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

November, December 2015 and January 2016

This Environmental Monitoring Report covers the period 1st November 2015 to 31st January 2016 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

APPENDICES

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 and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. November 2015 through January 2016 were characterized by warm to hot temperatures with winds predominantly south to southeast with lesser north to northwest winds. November 2015 had below average rainfall while December 2015 and January 2016 had slightly above average rainfall.

Month	Quipolly Temp (°C)			Werris Creek Temp (°C)			WCC Temp (°C) 10m			Lapse Rate (°C/100m)		Rainfall (mm)			
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Quip	WC	Annual*
November 2015	8.9	22.7	39.1	10.4	23.2	38.2	11.6	23.0	37.2	-1.5	+5.0	30.8	34.8	33.8	306.4
December 2015	7.2	23.3	35.4	10.3	23.6	34.8	12.3	23.3	33.6	-2.0	+3.4	139.0	89.0	103.4	445.4
January 2016	9.2	23.3	38.2	12.0	23.7	36.8	12.1	23.5	36.8	-1.5	+3.9	103.6	101.0	97.4	549.0

* Annual cumulative total since April 2015 from the onsite Weather Station at WCC.

November 2015 **December 2015** **January 2016**

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10 & PM2.5)

WCC operates five High Volume Air Sampler (HVAS) measuring particulate matter less than 10 micron (PM10) and total suspended particulate (TSP) matter at four sites. HVAS sampling is scheduled for 24 hours every 6 days in accordance with Environment Protection Authority (EPA) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled. In addition, WCC operates a Tapered Element Oscillating Microbalance (TEOM) monitor in Werris Creek measuring real time PM10 and PM2.5 (particulate matter less than 2.5 micron) dust levels. Dust monitoring locations are identified in **Figure 1**.

PM2.5 – TEOM92 “Werris Creek”
PM10 – TEOM92 “Werris Creek”
PM10 – HVP20 “Tonsley Park”
PM10 – HVP1 “Escott”
PM10 – HVP20 “Glenara”
PM10 – HVP98 “Kyooma”
TSP – HVT98 “Kyooma”

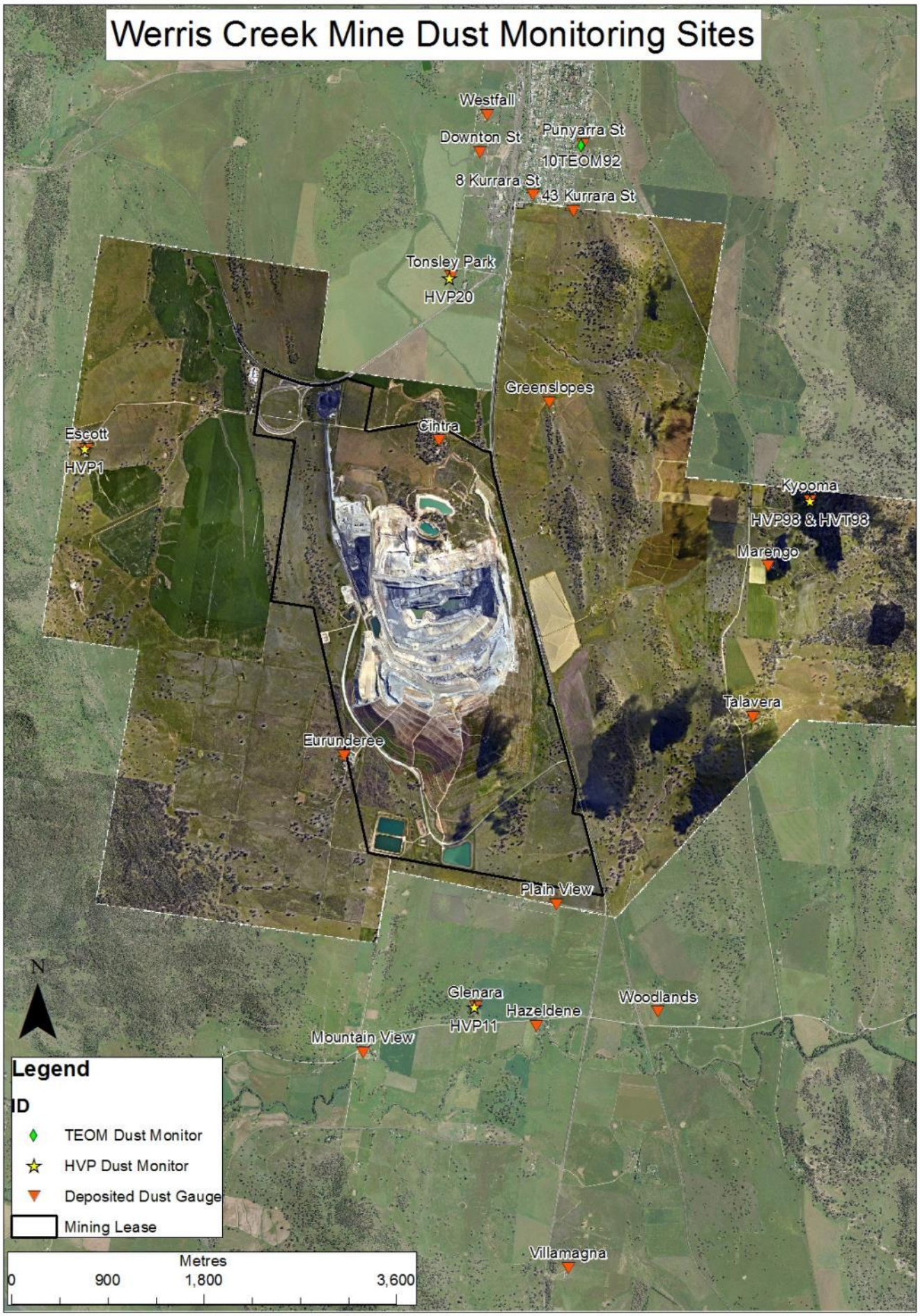

Figure 1 – WCC Dust Monitoring Locations

2.1.1 Monitoring Data Results

The average results for the last three months are provided in the table below; however see HVAS/TEOM monitoring data under **Appendix 1** for individual results.

Monitor Location	Daily Maximum (µg/m^3)	November 2015 (µg/m^3)	December 2015 (µg/m^3)	January 2016 (µg/m^3)	2015-2016 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	12.8	4.8	3.4	3.4	3.2	8	25
PM10 – TEOM92 "Werris Creek"	43.7	12.1	8.3	8.7	7.3	30	50
PM10 – HVP20 "Tonsley Park"	38.7	12.1	25.6	13.2	13.0	30	50
PM10 - HVP1 "Escott"	31.8	10.6	22.3	8.5	10.0	30	50
PM10 – HVP20 "Glenara"	35.8	14.9	24.2	15.7	16.4	30	50
PM10 – HVP98 "Kyooma"	17.5	8.9	12.6	7.0	7.8	30	50
TSP – HVT98 "Kyooma"	33.0	17.9	23.9	13.3	16.1	90	-

Yellow Bold – Elevated dust level.

2.1.2 Discussion - Compliance / Non Compliance

All TSP, PM10 and PM2.5 dust results were within criteria during the period.

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 three months are provided in the table below; however **Appendix 2** has more information on Deposited Dust Monitoring Results.

Monitor Location	November 2015 (g/m^2/month)	December 2015 (g/m^2/month)	January 2016 (g/m^2/month)	2015-2016 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.8*	1.0	0.2*	0.5	4.0
DG2 "Cintra"	2.5*	0.9	1.5*	2.1	4.0
DG3 "Eurunderee"	0.3*	1.7	0.3*	1.0	4.0
DG5 "Railway View"	1.3*	2.0	**51.1**	**6.4**	4.0
DG9 "Marengo"	0.6	1.3	0.5*	0.8	4.0
DG11 "Glenara"	1.4*	1.3	1.4	0.9	4.0
DG14 "Greenslopes"	0.3*	0.9	<0.1	0.6	4.0
DG15 "Plain View"	0.6*	1.3	2.1*	1.3	4.0
DG17 "Woodlands"	**7.1***	2.6	1.4*	3.2	4.0
DG20 "Tonsley Park"	2.1*	2.0*	1.2*	**6.0**	4.0
DG22 "Mountain View"	2.0	1.6	0.2*	1.5	4.0
DG24 "Hazeldene"	3.6*	2.5	0.5*	2.2	4.0
DG34 8 Kurrara St	0.4	**9.5**	**4.4**	**5.1**	4.0
DG62 Werris Creek South	0.4*	1.1	0.2*	1.2	4.0
DG92 Werris Creek Centre	0.1	0.6	<0.1	0.6	4.0
DG96 "Talavera"	0.4*	1.5	0.2*	0.6	4.0
DG98 "Kyooma"	<0.1	0.8	<0.1	0.3	4.0
DG101 "Westfall"	0.5*	1.8	2.4*	1.2	4.0
DG103 West Street	0.5*	1.0	0.4*	0.6	4.0

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e. bird droppings and insects); c - indicates sample is contaminated from a Non-Werris Creek Coal dust source; **Yellow Bold** – Elevated dust level.

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results were below the annual criteria of 4.0g/m^2/month except for DG5 ("Railway View"), DG20 ("Tonsley Park") and DG34 (8 Kurrara St). DG5 was affected by one anomalous spike in deposited dust in January, which has skewed the results at this depositional dust gauge. Annual averages for both DG20 and DG34 have continued to decline during the quarter, however DG34 continues to regularly record depositional dust levels above the annual criteria, which appears to be unrelated to Werris Creek Mine, as other depositional gauges between Werris Creek Mine and DG34 do now show a similar exceedance.

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; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	November 2015		December 2015		January 2016		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	0.7	10%	4.0	5%	2.3	10%	1.9
DDW20	0.8	10%	1.2	10%	1.0	30%	0.9
DDW13	0.7	10%	1.6	25%	1.0	30%	1.0
Train Line							
DDE13	2.0	<1%	2.3	10%	2.5	<1%	1.9
DDE20	0.4	10%	1.3	5%	1.6	<1%	0.9
DDE30	1.1	10%	2.7	10%	4.7	<1%	1.4

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 for all samples except one furthest from the railway line on the eastern side in January 2016) and comparable to the levels monitored around WCC.

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.

- A - "Rosehill" R5;
- B - "Almawille" (private agreement) R8;
- B - 83 Wadwells Lane (private agreement) R7;
- B - "Mountain View" (private agreement) R22;
- B - "Gedhurst" (private agreement) R9;
- C - "Meadholme" (private agreement) R10;
- C - "Glenara" (private agreement) R11;
- D - "Hazeldene" R24;
- E - "Railway Cottage" R12;
- F - "Talavera" R96;
- G - R97;
- H - "Kyooma" (private agreement) R98;
- I - Kurrara St, Werris Creek;
- J - Coronation Ave, Werris Creek;
- K - "Alco Park" (private agreement) R21; and
- L - R103.

3.1.1 Monitoring Data Results

The WCC operations only noise level (not ambient noise) results for the last three months are outlined below; however see Monthly Noise Monitoring Reports under **Appendix 4** for more detail. Noise monitoring locations are identified in **Figure 2**.

Monday 30th November 2015

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	24#	38	23#	37
G	R97	25#	40	26#	40
H	**"Kyooma"** R98*	Inaudible	35	31	35
I	**Kurrara St, WC**	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible#	40	Inaudible#	40
K	**South St, WC** (R20*, R21*)	Inaudible#	35	30#	35
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) $L_{eq\ 15min}$

Wednesday 30th December 2015

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**	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible#	35
K	**South St, WC** (R20*, R21*)	27#	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) $L_{eq\ 15min}$

Tuesday 19th January 2016

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	21	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*	20	40	24	40
I	**Kurrara St, WC**	Inaudible	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible#	35
K	**South St, WC** (R20*, 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) $L_{eq\ 15min}$

Figure 2 – WCC Noise Monitoring Locations

3.1.2 Discussion - Compliance / Non Compliance

Noise from Werris Creek Mine was inaudible at most of the monitoring sites during the quarter. This is largely the result of mining operations progressing deeper within the pit during the quarter (especially December and January), and due to milder night time inversion conditions during the summer months, with no strong temperature inversions present during the quarter.

3.2 NOISE COMPLAINTS

There were no noise complaints during November, December 2015 and January 2016.

4.0 BLAST

During the period a total of thirty one blasts were 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 three months are provided below; however see the blasting results database under **Appendix 5** for more detail.

November 2015	"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	0.18	101.1	0.69	102.8	0.34	102.9	0.27	100.1
Monthly Maximum	0.50	107.8	1.26	109.5	0.60	110.3	0.51	108.9
Annual Average	0.15	99.3	0.78	100.8	0.40	100.2	0.25	99.0
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s	9 out of 10 blast events							

December 2015		"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		0.13	98.6	0.68	99.6	0.34	99.2	0.18	96.6
Monthly Maximum		0.32	112.9	1.90	107.7	1.01	112.7	0.54	108.1
Annual Average		0.15	99.4	0.76	100.9	0.38	100.4	0.25	98.9
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s		5 out of 10 blast events							

January 2016		"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		0.12	101.3	0.48	102.3	0.25	100.7	0.16	99.3
Monthly Maximum		0.31	107.3	1.12	113.3	0.46	110.6	0.38	111.3
Annual Average		0.15	99.6	0.73	101.1	0.37	100.5	0.24	99.0
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s		4 out of 11 blast events							

Yellow – overpressure >115dB(L) or Werris Creek vibration >0.8mm/s.

4.1.2 Discussion - Compliance / Non Compliance

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

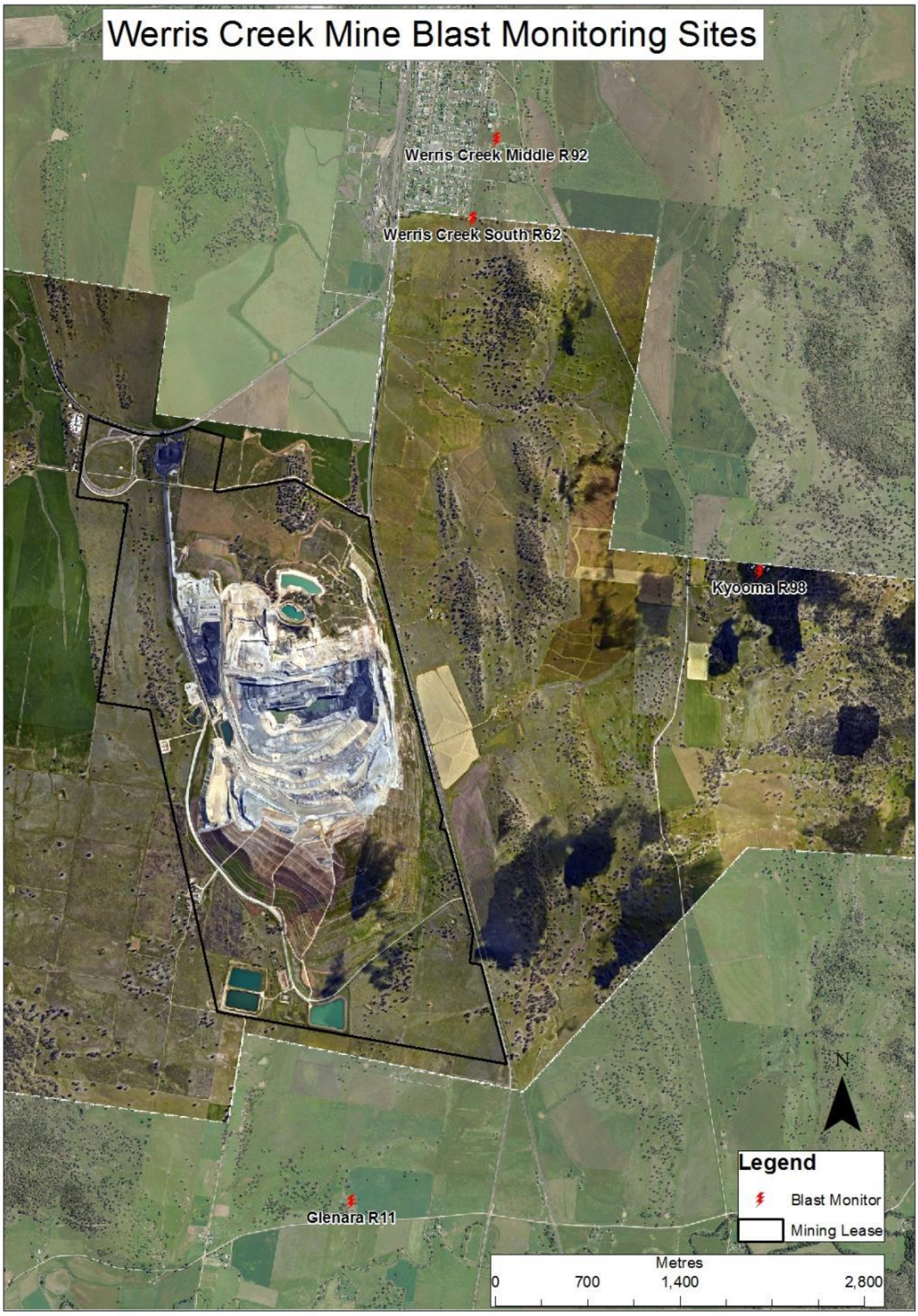

Figure 3 – WCC Blast Monitoring Locations

4.2 BLAST COMPLAINTS

There was one blast complaint during the period from a blast event on the 6th January. This blast was in compliance with license conditions. The blast complaint was related to vibration impacts from blasting in the western area near the natural surface of the mine. Specific actions taken in relation to this complaint is outlined in **Section 6.**

5.0 WATER

The groundwater monitoring program monitors groundwater levels bi-monthly and groundwater quality six monthly. Surface water monitoring is undertaken quarterly. There were no dirty water discharge events during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to identify if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 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. Bi-monthly groundwater level survey was completed between the 24th and 26th November 2015 and the 18th and 20th January 2016. Groundwater monitoring locations are identified in **Figure 4**.

5.1.1 Monitoring Data Results

A summary of groundwater monitoring results is provided below with the field sheets provided in **Appendix 6**.

Site		Nov 2015		Jan 2016	
		mbgl	%	mbgl	%
Werrie Basalt Near WCC	MW1	Dry	-	Dry	-
	MW2	35.92	-3%	37.02	-3%
	MW3	19.04	-1%	19.23	-1%
	MW4B	16.39	-3%	16.63	-1%
	MW5	12.21	-2%	12.39	-1%
	MW6	15.18	-2%	15.38	-1%
	MW27*	53.33	+5%	54.90	-3%
	MW36A	24.43	-4%	24.45	0%
	MW36B	24.20	-3%	24.22	0%
Werrie Basalt	MW8*	19.37	-2%	19.56	-1%
	MW10	16.96	+0%	16.98	0%
	MW14	19.98	-6%	20.23	-1%
	MW17B*	13.73	+3%	13.90	-1%
	MW19A*	9.18	-2%	9.36	-2%
	MW20*	21.46	-0%	21.57	-1%
	MW38A	15.03	-3%	14.92	+1%
	MW38B*	10.11	-1%	10.20	-1%
	MW38C*	22.75	-5%	23.50	-3%
	MW38E*	10.38	-1%	10.57	-2%
#[1]	MW24A*	15.33	0%	15.61	-2%
	MW29*	18.57	+40%	15.19	+22%
Quipolly Alluvium	MW7*				
	MW12*	13.51	-2%	13.70	-1%
	MW13*	7.23	-2%	7.41	-2%
	MW13B*	5.57	-3%	5.70	-2%
	MW13D*	5.39	-3%	5.57	-3%
	MW15*	6.47	+1%	6.89	-6%
	MW16*	8.7	-11%	Dry	-
	MW17A*	6.99	-2%	7.31	-4%
	MW18A*	6.86	-2%	Dry	-
	MW21A*	10.94	-2%	11.13	-2%
	MW22A*	8.19	+9%	Dry	-
	MW22B*	Dry	-	Dry	-
	MW23A*	4.28	-3%	4.38	-2%

	MW23B*	5.19	-19%	4.38	+18%
	MW26B*~	9.52		9.63	-1%
	MW28A*	15.37	-3%	15.65	-2%
	MW32*	4.19	-1%	4.22	-1%
#[2]	**MW34***	11.38	-4%	11.52	-1%

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. ~ - Requested by landholder to resume bore sampling in December 2015.

Figure 4 – WCC Groundwater Monitoring Locations

5.1.2 Discussion - Compliance / Non Compliance

Below average rainfall during November was followed by above average rainfall in December and January, however this wasn't sufficient to restore the significant rainfall deficit experienced over the past three years. This saw the groundwater levels in the majority of monitoring bores continuing to decline over the period. All groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced due to the continuing significant rainfall deficit. There was ongoing community and media attention on this issue during the quarter.

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 16th November 2015. Surface water monitoring locations are identified in **Figure 5**.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with the laboratory reports provided in **Appendix 7**.

Site	pH	EC	TSS	O&G	Change from Previous Quarter
ONSITE					
SB2	Dry	Dry	Dry	Dry	Dry.
SB9	8.20	894	<5	<5	pH and EC increased from 7.77 and 654 respectively. TSS and O&G unchanged.
SB10	Dry	Dry	Dry	Dry	Dry.
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry.
QCD	7.90	1070	<5	23	pH decreased from 8.26. EC and O&G increased from 1030 and <5 respectively.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.00	1330	34	14	pH and EC decreased from 8.41 and 1360 respectively. TSS and O&G increased from 23 and 5 respectively.

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; Orange – Issue with water quality; Green – water quality OK.

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 16th November 2015 with all onsite and offsite sampling undertaken in dry conditions represented by low or dry pools, which reflected on water quality. Most water quality results were within longer term averages and the Site Water Management Plan trigger values, except for EC at SB9 above the longer term average for this site, and Total Oil and Grease at the Werris Creek and Quipolly Creek downstream sites above the EPL criteria value (which apply to the discharge point only), however these latter values are unlikely to represent impacts from Werris Creek Mine, as there have been no overflows from Sediment Basins since December 2013, and on site O&G concentrations remain low.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no discharge events during the period.

Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
						No Discharges		
Criteria		**8.5**	**N/A**	**50**	**10**			

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; **Yellow** – indicates results outside criteria due to 5 day rain >39.2mm.

5.3.2 Discussion - Compliance / Non Compliance

There were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as there were a no dirty water discharge events in the quarter.

5.3 WATER COMPLAINTS

There were no surface water or groundwater complaints during November, December 2015 and January 2016.

Figure 5 – WCC Surface Water Monitoring Locations

6.0 COMPLAINTS SUMMARY

There was one complaint received during the period, which is summarised below. This complaint related to vibration impacts from blasting received in Werris Creek.

#	Date	Complainant	Complaint	Investigation	Action Taken
500	6/01/2016 1:08pm	BI Werris Creek	The complainant advised that they felt a slight shake then a larger shake a few seconds later and wished to complain.	Blast #002-2016 S21_B17_RL350_PS was fired at 1:08pm on Wednesday 6th January 2016 was a pre-split shot on the western side of pit 30 metres below natural surface that was in compliance. Actual blast vibration was above the predicted vibration of 0.3mm/s but below the anecdotal complaint threshold of 0.5mm/s. Weather conditions were a strong south southeasterly wind (136°) @ 8.0m/s with no inversion present.	Follow up phone call and email response provided to complainant. WCC committed to additional targeted blast monitoring.

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.

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2014-2015

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	Monthly Summary	Rolling Annual Average	HVP98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	HVP1 Escott	Monthly Summary	Rolling Annual Average	HVP11 Glenara	EPL#29 Monthly Summary	Rolling Annual Average	HVT98 Kyooma	Monthly Summary	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
05-Apr-15		0.1			0.8		3	3.1	3.1	2	1.5	1.5	1	1.2	1.2	2	1.8	1.8	5	5.0	5.0	50	30	90
11-Apr-15		3.1	3.1		5.5	5.5	6	12.8	4.3	3.6	7.3	2.6	3.3	7.6	2.3	16	15.6	8.9	8	13.7	6.5	50	30	90
17-Apr-15		2.5			4.8		34	7.1	14.1	21	3.4	8.7	21	4.3	8.4	35	13.0	17.4	34	8.0	15.6	50	30	90
23-Apr-15		7.8			11.9		9	33.8	12.8	3	21.0	7.3	5	20.8	7.6	10	34.5	15.6	8	33.8	13.7	50	30	90
29-Apr-15							8		11.7	3		6.5	5		7.1	14		15.2	5		12.0	50	30	90
05-May-15		0.0			0.0		13	3.6	11.9	8	2.5	6.8	9	3.3	7.3	19	5.0	15.8	17.2	4.7	12.9	50	30	90
11-May-15		2.9	3.0		4.5	5.0	11	8.5	11.8	12	6.8	7.5	9	6.6	7.5	12	12.6	15.3	30	15.7	15.3	50	30	90
17-May-15		2.9			4.1		6	8.6	11.1	4	6.2	7.1	5	7.0	7.3	14	13.2	15.2	11.3	14.3	14.8	50	30	90
23-May-15		6.9			15.0		4	13.1	10.3	3	12.1	6.6	3	9.0	6.8	5	19.0	14.0	5	29.7	13.7	50	30	90
29-May-15							7		10.0	6		6.5	11		7.2	6		13.3	12		13.5	50	30	90
04-Jun-15		0.0			0.0		14	2.8	10.4	7	1.2	6.5	11	2.7	7.5	11	1.8	13.0	11	3.6	13.3	50	30	90
10-Jun-15		1.9	2.6		4.0	4.7	11	9.0	10.4	6	4.3	6.4	10	7.6	7.8	10	6.5	12.7	8	7.9	12.8	50	30	90
16-Jun-15		1.4			3.9		3	9.6	9.8	2	5.5	6.1	3	10.4	7.4	2	6.4	11.9	5	8.2	12.2	50	30	90
22-Jun-15		5.9			10.6		10	14.4	9.8	1	6.6	5.8	4	10.9	7.1	4	10.6	11.3	4	12.4	11.6	50	30	90
28-Jun-15							8		9.7	4		5.7	6		7.0	14		11.5	6		11.2	50	30	90
04-Jul-15		0.0			0.5		13	0.7	9.9	6	1.3	5.7	7	0.4	7.1	13	2.1	11.6	10	3.3	11.2	50	30	90
10-Jul-15		2.6	2.6		5.5	4.9	5	7.3	9.6	2	3.1	5.5	4	4.2	6.9	13	10.1	11.7	6	6.2	10.9	50	30	90
16-Jul-15		2.6			5.8		1	7.6	9.1	1	2.3	5.2	0	4.1	6.5	2	12.8	11.2	3	6.2	10.5	50	30	90
22-Jul-15		7.3			10.8		10	13.4	9.2	2	5.8	5.1	3	7.4	6.4	8	14.1	11.0	5	9.8	10.2	50	30	90
28-Jul-15							17		9.6	NS		5.1	6		6.3	12		11.1	NS		10.2	50	30	90
03-Aug-15		0.0			0.0		9	9.0	9.5	NS	8.6	5.1	8	5.8	6.4	10	9.9	11.0	NS	21.2	10.2	50	30	90
09-Aug-15		3.8	2.9		7.7	5.5	16	16.6	9.8	NS	14.2	5.1	11	11.0	6.6	21	19.8	11.5	NS	27.8	10.2	50	30	90
15-Aug-15		3.4			7.8		15	15.7	10.1	9	14.2	5.2	9	8.8	6.7	18	18.2	11.8	21	27.8	10.7	50	30	90
21-Aug-15		11.4			17.8		26	25.5	10.7	20	19.8	5.9	22	21.7	7.3	38	37.6	12.9	34	34.4	11.9	50	30	90
27-Aug-15							6		10.5	4		5.9	5		7.2	7		12.6	8		11.7	50	30	90
02-Sep-15		0.0			0.0		11	5.7	10.5	9	1.1	6.0	9	1.6	7.3	16	6.6	12.7	20	7.8	12.0	50	30	90
08-Sep-15		1.6	2.6		5.9	5.4	11	11.2	10.6	10	7.7	6.2	10	8.3	7.4	12	15.9	12.7	32	20.2	12.9	50	30	90
14-Sep-15		1.4			5.9		18	11.3	10.8	14	9.1	6.5	16	8.8	7.7	25	16.0	13.1	33	19.6	13.7	50	30	90
20-Sep-15		4.3			10.8		10	17.9	10.8	1	13.6	6.3	2	16.4	7.5	20	24.8	13.4	8	32.7	13.5	50	30	90
26-Sep-15							5		10.6	5		6.2	5		7.4	15		13.4	8		13.3	50	30	90
02-Oct-15		0.0			0.0		29	5.4	11.2	17	5.0	6.6	20	4.9	7.8	37	15.0	14.2	36	8.0	14.1	50	30	90
08-Oct-15		5.0			11.4		11	15.6	11.2	8	10.5	6.7	13	13.5	8.0	21	28.6	14.4	23	23.4	14.4	50	30	90
14-Oct-15		5.4	2.9		11.3	6.3	12	12.2	11.2	9	9.2	6.8	14	14.0	8.1	47	23.1	15.4	23	23.0	14.7	50	30	90
20-Oct-15		16.2			29.2		20	29.2	11.5	13	17.2	7.0	16	20.0	8.4	23	47.2	15.6	28	35.7	15.1	50	30	90
26-Oct-15							14		11.6	8		7.0	8		8.4	12		15.5	15		15.0	50	30	90
01-Nov-15		0.5			2.7		13	9.4	11.6	10	6.8	7.1	9	6.3	8.4	13	12.0	15.5	18	13.8	15.1	50	30	90
07-Nov-15		4.8	3.1		12.1	7.0	9	12.1	11.5	7	8.9	7.1	6	10.6	8.3	12	14.9	15.4	14	17.9	15.1	50	30	90
13-Nov-15		4.5			10.1			13.2	11.5	7	8.0	7.1	11	8.9	8.4	13	12.8	15.3	15	14.5	15.1	50	30	90
19-Nov-15		12.8			36.9			13.6	11.5	14	13.5	7.2	19	19.3	8.7	24	24.4	15.5	29	28.6	15.5	50	30	90
25-Nov-15									11.5	18		7.5	32		9.2	33		16.0	33		15.9	50	30	90
01-Dec-15		0.0			0.0		39	15.0	12.3	17	7.7	7.8	32	15.3	9.8	36	13.8	16.4	31	15.5	16.3	50	30	90
07-Dec-15		3.4	3.1		8.3	7.1	19	25.6	12.4	10	12.6	7.8	15	22.3	9.9	21	24.2	16.6	20	23.9	16.4	50	30	90
13-Dec-15		3.7			8.9		15	24.3	12.5	8	11.0	7.8	18	17.6	10.1	14	21.1	16.5	16	20.8	16.4	50	30	90
19-Dec-15		7.2			23.4		30	38.7	12.9	11	17.5	7.9	15	31.8	10.2	18	35.8	16.5	21	33.0	16.5	50	30	90
25-Dec-15							5		12.7	6		7.8	7		10.1	10		16.4	14		16.4	50	30	90
31-Dec-15		0.0			0.0		18		12.9	6		7.8	8		10.1	19		16.4	9		16.3	50	30	90
06-Jan-16		3.4	3.2		8.7	7.3	10	5.4	12.8	2	1.8	7.7	3	3.2	10.0	7	7.4	16.2	5	5.0	16.0	50	30	90
12-Jan-16		3.4			7.6		23	13.2	13.0	15	7.0	7.8	15	8.5	10.1	22	15.7	16.4	28	13.3	16.3	50	30	90
18-Jan-16		9.1			43.7		12	11.4	13.0	4	6.1	7.7	8	8.1	10.0	23	15.8	16.5	9	11.6	16.1	50	30	90
24-Jan-16							11	23.2	13.0	9	15.0	7.8	9	15.0	10.0	13	22.7	16.4	15	28.2	16.1	50	30	90
24-Jan-16									13.0			7.8			10.0			16.4			16.1	50	30	90
30-Jan-16								0.0	13.0		0.0	7.8		0.0	10.0		0.0	16.4		0.0	16.1	50	30	90
05-Feb-16			3.2			7.3		#DIV/0!	13.0		#DIV/0!	7.8		#DIV/0!	10.0		#DIV/0!	16.4		#DIV/0!	16.1	50	30	90
11-Feb-16								#NUM!	13.0		#NUM!	7.8		#NUM!	10.0		#NUM!	16.4		#NUM!	16.1	50	30	90
17-Feb-16								0.0	13.0		0.0	7.8		0.0	10.0		0.0	16.4		0.0	16.1	50	30	90
23-Feb-16									13.0			7.8			10.0			16.4			16.1	50	30	90
29-Feb-16									13.0			7.8			10.0			16.4			16.1	50	30	90
06-Mar-16								0.0	13.0		0.0	7.8		0.0	10.0		0.0	16.4		0.0	16.1	50	30	90
12-Mar-16			3.2			7.3		#DIV/0!	13.0		#DIV/0!	7.8		#DIV/0!	10.0		#DIV/0!	16.4		#DIV/0!	16.1	50	30	90
18-Mar-16								#NUM!	13.0		#NUM!	7.8		#NUM!	10.0		#NUM!	16.4		#NUM!	16.1	50	30	90
24-Mar-16								0.0	13.0		0.0	7.8		0.0	10.0		0.0	16.4		0.0	16.1	50	30	90
Min					**0.0**		**0.7**			**1.1**			**0.4**			**1.8**			**3.3**					
Median					**6.8**		**11.3**			**6.8**			**8.7**			**13.8**			**13.8**					
Max					**43.7**		**38.7**			**21.0**			**31.8**			**47.2**			**35.7**					
Capture							**77%**			**77%**			**82%**			**82%**			**77%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2015-2016

MONTH (g/m2/month)				April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	October 2015	November 2015	December 2015	January 2016	February 2016	March 2016	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG1	Escott	Total Matter	0.3	0.2	0.1	0.1	0.2	1.9	0.3	0.8	1.0	0.2			0.5	0.7	0.1	1.9	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1	0.1	1.0	<0.1	<0.1	0.6	<0.1							
-	DG2	Cintra	Total Matter	1.2	2.7	1.5	1.6	2.1	3.3	3.4	2.5	0.9	1.5			2.1	1.7	0.9	3.4	4.0
			Ash Content	0.3	1.4	0.5	0.8	1.0	1.6	1.5	1.0	0.5	0.5							
-	DG3	Eurunderee	Total Matter	1.2	2.4	0.5	0.7	1.1	0.7	1.2	0.3	1.7	0.3			1.0	1.3	0.3	2.4	4.0
			Ash Content	0.8	0.7	0.2	0.2	0.7	0.3	0.6	<0.1	1.1	0.1							
-	DG5	Railway View	Total Matter	1.9	1.8	0.4	1.3	1.0	0.8	2.5	1.3	2.0	51.1			6.4	9.6	0.4	51.1	4.0
			Ash Content	1.1	0.7	0.2	0.7	0.6	0.3	1.1	0.6	1.2	32.5							
-	DG9	Marengo	Total Matter	1.6	0.8	0.1	0.4	1.2	0.4	0.7	0.6	1.3	0.5			0.8	0.9	0.1	1.6	4.0
			Ash Content	1.1	0.4	0.1	0.2	0.7	0.1	0.3	0.3	0.8	0.1							
EPL#29	DG11	Glenara	Total Matter	0.8	0.5	0.6	0.3	0.6	1.0	0.8	1.4	1.3	1.4			0.9	0.9	0.3	1.4	4.0
			Ash Content	0.4	0.2	0.4	<0.1	0.3	0.4	0.5	0.6	0.9	0.8							
-	DG14	Greenslopes	Total Matter	1.3	0.5	0.1	0.3	0.2	0.5	2.0	0.3	0.9	<0.1			0.6	0.8	<0.1	2.0	4.0
			Ash Content	0.8	0.2	<0.1	0.1	0.1	0.1	1.1	<0.1	0.5	<0.1							
-	DG15	Plain View	Total Matter	1.0	0.6	0.4	4.0	0.5	1.5	1.2	0.6	1.3	2.1			1.3	1.4	0.4	4.0	4.0
			Ash Content	0.5	0.3	0.1	2.0	0.3	0.7	0.6	<0.1	0.7	0.8							
-	DG17	Woodlands	Total Matter	2.6	4.8	8.3	1.0	0.8	1.6	1.3	7.1	2.6	1.4			3.2	1.6	0.8	8.3	4.0
			Ash Content	1.2	1.2	0.6	0.4	0.5	0.8	0.8	3.1	1.5	0.6							
-	DG20	Tonsley Park	Total Matter	4.4	11.9	3.1	27.6	4.2	1.4	2.0	2.1	2.0	1.2			6.0	2.7	1.2	27.6	4.0
			Ash Content	1.8	5.7	2.4	24.0	3.4	0.7	1.0	0.9	0.9	0.5							
-	DG22	Mountain View	Total Matter	4.3	2.2	1.2	0.3	0.6	2.2	0.6	2.0	1.6	0.2			1.5	1.5	0.2	4.3	4.0
			Ash Content	1.2	1.8	0.9	0.1	0.5	0.9	0.1	1.0	1.2	<0.1							
-	DG24	Hazeldene	Total Matter	5.1	4.5	0.6	0.5	1.3	0.4	2.6	3.6	2.5	0.5			2.2	1.4	0.4	5.1	4.0
			Ash Content	3.8	3.1	0.1	0.3	0.7	<0.1	0.8	1.6	1.4	0.2							
-	DG34	8 Kurrara Street	Total Matter	0.7	29.5	0.5	0.3	1.4	0.2	4.3	0.4	9.5	4.4			5.1	3.6	0.2	29.5	4.0
			Ash Content	0.3	20.7	0.2	0.1	1.0	<0.1	2.6	0.2	6.4	3.1							
-	DG62	Werris Creek South	Total Matter	7.7	0.8	0.1	0.5	0.3	0.3	0.8	0.4	1.1	0.2			1.2	0.7	0.1	7.7	4.0
			Ash Content	0.8	0.3	<0.1	0.2	0.1	<0.1	0.4	<0.1	0.7	<0.1							
EPL#30	DG92	Werris Creek Centre	Total Matter	1.0	0.4	0.1	2.7	0.3	0.6	0.5	0.1	0.6	<0.1			0.6	0.4	<0.1	2.7	4.0
			Ash Content	0.5	0.2	<0.1	0.7	0.1	0.1	0.1	<0.1	0.4	<0.1							
-	DG96	Talavera	Total Matter	0.2	0.5	NS	0.8	0.1	0.6	0.8	0.4	1.5	0.2			0.6	0.8	0.1	1.5	4.0
			Ash Content	<0.1	0.2	NS	0.2	<0.1	0.2	0.4	0.1	0.8	<0.1							
EPL#28	DG98	Kyooma	Total Matter	0.8	0.2	0.1	0.1	0.1	0.3	0.2	<0.1	0.8	<0.1			0.3	0.3	<0.1	0.8	4.0
			Ash Content	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1							
-	DG101	Westfall	Total Matter	2.5	0.9	1.0	0.5	0.7	0.4	1.3	0.5	1.8	2.4			1.2	1.6	0.4	2.5	4.0
			Ash Content	1.1	0.4	0.4	0.2	0.3	0.1	0.7	0.2	1.0	0.9							
-	DG103	West Street	Total Matter	0.9	0.9	0.3	0.1	0.7	0.2	0.7	0.5	1.0	0.4			0.6	0.9	0.1	1.0	4.0
			Ash Content	0.6	0.4	0.1	<0.1	0.5	<0.1	0.3	0.2	0.7	0.1							

Note: All results are in the form of Insoluble Matter (g/m2/month); NS - Not sampled

BROWN - indicates sample is contaminated from a Non-Werris Creek Coal dust source

YELLOW - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e bird droppings and insects)

RED - result above 4g/m2/month

NS - No sample

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2015-2016

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2015	1.0	10%	10%	80%	1.1	10%	10%	80%	0.8	5%	20%	75%	1.2	20%	40%	40%	1.1	10%	10%	80%	1.1	5%	30%	65%	4.0
May 2015	1.2	10%	5%	85%	1.0	10%	20%	70%	1.0	10%	20%	70%	3.9	10%	30%	40%	0.8	5%	20%	75%	1.2	5%	10%	85%	4.0
June 2015	4.8	10%	20%	70%	0.6	0%	10%	90%	0.5	5%	5%	90%	1.9	10%	20%	70%	0.9	15%	15%	70%	0.6	5%	10%	85%	4.0
July 2015	1.2	20%	30%	20%	0.6	40%	30%	10%	1.1	20%	20%	30%	2.4	40%	50%	10%	0.8	50%	40%	10%	0.4	10%	30%	20%	4.0
August 2015	1.8	10%	20%	70%	0.7	40%	10%	30%	1.8	40%	30%	20%	1.1	35%	35%	20%	0.7	35%	20%	15%	0.3	30%	30%	40%	4.0
September 2015	1.1	5%	25%	65%	0.6	20%	15%	65%	0.7	30%	15%	55%	0.4	10%	15%	75%	0.8	20%	10%	70%	0.6	5%	15%	75%	4.0
October 2015	1.1	5%	10%	85%	1.1	10%	10%	80%	1.1	15%	10%	75%	1.7	5%	10%	80%	0.6	5%	10%	85%	1.3	10%	10%	80%	4.0
November 2015	0.7	10%	30%	50%	0.8	10%	20%	60%	0.7	10%	15%	70%	2.0	0%	35%	10%	0.4	10%	25%	45%	1.1	10%	30%	50%	4.0
December 2015	4.0	5%	50%	25%	1.2	10%	45%	30%	1.6	25%	30%	45%	2.3	10%	35%	20%	1.3	5%	20%	65%	2.7	10%	35%	20%	4.0
January 2016	2.3	10%	20%	70%	1.0	30%	20%	50%	1.0	30%	15%	55%	2.5	0%	35%	60%	1.6	0%	20%	80%	4.7	0%	80%	10%	4.0
February 2016																									4.0
March 2016																									4.0
ANNUAL AVERAGE	**1.9**				**0.9**				**1.0**				**1.9**				**0.9**				**1.4**				**4.0**
Average Coal %	**9.5%**				**18.0%**				**19.0%**				**14.0%**				**15.5%**				**9.0%**				**-**
Average Coal g/m2	**0.18**				**0.16**				**0.20**				**0.27**				**0.14**				**0.13**				**-**
MINIMUM	**0.7**				**0.6**				**0.5**				**0.4**				**0.4**				**0.3**				**-**
MAXIMUM	**4.8**				**1.2**				**1.8**				**3.9**				**1.6**				**4.7**				**4.0**

Note: All results are in the form of Insoluble Matter (g/m2/month)

Appendix 4 – Noise Monitoring Results

14 December 2015

Ref: 04035/6202

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: NOVEMBER 2015 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Monday 30th of November, 2015 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Monday 30th November 2015 had the 5600 excavator in Strip 16 (middle) at RL305m and one 1900 excavator in Strip 16 west at RL305m until end of shift at 2:40am. The second 1900 excavator was not running due to manning issues. The 3600 excavator was in Strip 20 west at RL365m until end of shift at 2:40am. The trucks on the 5600 and 1900 excavators were all running to the low in-pit dump (RL261m), while the 3600 trucks were utilising the high in-pit dump (RL405m). One drill was operating in Strip 16 east and the other in Strip 23 west until end of shift at 2:40am. No production time was lost on Monday night due to noise impacts. The Coal Processing and Train Load Out facility operated to end of shift at 9:12pm with one train loaded during the evening from 6:28pm until 9:30pm.

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**.

Table 2
WCC Noise Monitoring Results – 30 November 2015 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s),dir^{O}	Identified Noise Sources
A R5 Rosehill	1:22 pm	38	35	n/a	4.8,284	Wind (35), birds (33), traffic (29), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:41 pm	51	40*	n/a	2.9,279	Birds (50), wind (42), traffic (26), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	1:58 pm	40	40*	n/a	6.2,281	Wind (40), birds (28), traffic (25), **WCC inaudible (<20)**
D R24 Hazeldene	2:18 pm	40	37	n/a	3.8,302	Wind (38), birds (34), traffic (31), **WCC inaudible (<20)**
E R12 Railway Cottage	3:25 pm	42	38	n/a	4.3,313	Traffic (41), wind (34), birds (27), **WCC inaudible (<20)**
F R96 Talavera	1:02 pm	40	38	n/a	3.8,282	Birds (38), wind (35), **WCC (24)**, traffic (23)
H R98 Kyooma	2:08 pm	38	40*	n/a	6.2,300	Wind (35), birds (34), **WCC (25)**
I R57 Kurrara St	2:51 pm	46	35	n/a	3.6,290	Birds (45), traffic (39), train yard (32), wind (30), **WCC inaudible (<20)**
J R57 Coronation Ave	2:32 pm	44	35	n/a	3.4,298	Train yard (41), traffic (38), wind (36), birds (34), **WCC inaudible (<20)**
K R21 Alco Park	4:20 pm	41	40*	n/a	4.2,304	Train yard (38), wind (37), birds (28), traffic (25), **WCC inaudible (<20)**
L R103	4:00 pm	40	35	n/a	4.8,316	Train yard (38), wind (35), traffic (26), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

Table 3 WCC Noise Monitoring Results – 30 November 2015 (Evening/Night)						
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m, Wind speed (m/s), dir°**	**Identified Noise Sources**
A R5 Rosehill	7:18 pm	n/a	38	35	+0.4,3.3,271	Traffic (37), birds (31), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:39 pm	n/a	43	40*	+1.5,3.0,219	Birds & insects (43), traffic (28), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	7:58 pm	n/a	40	40*	+4.7,3.1,199	Birds & insects (39), traffic (32), **WCC inaudible (<20)**
D R24 Hazeldene	8:22 pm	n/a	41	37	+8.7,2.3,145	Traffic (41), insects (26), **WCC inaudible (<20)**
E R12 Railway Cottage	9:29 pm	n/a	40	38	+7.9,2.0,337	Traffic (40), insects (25), **WCC inaudible (<20)**
F R96 Talavera	7:03 pm	26	37	37	+0.8,3.2,264	Birds & insects (36), traffic (27), **WCC (23)**
H R98 Kyooma	8:09 pm	29	49	40*	+5.8,2.6,180	Insects (49), train (34), **WCC (26)**
I R57 Kurrara St	8:53 pm	38	39	35	+9.8,2.0,189	Insects (35), train yard (35), **WCC (31)**, traffic (29)
J R57 Coronation Ave	8:33 pm	n/a	39	35	+8.5,2.3,144	Train yard (37), insects (32), traffic (29), **WCC inaudible (<20)**
K R21 Alco Park	10:20 pm	n/a	40	40*	+8.2,2.3,336	Insects (39), train yard (32), traffic (25), **WCC inaudible (<20)**
L R103	10:01 pm	35	45	35	+6.7,2.1,327	Insects (44), train yard (35), **WCC (30)**, traffic (29)

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels did not exceed the relevant noise criteria at any other time or location during the monitoring period.

Operational noise from WCC was only audible at a few receiver locations. The noise was predominantly general mine hum with dozer engine and track noise audible at times.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring

location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

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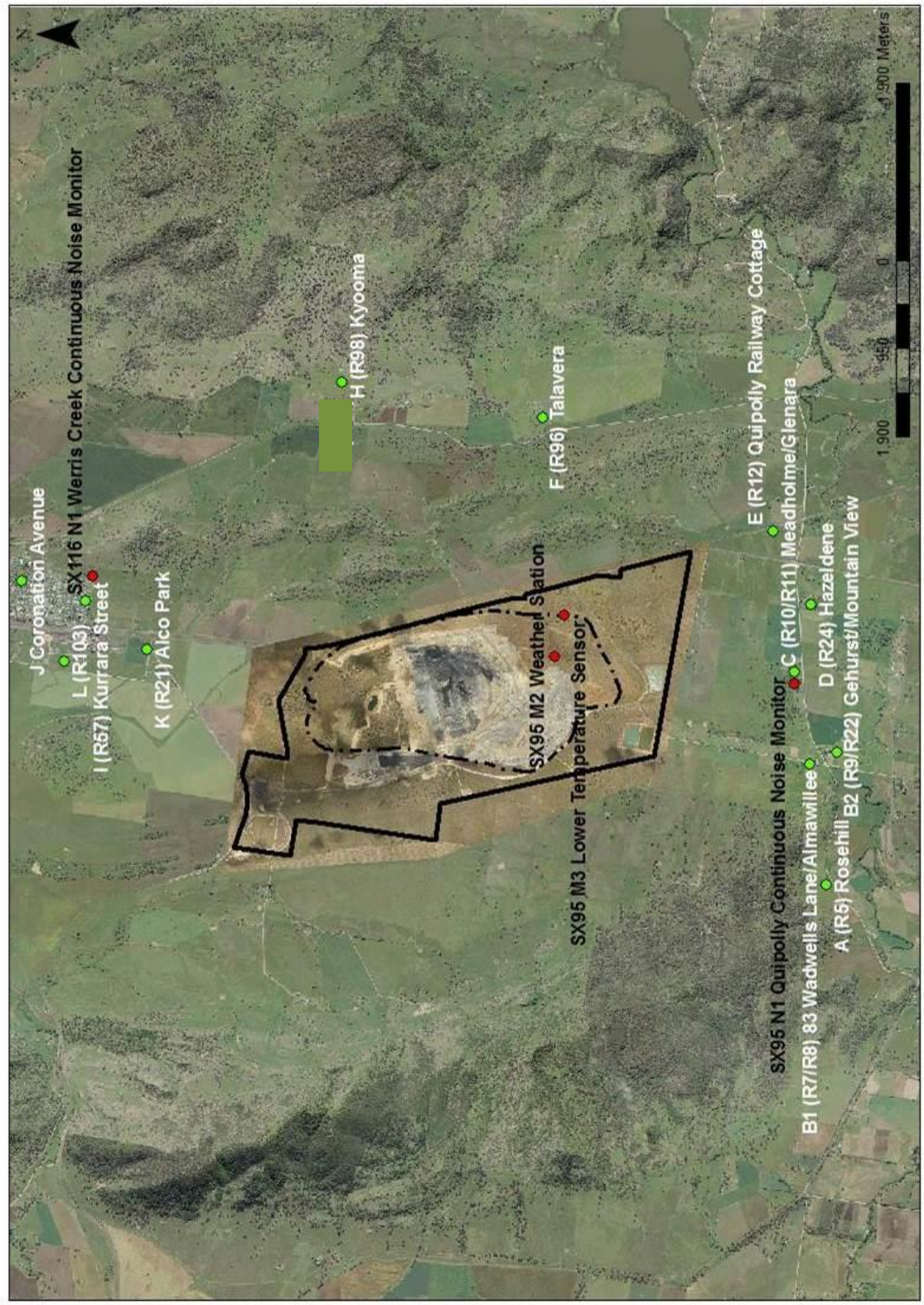
Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

6 January 2016

Ref: 04035/6260

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: DECEMBER 2015 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Wednesday 30th of December, 2015 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Wednesday 30th December 2015 had the 5600 excavator in Strip 19 west at RL380m until end of shift at 2:40am. One 1900 excavator worked at Strip 15 west RL290m until 8:45pm, when it was replaced by the 3600 excavator which returned from break down. The 3600 excavator continued until end of shift at 2:40am, while the first 1900 did not continue due to manning issues. The second 1900 excavator was not running due to manning issues. The trucks on the 5600 excavator were running to the high in-pit dump (RL405m), while the 3600 and 1900 trucks were utilising the low in-pit dump (RL280m). One drill only was operating in Strip 16 east until end of shift at 2:40am. No production time was lost on Wednesday night due to noise impacts. The Coal Processing and Train Load Out facility operated extended hours until 11:19pm with one train loaded during the evening from 11:13pm until 1:01am (31/12/15).

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**.

Table 2
WCC Noise Monitoring Results – 30 December 2015 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s),dir^{O}	Identified Noise Sources
A R5 Rosehill	2:05 pm	40	35	n/a	5.0,169	Wind (38), tractor (33), birds (31), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	2:25 pm	44	40*	n/a	5.2,169	Birds (41), wind (41), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	2:45 pm	44	40*	n/a	4.7,168	Wind (43), traffic (34), birds (31), **WCC inaudible (<20)**
D R24 Hazeldene	3:15 pm	42	37	n/a	7.1,177	Traffic (40), birds (36), wind (33), **WCC inaudible (<20)**
E R12 Railway Cottage	4:28 pm	39	38	n/a	7.3,157	Wind (37), traffic (35), **WCC inaudible (<20)**
F R96 Talavera	4:48 pm	47	38	n/a	7.5,156	Wind (46), birds & insects (36), tractor (33), **WCC inaudible (<20)**
H R98 Kyooma	4:12 pm	48	40*	n/a	7.2,172	Wind (48), **WCC inaudible (<20)**
I R57 Kurrara St	2:40 pm	44	35	n/a	6.4,178	Train yard (41), birds & insects (39), traffic (35), wind (31), **WCC inaudible (<20)**
J R57 Coronation Ave	3:45 pm	46	35	n/a	7.5,174	Birds & insects (45), wind (38), traffic (30), **WCC inaudible (<20)**
K R21 Alco Park	2:16 pm	42	40*	n/a	4.7,166	Traffic (41), wind (34), **WCC (27)**, birds & insects (27)
L R103	1:55 pm	35	35	n/a	4.7,165	Traffic (34), train yard (28), birds & insects (24), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

Table 3 WCC Noise Monitoring Results – 30 December 2015 (Evening/Night)						
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m, Wind speed (m/s), dir°**	**Identified Noise Sources**
A R5 Rosehill	7:08 pm	n/a	40	35	Lapse,8.0,150	Wind (38), traffic (33), birds & insects (33), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:29 pm	n/a	38	40*	Lapse,7.3,154	Wind (35), birds & insects (33), traffic (30), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	7:48 pm	n/a	42	40*	Lapse,6.3,148	Wind (41), traffic (33), birds & insects (29), **WCC inaudible (<20)**
D R24 Hazeldene	8:09 pm	n/a	39	37	Lapse,6.0,136	Traffic (38), insects (31), **WCC inaudible (<20)**
E R12 Railway Cottage	9:15 pm	n/a	38	38	Lapse,3.4,132	Traffic (36), insects (34), **WCC inaudible (<20)**
F R96 Talavera	9:47 pm	n/a	47	37	Lapse,2.6,134	Insects (47), wind (26), **WCC inaudible (<20)**
H R98 Kyooma	9:25 pm	n/a	41	40*	Lapse,4.3,137	Insects (39), wind (37), **WCC inaudible (<20)**
I R57 Kurrara St	7:54 pm	n/a	49	35	Lapse,6.0,141	Birds & insects (48), traffic (39), wind (38), train yard (30), **WCC inaudible (<20)**
J R57 Coronation Ave	8:59 pm	n/a	37	35	Lapse,5.0,121	Wind (34), traffic (32), insects (28), **WCC inaudible (<20)**
K R21 Alco Park	7:31 pm	n/a	49	40*	Lapse,7.3,154	Birds & insects (48), wind (39), traffic (38), **WCC inaudible (<20)**
L R103	7:11 pm	n/a	47	35	Lapse,7.8,152	Birds & insects (44), train yard (41), traffic (37), wind (34), **WCC inaudible (<20)**

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels did not exceed the relevant noise criteria at any other time or location during the monitoring period.

Operational noise from WCC was only audible at one receiver location during the day. The noise was predominantly general mine hum.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than

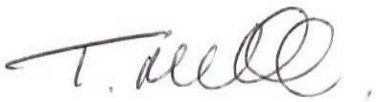
the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

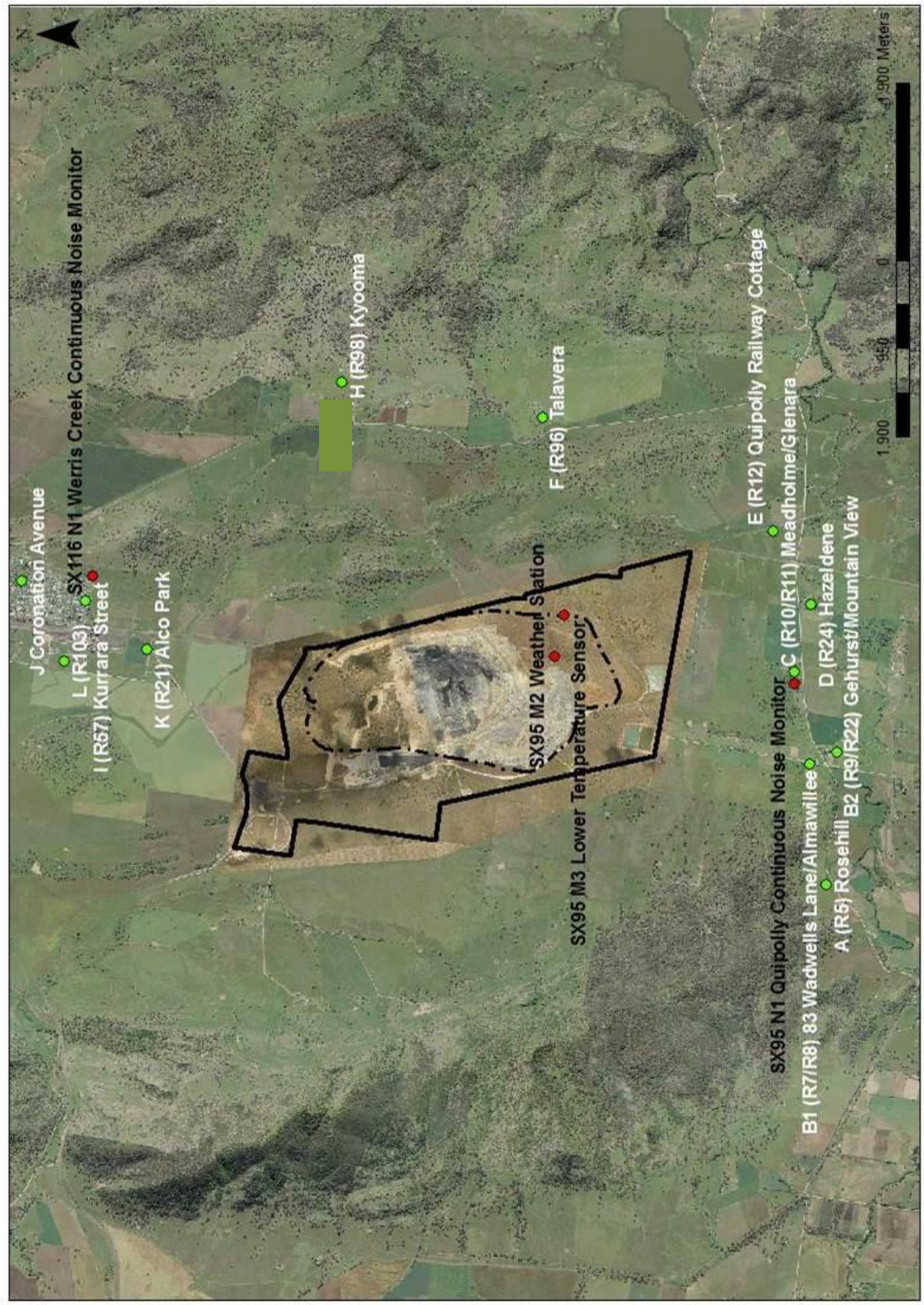


Tristan McCormick
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

22 January 2016

Ref: 04035/6280

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: JANUARY 2016 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 19th of January, 2016 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Tuesday 19th January 2016 had the 5600 excavator and one 1900 excavator in Strip 16 east at RL320m until end of shift at 2:40am. The 3600 excavator and other 1900 excavator worked at Strip 15 west RL290m until end of shift at 2:40am. All trucks were utilising the low in-pit dumps (RL280m and RL296m). One drill only was operating in Strip 16 west until end of shift at 2:40am, with the second drill not operating due to mechanical issues. Elevated noise levels recorded at the Quipolly noise monitor at approximately 8:20pm required switching off a mine water transfer pump at Void Water Dam 1, which was the source of the elevated noise. However, due to a neighbour's stray dog entering the pit and its subsequent rescue at this time, the pump could not be turned off until 9:00pm. The Coal Processing and Train Load Out facility operated until end of shift at 10:22pm with no trains loaded during the evening.

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**.

Table 2
WCC Noise Monitoring Results – 19 January 2016 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s),dir^{O}	Identified Noise Sources
A R5 Rosehill	1:18 pm	34	35	n/a	0.3/301	Birds (33), traffic (27), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:38 pm	37	40*	n/a	1.7/210	Birds & insects (36), wind (28), train (25), traffic (24), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	1:58 pm	35	40*	n/a	2.2/226	Birds & insects (32), tractor (31), traffic (27), **WCC inaudible (<20)**
D R24 Hazeldene	2:19 pm	38	37	n/a	2.0/199	Tractor (36), birds & insects (31), traffic (29), **WCC inaudible (<20)**
E R12 Railway Cottage	3:29 pm	33	38	n/a	1.9/223	Birds & insects (32), traffic (27), **WCC inaudible (<20)**
F R96 Talavera	3:49 pm	30	38	n/a	2.2/248	Wind (28), birds & insects (24), traffic (22), **WCC inaudible (<20)**
H R98 Kyooma	3:27 pm	31	40*	n/a	1.9/171	Birds & insects (31), **WCC (20)**
I R57 Kurrara St	1:06 pm	45	35	n/a	1.4/250	Birds (45), traffic (31), train yard (27), **WCC inaudible (<20)**
J R57 Coronation Ave	2:59 pm	40	35	n/a	2.5/171	Birds & insects (40), traffic (26), train yard (25), **WCC inaudible (<20)**
K R21 Alco Park	2:35 pm	37	40*	n/a	1.8/205	Birds (36), traffic (30), **WCC inaudible (<20)**
L R103	2:15 pm	33	35	n/a	1.5/207	Construction (31), birds & insects (25), train yard (25), traffic (22), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

Table 3 WCC Noise Monitoring Results – 19 January 2016 (Evening/Night)						
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion ^{O}C/100m, Wind speed (m/s), dir^{O}**	**Identified Noise Sources**
A R5 Rosehill	7:15 pm	n/a	35	35	+0.8,0.5,202	Birds & insects (34), traffic (27), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:35 pm	n/a	34	40*	+3.3,0.6,175	Birds & insects (31), traffic (31), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	7:57 pm	23	34	40*	+6.3,1.1,138	Birds & insects (32), traffic (29), **WCC (21)**
D R24 Hazeldene	8:17 pm	n/a	58	37	+6.6,2.7,108	Insects (58), traffic (44), **WCC inaudible (<20)**
E R12 Railway Cottage	9:26 pm	n/a	41	38	+8.3,1.7,75	Traffic (40), insects (35), **WCC inaudible (<20)**
F R96 Talavera	6:59 pm	n/a	50	37	+1.8,0.9,177	Birds & insects (50), traffic (26), **WCC inaudible (<20)**
H R98 Kyooma	8:07 pm	27	48	40*	+6.5,1.8,136	Birds & insects (48), **WCC (24)**
I R57 Kurrara St	8:51 pm	n/a	43	35	+6.6,2.5,97	Frogs & insects (42), traffic (35), **WCC inaudible (<20)**
J R57 Coronation Ave	8:31 pm	n/a	48	35	+7.1,3.0,112	Birds & insects (48), traffic (32), train yard (27), **WCC inaudible (<20)**
K R21 Alco Park	10:18 pm	n/a	42	40*	+9.3,1.4,51	Traffic (40), insects (37), train yard (28), **WCC inaudible (<20)**
L R103	9:58 pm	n/a	41	35	+8.9,1.6,65	Insects (40), traffic (31), train yard (29), **WCC inaudible (<20)**

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels did not exceed the relevant noise criteria at any other time or location during the monitoring period.

Operational noise from WCC was only audible at three receiver location during the whole monitoring period. The noise was general mine hum.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance

between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

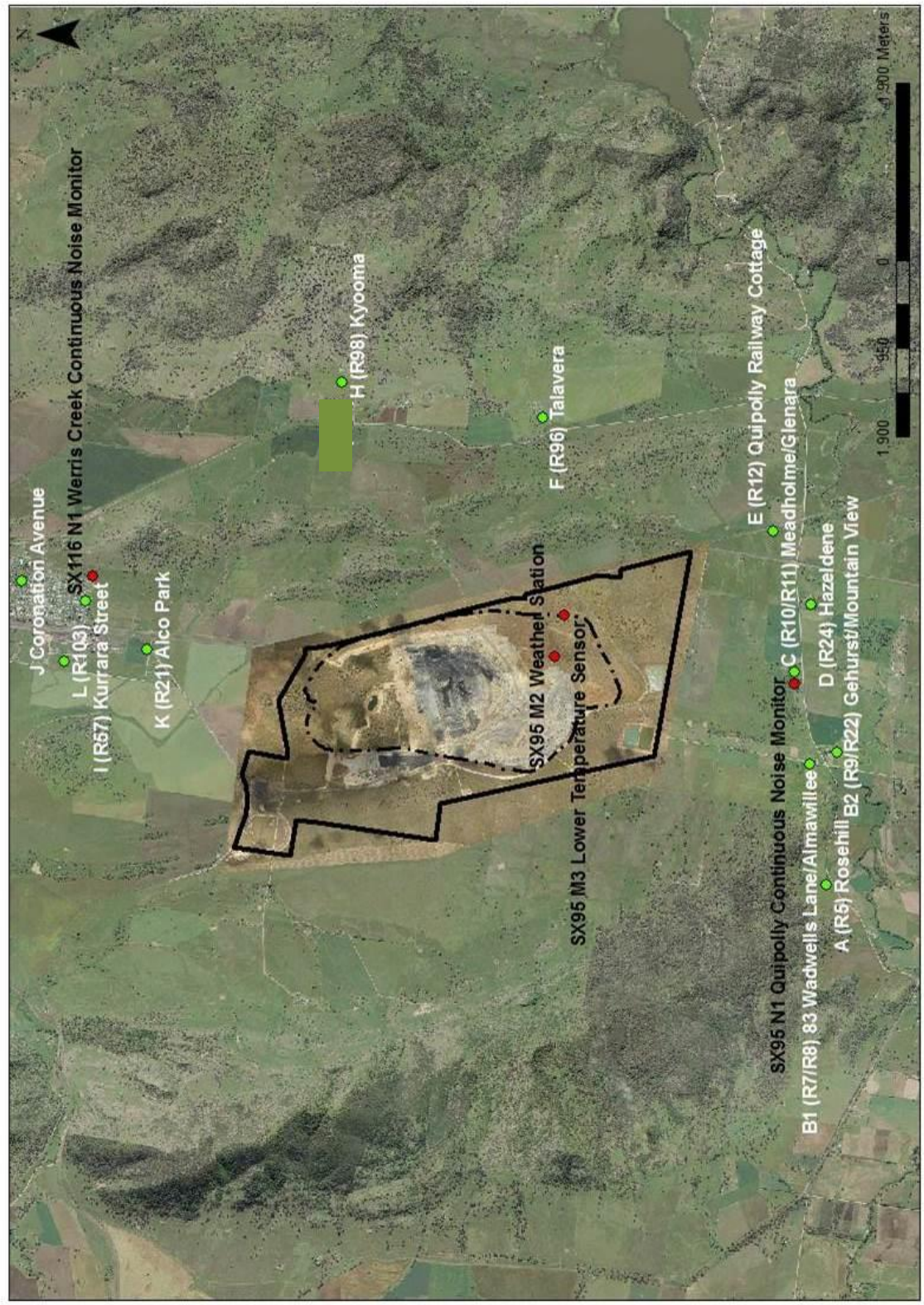
Author:

Tristan McCormick
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

Appendix 5 – Blasting Monitoring Results

Werris Creek Coal
Blast Monitoring
2014-2015

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	WERRIS CREEK COAL BLASTING RESULTS NOVEMBER 2015																								
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
100	2015-116	2/11/2015	13:12	S21_B1920_RL395	0.7	OB	0.17	95.7	0.65	99	0.27	99.6	0.51	100.8	10.00	120.0	Not Monitored		50.00	-4.7	4	3.4	10.3	9.9	9.6	0	Onsite	0	0	0
101	2015-118	5/11/2015	12:58	S16_B08_RL3352_Ewedge	0.2	IB	0.05	98.5	0.36	102.4	0.24	99.1	0.12	95.9	10.00	120.0	1.96	117.8	50.00	-3.3	17	2.7	2.4	3.2	11.2	0	Onsite	0	0	0
102	2015-117	6/11/2015	13:28	S15_B1617_Bseam	0.8	IB	0.15	104.3	0.84	109.5	0.25	109.3	0.4	100.6	10.00	120.0	Not Monitored		50.00	-5	308	8.6	13.6	11.2	16.5	3A	Onsite	0	0	0
103	2015-119&120	11/11/2015	13:37	S15_B08_UG_P2 + S23_B1518_RL395	0.8	OB+UG	0.5	101.5	1.26	103.9	0.6	110.3	0.23	108.9	10.00	120.0	Not Monitored		50.00	-5	152	4.1	5.2	5.6	5.8	2A	Onsite	0	0	0
104	2015-121	13/11/2015	13:12	S16_B1013_RL320	0.7	IB	0.08	102.7	0.51	108.6	0.25	102.1	0.13	99.7	10.00	120.0	Not Monitored		50.00	-4.2	356	2.4	16.4	2.6	2.6	0	Onsite	0	0	0
105	2015-122	18/11/2015	13:13	S24_B1517_RL395	0.6	OB	0.2	98.7	0.57	99.8	0.58	97.7	0.19	99.1	10.00	120.0	Not Monitored		50.00	-4.4	301	1.7	11.2	11.1	11	0	Onsite	0	0	0
106	2015-123	20/11/2015	13:12	S21_B1719_RL380	0.5	OB	0.14	107.8	0.7	105.3	0.18	102.5	0.35	106.8	10.00	120.0	Not Monitored		50.00	-4.5	323	7.4	13.2	3	2.9	0	Onsite	0	0	0
107	2015-124	23/11/2015	13:07	S16_B1216_Cseam_PS	0.3	PS	0.18	97.8	0.68	95.5	0.27	108.4	0.38	94.8	10.00	120.0	Not Monitored		50.00	-4.9	292	6.2	2.3	2.3	2.6	1A	Onsite	0	0	0
108	2015-125	25/11/2015	13:12	S22_B1621_RL380_TSB	0.8	OB	0.22	105.4	0.7	106.5	0.4	101.0	0.18	100.4	10.00	120.0	Not Monitored		50.00	-4.8	306	4.7	10.2	11.1	10.8	0	Offsite	0	0	0
109	2015-126	27/11/2015	12:23	S16_B1216_Cseam	0.6	IB	0.09	98.3	0.65	97.1	0.31	98.7	0.18	93.8	10.00	120.0	Not Monitored		50.00	-5.0	211	3.6	14.3	12.8	14.6	0	Offsite	0	0	0
	TOTALS	**NOVEMBER 2015**	**# BLAST**	**10**	**TARGET**	**AVERAGE**	**0.18**	**101.1**	**0.69**	**102.8**	**0.34**	**102.9**	**0.27**	**100.1**	**5.00**	**115.0**									#3+	1				
	TOTALS	**NOVEMBER 2015**	**#>0.5mm**	**9**	**<0.8mm/s**	**HIGHEST**	**0.50**	**107.8**	**1.26**	**109.5**	**0.60**	**110.3**	**0.51**	**108.9**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**67**	**<115dBL**	**AVERAGE**	**0.15**	**99.5**	**0.77**	**101.0**	**0.39**	**100.5**	**0.25**	**99.2**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**1.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**													
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**													

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	WERRIS CREEK COAL BLASTING RESULTS DECEMBER 2014																								
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
110	2015-127	2/12/2015	13:18	S16_B0507_RL320_TSB	0.6	TSB	0.32	98.5	1.90	107.7	1.01	103.4	0.54	108.1	10.00	120.0	7.59	119.3	50.00	-5.0	271	7.0	6	7	7	0	Offsite	0	0	0
111	2015-128&129	4/12/2015	13:48	S15_B0910_UG_P3a & S16_B10_Eseam_PS	0.6	UG&PS	0.08	99.8	0.38	105.3	0.12	99.1	0.11	95.8	10.00	120.0	Not Monitored		50.00	-5.0	205	2.3	3	3	2	0	Onsite	0	0	0
112	2015-130	9/12/2015	12:58	S15_B0910_UG_P3b	0.5	UG	0.11	98.0	0.46	99.9	0.15	99.6	0.12	98.4	10.00	120.0	Not Monitored		50.00	-5.9	349	4	1.5	1.7	1.8	1B	Onsite	0	0	0
113	2015-131	10/12/2015	11:03	S15_B1920_RL280_TSB	0.4	TSB	0.10	99.4	0.3	102.8	0.25	93.1	0.09	87.8	10.00	120.0	Not Monitored		50.00	-2.7	4	6.2	11.5	11.7	10.8	2A	Onsite	0	0	0
114	2015-132	14/12/2015	11:08	S15_B0810_Cseam	0.6	IB	0.10	99.1	0.84	100.6	0.17	89.9	0.1	91.5	10.00	120.0	Not Monitored		50.00	-4.5	314	3.4	6.2	10.8	10.4	1B	Onsite	0	0	0
115	2015-134	18/12/2015	13:28	S16_B1821_RL290_TSB	0.3	TSB	0.18	95.8	0.93	97.1	0.49	104.0	0.25	101.0	10.00	120.0	Not Monitored		50.00	-4	257	1.6	16.8	8.4	8.4	0	Onsite	0	0	0
116	2015-133	21/12/2015	13:23	S23_B1821_RL380	0.6	OB	0.11	92.3	0.77	99.4	0.63	100.3	0.22	97.0	10.00	120.0	Not Monitored		50.00	-4.9	353	3.6	10	10.1	12.7	0	Onsite	0	0	0
117	2015-135	22/12/2015	13:18	S16_B08_UG_P2	0.5	UG	0.07	102.1	0.42	95.8	0.19	112.7	0.12	101.0	10.00	120.0	Not Monitored		50.00	-4.9	161	8.3	2.2	3.1	2.3	0	Onsite	0	0	0
118	2015-136	30/12/2015	13:29	S15_B1317_Eseam_PS & S16_B0809_Cwedge	0.2	PS&IB	0.2	112.9	0.73	99.5	0.28	102.6	0.17	100.1	10.00	120.0	Not Monitored		50.00	-4.9	111	3.1	2.4	3	3	0	Onsite	0	0	0
119	2015-137	31/12/2015	13:08	S16_B07_Ewedge	0.2	IB	0.08	88.2	0.25	96.6	0.27	96.5	0.09	93.4	10.00	120.0	2.37	109.9	50.00	-4.3	147	2.5	11.1	13.1	11.4	0	Onsite	0	0	0
	TOTALS	**DECEMBER 2015**	**# BLAST**	**10**	**TARGET**	**AVERAGE**	**0.14**	**98.6**	**0.70**	**100.5**	**0.36**	**100.1**	**0.18**	**97.4**	**5.00**	**115.0**									#3+	0				
	TOTALS	**DECEMBER 2015**	**#>0.5mm**	**5**	**<0.8mm/s**	**HIGHEST**	**0.32**	**112.9**	**1.90**	**107.7**	**1.01**	**112.7**	**0.54**	**108.1**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**119**	**<115dBL**	**AVERAGE**	**0.15**	**99.4**	**0.76**	**101.0**	**0.39**	**100.5**	**0.25**	**99.0**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**													
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**													

Blast Number	Shot Number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	WERRIS CREEK COAL BLASTING RESULTS JANUARY 2015																								
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
120	2016-001	4/01/2016	13:33	S16_B1112_Eseam_PS	0.3	PS	0.08	97.4	0.50	90.9	0.19	90.2	0.14	88.7	10.00	120.0	Not Monitored		50.00	-4.4	153	2.9	2.1	2.5	2.6	1B	Onsite	0	0	0
121	2016-002	6/01/2016	13:08	S21_B17_RL350_PS	0.3	PS	0.31	106	1.12	113.3	0.45	110.6	0.38	98.6	10.00	120.0	Not Monitored		50.00	-4.8	163	8.0	3.1	3.7	2.3	2B	Onsite	1	0	0
	2016-003	6/01/2016	13:07	S15_B1112_Cseam	0.4	IB	0.06	107.3	0.42	109.6	0.2	108.1	0.09	98.4	10.00	120.0	Not Monitored		50.00	-4.8	163	8.0	8.5	8.7	7.6	0	Onsite	0	0	0
122	2016-004	7/01/2016	13:18	S15_B1214_UG_P6A1	0.3	UG	0.13	98.7	0.55	108.0	0.19	100.9	0.15	111.3	10.00	120.0	Not Monitored		50.00	-4.7	153	9.1	2.3	2.3	2.6	0	Onsite	0	0	0
123	2016-005	8/01/2016	13:05	S15_B1214_UG_P6A2	0.3	UG	0.06	100.7	0.36	93.7	0.15	93	0.13	95.1	10.00	120.0	Not Monitored		50.00	-4.8	143	4.6	2.3	2.4	2.3	0	Onsite	0	0	0
124	2016-006	12/01/2016	13:08	S15_B1214_UG_P6A3	0.3	UG	0.07	102.2	0.56	96.3	0.24	94	0.12	94.5	10.00	120.0	Not Monitored		50.00	-4.3	311	5.0	2.3	3	2.4	0	Offsite	0	0	0
125	2016-007	14/01/2016	13:09	S15_B1214_UG_P6B1	0.5	UG	0.12	106.4	0.49	101.7	0.33	104	0.24	100.3	10.00	120.0	Not Monitored		50.00	-4.8	314	5.6	2.3	12.8	11.6	0	Onsite	0	0	0
126	2016-008	15/01/2016	13:13	S16_B07_RL320_Ewedge	0.1	IB	0.04	98.0	0.13	113.0	0.19	107.7	0.06	104.3	10.00	120.0	Not Monitored		50.00	-3.3	187	8.3	11.5	10.9	11.4	0	Onsite	0	0	0
127	2016-010	21/01/2016	13:07	S15_B1214_UG_P6B2	0.5	UG	0.14	103.5	0.4	102.5	0.3	102.2	0.17	107.6	10.00	120.0	Not Monitored		50.00	-4.6	308	6.3	2.3	2.4	11.7	0	Onsite	0	0	0
128	2016-009	22/01/2016	13:09	S21_B1720_RL365_TSB	0.5	TSB	0.23	107.1	0.57	103.7	0.46	98.9	0.24	102.1	10.00	120.0	Not Monitored		50.00	-4.1	314	6.5	8.7	10.2	9.3	0	Onsite	0	0	0
129	2016-011	27/01/2016	14:03	S15_B1516_Dseam_P7-1	0.4	IB	0.10	92.7	0.4	98.6	0.24	98	0.13	97.6	10.00	120.0	Not Monitored		50.00	-4.1	221	3.3	14.8	14.8	14.6	0	Onsite	0	0	0
130	2016-012	28/01/2016	11:42	S16_B0809_UG_P3	0.2	UG	0.04	95.9	0.22	96.3	0		0.05	93.2	10.00	120.0	Not Monitored		50.00	-3	357	2.2	0	3	0	0	Onsite	0	0	0
	TOTALS	**JANUARY 2016**	**# BLAST**	**11**	**TARGET**	**AVERAGE**	**0.12**	**101.3**	**0.48**	**102.3**	**0.25**	**100.7**	**0.16**	**99.3**	**5.00**	**115.0**									#3+	0				
	TOTALS	**JANUARY 2016**	**#>0.5mm**	**4**	**<0.8mm/s**	**HIGHEST**	**0.31**	**107.3**	**1.12**	**113.3**	**0.46**	**110.6**	**0.38**	**111.3**	**10.00**	**120.0**									%0-2	98.5%				
	TOTALS	**ANNUAL**	**# BLAST**	**130**	**<115dBL**	**AVERAGE**	**0.15**	**99.6**	**0.73**	**101.1**	**0.37**	**100.5**	**0.24**	**99.0**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**1.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**													
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**													

Appendix 6 – Groundwater Monitoring Results

WO # 11538 * Gap Rd *

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No:
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME: B. Phillips	6 Monthly-Natural,Nutrients,Orange TPH
SITE: WERRIS CREEK MINE AND SURROUNDS	

ALS ACIRL

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	24/11	11:45	19.37		0.2										Roseneath
	MW12	26/11	11:30	13.51		0.5										Hazeldene
	MW13	24/11	12:10	7.23		0.4										Wadwell ln. - well
	MW13B	24/11	12:20	5.57		0.3										Taylors ln. - opp shed
	MW13D	24/11	12:35	5.39		0.2										Taylors ln. - Windmill
	MW15	24/11	13:35	6.47		0.2				(Windmill running!) muddy surrounds.						Paynes ln. - Windmill
	MW16	26/11	10:15	"Dry"		0.3				(Just mud on probe @ ~8.7m)						Mountain view - Pump Shed
	MW17A	24/11	14:00	6.99		0.5										83 Wadwell ln.
	MW18A	24/11	14:10	6.86		—										82 Wadwell ln.
	MW19A	24/11	11:55	9.18		0.15										Lintang.
	MW21A	26/11	10:55	10.94		0.3										Glenara. (windmill)
	MW22A	26/11	10:30	8.19		0.55				(NB. Not water on probe - just Slime,)						308 Paynes ln. - House
	MW22B	26/11	10:40	"Dry"		~~0.45~~										308 Paynes ln. - Irrigation
	MW23A	24/11	13:00	4.28		0.2				(Pump running!)						Peggy Easy - House yard.
	MW23B	24/11	13:25	5.19		0.1	"Walked over."			(Pump running - irrigating adjacent paddock!)						Peggy Easy - Irrigation
	MW28A	24/11	11:10	15.31		0.25										Woodlands (Windmill)
	MW28B	24/11	—			—	"Pump over bore"									Woodlands (Pump RHS)

SPECIAL COMMENTS: M

Sheet ... of ...

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No:
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME:	6 Monthly Natural, Nutrients, Orange TPH
SITE: WERRIS CREEK MINE AND SURROUNDS	Note: When taking water always use pump & purge on MW3

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW1	25/11/15	9:25	"Dry"		0.25										6 Monthly Hillview
	MW2	25/11/15	9:10	35.92		0.15										6 Monthly Railway view
	MW3	25/11/15	10:00	19.04		0.95										6 Monthly (Always Purge) Entrance
	MW4	25/11/15	—	—												Mine - Front
	MW4B	25/11/15	11:15	16.39		0.7										6 Monthly Mine - Front
	MW5	25/11/15	10:20	12.21		1.15										6 Monthly - Mine
	MW5B	25/11/15	10:10	11.74		0.7										- Mine
	MW6	24/11/15	11:30	15.18		0.5										6 Monthly 111 Werris Creek Rd
	MW9	—														Rail loop.
	MW10	25/11/15	12:30	16.96		0.7										Escot In. - Shed.
	MW11	—														~~111 Werris Creek Rd~~
	MW14	25/11/15	11:30	19.98		0.95										Mine - Rail loop
	MW14B	25/11/15	11:35	19.70		0.75										Mine - Rail loop
	MW17B	24/11/15	13:50	13.73		0.65										Wadwell In. - Windmill
	MW20	24/11/15	10:00	21.46		0.55										Tonsley Park
	MW24A	24/11/15	10:35	15.33		0.5										Maroneck - Pump in Shed.
	MW25A	—														Mine site
	MW25B	—														" "
	MW27	25/11/15	12:40	53.33		0.45										Cintra - Escott In.
	MW29	24/11/15	10:20	18.57		—										Kyoomen - Windmill.
	MW31	—														Talawera - Broken Windmill

"Broken Stick up / Blockage"

"Broken Stick up"

"Pump over bore"

(Windmill running - tank overflowing)

"Pump over Bore"

"Pump over Bore"

(Windmill running - pumping water)

(No longer monitored)

SPECIAL COMMENTS: M

Sheet: of

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No:
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME:	6 Monthly Natural, Nutrients, Orange TPH
SITE: WERRIS CREEK MINE AND SURROUNDS	

ALS ACIRL

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW7	—														* Mrs Andersens - well;
	MW7B	—														" " Windmill
	MW32 *	24/11/15	12:50	4.19		0.45										"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	25/11/15	11:45	24.43		0.95										TLO - Nth
	MW36B	25/11/15	11:50	24.20		0.95										TLO - Sth.
	MW35	—														* Off BG Rd.
	MW34	26/11	12:45	11.38		—										Wamis - off Gap Rd.
	MW5D	25/11	10:30	14.41		0.68										Mine Site
	MW5C	25/11	10:40	12.03		0.93										Mine Site
	MW5E	25/11	10:50	15.09		0.76										Mine Site
	MW5F	25/11	11:06	17.59		1.20										Mine Site
	MW5G	25/11	11:05	15.88		0.95										Mine Site
																* New.
	MW37	24/11/15	10:50	6.65		0.15										Lowes Creek Rd. (Horse yard)
								* Lorenz's *								
	MW38A	25/11/15	13:50	15.03		0.45							(Near Tank)			Yandilla - Broken Mill (Back)
	MW38B	25/11/15	13:35	10.11		0.15	(Windmill running)						(Near Hay Shed)			Yandilla - Windmill (Back)
	MW38C	25/11/15	13:20	22.75		0.25							(green bin)			Yandilla - Stanleystyle
	MW38E	25/11/15	13:05	10.28		0.5										Yandilla - Windmill (Front)
*	Mine Windmill	25/11/15	12:10	Dry		0.7										* Windmill on the mine site - LHS of entrance

SPECIAL COMMENTS: M

Sheet: of

WO # 11876.

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: B Phillips Jan'16

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

6 Monthly Natural, Nutrients, Orange TPH

Note: When taking water always use pump & purge on MW3

ALS ACIRL

Reportables / Analytes	Sample ID / Bore ID	Date	Time (24hr)	Standing Water Level □mbgl □mbtoc □m	Bore depth □mbgl □mbtoc □m	Stick up m	Purge Type Pump / Bailer	Purge Volume L	Pump Set Depth □mbgl □mbtoc □m	EC - field uS/cm	pH - field pH units	Temp - field °C	Appearance	Odor	Colour	Comments
	MW1	18/1	13:10	'DM'		0.25										6 Monthly Millview
	MW2	18/1	13:25	37.02		0.15										6 Monthly Railwayview
	MW3	18/1	9:45	19.23		0.95										6 Monthly (Always Purge) Eurdevee
	MW4	18/1	—	—						Broken Stickup + Blockage.						mine
	MW4B	18/1	11:25	16.63		0.7										6 Monthly Mine
	MW5	18/1	10:00	12.39		1.15				(Wet Track!)						6 Monthly mine.
	MW5B	18/1	10:10	11.92		0.7.										Mine.
	MW6	18/1	11:40	15.38		1.05										6 Monthly 1111 W/C Rd
	MW9	—								"Broken stickup"						Rail loop.
	MW10	18/1	12:55.	16.98		0.2										Escott ln - Shed.
	MW11	—								"Pump over bore"						Near - Gap.
	MW14	18/1	12:10	20.23		0.95										Mine - Rail loop
	MW14B	18/1	12:20	20.11		0.75										Mine - Rail loop.
✗	MW17B	19/1	12:30	13.90		0.65										Wadwell ln - Windmill
	MW20	19/1	9:00	21.57		0.55										Tonsley Park
	MW24A	18/1	13:55	15.61		0.5										Merenga - Pump in shed
	MW25A	—														Mine site
	MW25B	—														Mine site
	MW27	18/1	11:55	54.90		0.45				(Windmill not running!)						- Cintra - Escott ln.
	MW29	18/1	14:10	15.19		—										- Kyooma - Windmill
	MW31	—								(No longer monitored.)						- Talavera - Brocker Windmill

SPECIAL COMMENTS: M

Sheet: of

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME:

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

6 Monthly-Natural,Nutrients,Orange TPH

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	19/1	10.45	19.56		0.2										Rosereath
	MW12	19/1	9:15	13.70		0.5										Hazelbeare
	MW13	19/1	10:00	7.41		0.4										Wadwell In - well
	MW13B	19/1	11:00	5.70		0.3										Taylors In - opp shed
	MW13D	19/1	11:15	5.57		0.2										Taylors In - windmill
	MW15	19/1	12:15	6.89		0.2										Paynes In - Windmill
	MW16	19/1	13:10	Dry		0.3				(Just mud at bottom.						Maintainview - shed.
	MW17A	19/1	12:50	7.31		0.5										83 Wadwell In
	MW18A	19/1	12:40	Dry		—				(Hit bottom about 1.2m!)						82 Wadwell In
	MW19A	19/1	10:30	9.36		0.15										Lintara
	MW21A	19/1	9:30	11.13		0.3										Glenara (Windmill)
	MW22A	19/1	13:20	Dry		0.55				(Mud at bottom!)						308 Paynes In. - House
	MW22B	19/1	13:30	Dry		0.45										308 Paynes In. - Irrigation
	MW23A	19/1	11:45	4.33		0.2										Peggy Fay Horse yard.
	MW23B	19/1	12:00	4.38		0.1		"Walked over to bore."								" - Irrigation
	MW26	19/1	9:45	9.63		0.80										(NEW) "Meadholme Property"(Mrs Blackwell)
	MW28A	18/1	13:40	15.65		0.25										Woodlands - Windmill
	MW28B	18/1	—				* Pump over bore									" - Pump

SPECIAL COMMENTS: M

* MW28B 19/1 9:35 SWL 11.58m.

Sheet: of

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME:

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

6 Monthly Natural, Nutrients, Orange TPH

ALS ACIRL

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW7	—														Mr Andrews - Irrigation
	MW7B	—														" " - Windmill.
	MW32	19/1	11:30	4.22		0.45										"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	18/1	12:30	24.45		0.95										Near TLO - Nth
	MW36B	18/1	12:40	24.22		0.95										" " - Sth.
	MW35	—														Off B.G. Rd.
	MW34	20/1	12:55	11.52		—										Werris Creek - off Cap Rd.
	MW5D	18/1	10:25	14.58		0.68			(Wet Track - walked it!)							Mine Site
	MW5C	18/1	10:40	12.20		0.93										Mine Site
	MW5E	18/1	10:50	15.44		0.76										Mine Site
	MW5F	18/1	11:00	18.02		1.20										Mine Site
	MW5G	18/1	11:15	16.30		0.85			(Dodgy track - walked it!)							Mine Site
	MW37	20/1	10:10	'Dry'		0.15			(Probe Hits @ ~7.2m / Full troughs overflow to the surrounding ground!)							* Lowes Creek Rd. (Horse yard.
		(Lomax's)														
	MW38A	20/1	12:15	14.92		0.45							(Near Tank)			Yandilla - Brocken Mill (Back)
	MW38B	20/1	12:30	10.20		0.15							(Near Hay Shed)			" - Windmill (Back)
	MW38C	20/1	12:00	23.50		0.25							(Green Bin)			" - Solar
	MW38E	20/1	11:45	10.57		0.5			* (NB Mr Lomax came with!)				(Concrete Tank.)			" - Windmill (Front)
*	Mine Windmill	18/1	11:30	'Dry'		0.7										

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1536488**	Page	: 1 of 9
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	:
Address	: PO BOX 446 SUMMER PARK QLD 4074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: AWright@whitehavencoal.com.au	E-mail	:
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK NON-ROUTINE SURFACE-WATER	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 11458	Date Samples Received	: 17-Nov-2015 14:00
C-O-C number	: ----	Date Analysis Commenced	: 17-Nov-2015
Sampler	: ----	Issue Date	: 24-Nov-2015 17:39
Site	: ----		
		No. of samples received	: 9
Quote number	: ----	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dian Dao		Sydney Inorganics
Helen Simpson	Inorganic Chemist	ACIRL Sampling
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- AC04: Field observations supplied by ALS ACIRL.
- ACO3: Field test by ALS Coal Gunnedah 5-7 Talbot Rd Site No. 18941 and in accordance to NATA accreditation No. 15784. Approved signatory 'Matt Steele'.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB9	VWD1	VWD2	QCD	WCD
			Client sampling date / time	16-Nov-2015 11:30	16-Nov-2015 13:45	16-Nov-2015 12:45	16-Nov-2015 10:45	16-Nov-2015 09:50
Compound	CAS Number	LOR	Unit	ES1536488-001	ES1536488-002	ES1536488-003	ES1536488-004	ES1536488-005
				Result	Result	Result	Result	Result
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	894	1040	1010	1070	1330
pH	----	0.01	pH Unit	8.20	9.20	8.70	7.90	8.00
Temperature	----	0.1	°C	24.3	24.5	24.5	19.4	21.1
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.13	8.78	8.33	8.04	8.27
EA006: Sodium Adsorption Ratio (SAR)								
Sodium Adsorption Ratio	----	0.01	-	2.51	5.88	5.02	3.01	2.43
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	947	1090	1080	1110	1380
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	531	670	654	552	853
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	34
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	16	1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	117	80	110	287	386
Total Alkalinity as CaCO3	----	1	mg/L	117	97	111	287	386
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	104	149	136	12	72
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	132	161	156	155	153
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	54	29	43	61	88
Magnesium	7439-95-4	1	mg/L	21	19	16	35	64
Sodium	7440-23-5	1	mg/L	86	166	152	119	123
Potassium	7440-09-7	1	mg/L	9	10	11	2	4
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	221	151	173	296	483
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.002	0.002	0.006

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB9	VWD1	VWD2	QCD	WCD
				Client sampling date / time	16-Nov-2015 11:30	16-Nov-2015 13:45	16-Nov-2015 12:45	16-Nov-2015 10:45	16-Nov-2015 09:50
Compound	CAS Number	LOR	Unit		ES1536488-001	ES1536488-002	ES1536488-003	ES1536488-004	ES1536488-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L		**0.151**	**0.049**	**0.086**	**0.038**	**0.072**
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.002**	<0.001	<0.001	**0.007**	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	**0.001**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	**0.01**
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	**0.2**	**0.2**	**0.7**	**0.9**
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.04**	**0.04**	**0.06**	**0.03**	**0.02**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	**0.01**	**0.03**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	**0.93**	**2.53**	**0.02**	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	**0.94**	**2.56**	**0.02**	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.8**	**0.7**	**0.6**	**0.3**	**0.5**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.8**	**1.6**	**3.2**	**0.3**	**0.5**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.03**	**0.19**	**0.28**	**0.37**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	**0.01**	**0.09**	**0.28**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB9	VWD1	VWD2	QCD	WCD
				Client sampling date / time	16-Nov-2015 11:30	16-Nov-2015 13:45	16-Nov-2015 12:45	16-Nov-2015 10:45	16-Nov-2015 09:50
Compound	CAS Number	LOR	Unit		ES1536488-001	ES1536488-002	ES1536488-003	ES1536488-004	ES1536488-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**----**	**----**	**----**	**----**	**----**
Total Anions	----	0.01	meq/L		**8.23**	**9.58**	**9.45**	**10.4**	**13.5**
Total Cations	----	0.01	meq/L		**8.39**	**10.5**	**10.4**	**11.2**	**15.1**
Ionic Balance	----	0.01	%		**----**	**----**	**----**	**----**	**----**
Ionic Balance	----	0.01	%		**1.01**	**4.49**	**4.56**	**3.69**	**5.52**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**8**	**4**	**2**	**3**	**5**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	**46**	**23**	**14**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	VWD3	VWD4	SB8	VWD6	----
			Client sampling date / time	16-Nov-2015 13:20	16-Nov-2015 13:35	16-Nov-2015 13:00	16-Nov-2015 11:15	----
Compound	CAS Number	LOR	Unit	ES1536488-006	ES1536488-007	ES1536488-008	ES1536488-009	--------
				Result	Result	Result	Result	Result
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1000	1020	949	948	----
pH	----	0.01	pH Unit	8.70	8.70	8.80	8.70	----
Temperature	----	0.1	°C	23.2	23.3	24.6	23.3	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.24	8.09	8.38	8.29	----
EA006: Sodium Adsorption Ratio (SAR)								
Sodium Adsorption Ratio	----	0.01	-	4.53	4.83	4.55	4.51	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1050	1060	1010	1000	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	649	643	610	560	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	18	10	14	38	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	4	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	132	118	117	93	----
Total Alkalinity as CaCO3	----	1	mg/L	132	118	120	93	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	106	125	97	104	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	140	150	153	148	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	48	52	40	47	----
Magnesium	7439-95-4	1	mg/L	16	17	18	17	----
Sodium	7440-23-5	1	mg/L	142	157	138	142	----
Potassium	7440-09-7	1	mg/L	11	13	5	11	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	186	200	174	187	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.02	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	<0.001	0.001	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	VWD3	VWD4	SB8	VWD6	----
				Client sampling date / time	16-Nov-2015 13:20	16-Nov-2015 13:35	16-Nov-2015 13:00	16-Nov-2015 11:15	----
Compound	CAS Number	LOR	Unit		ES1536488-006	ES1536488-007	ES1536488-008	ES1536488-009	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L		**0.113**	**0.103**	**0.105**	**0.117**	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		**0.001**	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.1**	**0.2**	**0.7**	**0.2**	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.05**	**0.14**	**0.02**	**0.03**	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.04**	**0.07**	<0.01	**0.05**	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**4.87**	**2.73**	<0.01	**4.07**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**4.91**	**2.80**	<0.01	**4.12**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.8**	**0.7**	**0.4**	**0.6**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**5.7**	**3.5**	**0.4**	**4.7**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	<0.01	**0.02**	**0.01**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	VWD3	VWD4	SB8	VWD6	----
				Client sampling date / time	16-Nov-2015 13:20	16-Nov-2015 13:35	16-Nov-2015 13:00	16-Nov-2015 11:15	----
Compound	CAS Number	LOR	Unit		ES1536488-006	ES1536488-007	ES1536488-008	ES1536488-009	--------
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**----**	**----**	**----**	**8.55**	**----**
Total Anions	----	0.01	meq/L		**8.79**	**9.19**	**8.73**	**----**	**----**
Total Cations	----	0.01	meq/L		**10.2**	**11.2**	**9.61**	**10.2**	**----**
Ionic Balance	----	0.01	%		**----**	**----**	**----**	**8.82**	**----**
Ionic Balance	----	0.01	%		**7.25**	**9.64**	**4.76**	**----**	**----**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**2**	**2**	**5**	**2**	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB9 - 16-Nov-2015 11:30:00	Clear
AC04: Appearance	VWD1 - 16-Nov-2015 13:45:00	Clear
AC04: Appearance	VWD2 - 16-Nov-2015 12:45:00	Clear
AC04: Appearance	WCD - 16-Nov-2015 09:50:00	Slight Turbid
AC04: Appearance	VWD3 - 16-Nov-2015 13:20:00	Clear
AC04: Appearance	VWD4 - 16-Nov-2015 13:35:00	Clear
AC04: Appearance	SB8 - 16-Nov-2015 13:00:00	Slight Turbid
AC04: Appearance	VWD6 - 16-Nov-2015 11:15:00	Clear
AC04: Odour	SB9 - 16-Nov-2015 11:30:00	Nil
AC04: Odour	VWD1 - 16-Nov-2015 13:45:00	Nil
AC04: Odour	VWD2 - 16-Nov-2015 12:45:00	Nil
AC04: Odour	WCD - 16-Nov-2015 09:50:00	Nil
AC04: Odour	VWD3 - 16-Nov-2015 13:20:00	Nil
AC04: Odour	VWD4 - 16-Nov-2015 13:35:00	Nil
AC04: Odour	SB8 - 16-Nov-2015 13:00:00	Nil
AC04: Odour	VWD6 - 16-Nov-2015 11:15:00	Nil
AC04: Colour	SB9 - 16-Nov-2015 11:30:00	Clear
AC04: Colour	VWD1 - 16-Nov-2015 13:45:00	Clear
AC04: Colour	VWD2 - 16-Nov-2015 12:45:00	Clear
AC04: Colour	WCD - 16-Nov-2015 09:50:00	Brown
AC04: Colour	VWD3 - 16-Nov-2015 13:20:00	Clear
AC04: Colour	VWD4 - 16-Nov-2015 13:35:00	Clear
AC04: Colour	SB8 - 16-Nov-2015 13:00:00	Brown
AC04: Colour	VWD6 - 16-Nov-2015 11:15:00	Clear

Appendix 8 – Discharge Monitoring Results

Werris Creek Coal Community Consultative Committee

Thirty Ninth Meeting of the Committee

Meeting Room, Werris Creek Coal

9:30am Thursday 26th May 2016

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am for the quarterly meeting followed by a pit tour of the mine site inspecting operations from the southern lookout.

Meeting Opened at 9:35am.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Col Stewart (Liverpool Plains Shire Council (LPSC) – Councilor); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Dave Goldman (Community Representative); James O'Brien (Community Representative); Donna Ausling (LPSC – Director Environmental Services); Rod Hicks (WCC – Operations Manager); Lexie Frankham (Whitehaven Coal – Environmental Superintendent); Mark Hammond (WCC – Environmental Officer and Minute Taker); Lynden Cini (WCC – Environmental Officer); Andrew Ellis (Division of Resources and Energy – Community Liaison Officer); and Angela Felton (Department of Planning and Environment – Community Liaison Officer).

Apologies: Mike Lomax (Community Representative)

2. Declaration of Pecuniary or Other Interests

Gae Swain declared that her son-in-law is an employee for Whitehaven Coal at Narrabri Coal.

3. Minutes of Previous Meeting

Minutes of the previous meeting on the 25th February 2016 were reviewed by the committee.

Motion moved to accept the meeting minutes on the 25th February 2016 as a true and accurate representation of business conducted on that day.

Moved: Noel Taylor. Seconded: Lindsay Bridge. Motion carried.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. New Matters for Discussion under General Business

Five new items of business were:

a) Community Enhancement Fund (CEF) update;
b) Recent community interest regarding groundwater;

c) Agricultural Water Supply progression;
d) Change of personnel in the CCC
e) CCC guidelines revision submission

6. Environmental Monitoring Report: February, March, and April 2016

Meteorology – February through April 2016 were characterized by mild to hot temperatures with winds predominantly south to southeast. The period had significantly below average rainfall with a total deficit from the long term average of 188 mm across the three months.

Air Quality – All TSP, PM10 and PM2.5 dust results were within criteria during the period with the exception of two results measured at "Glenara", on the 17th February 2016 and the 11th April. On both occasions, Werris Creek Coal Mine was not predominantly upwind of the monitor during the sampling period, with downwind monitors recording measurements well within compliance limits for air quality. As such, the exceedances were attributed to localized sources of dust generation, and not attributable to mining activities at Werris Creek Coal Mine. All monthly dust deposition gauge results were below the annual criteria of 4.0g/m^2/month throughout the period except for DG34 (8 Kurrara St) during February and April 2016. Consistently high dust levels at this gauge and low deposited dust levels at nearby gauges indicate a localized source of dust generation, unrelated to activities at Werris Creek Coal Mine. Both DG5 and DG20 were affected by one anomalous high dust deposition measurement during the 2015-2016 reporting year, which has resulted in the annual average of these monitoring sites exceeding the annual criteria. On both occasions, deposited dust levels remained low at nearby gauges, indicating a localized source of dust in each case, unrelated to activities at Werris Creek Coal Mine. 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 for all samples except one furthest from the railway line on the eastern side in February 2016) and comparable to the levels monitored around Werris Creek Coal Mine. Coal contributions to the dust fraction remain very low at all monitoring sites.

There was one dust complaint recorded during the period relating to dust generated at the Train Load Out facility.

Noise – Noise from Werris Creek Coal Mine was inaudible at most of the monitoring sites during the quarter. This is largely the result of mining operations situated predominately low in the pit during the quarter (especially during February and April 2016), and due to generally milder night time inversion conditions, with few strong temperature inversions present during the quarter. Elevated noise levels were recorded at the Kyooma monitor during the evening of 30th March 2016, however this was during a period of adverse wind and inversion conditions. As is sometimes the case, Werris Creek Coal Mine changed mining operations to reduce noise generation potential on this evening in response to noise levels measured at the real time noise monitors.

There was one noise complaint recorded during the period, relating to noise impacts from mining operations in the Quipolly area.

Blasting – During the period a total of thirty eight blasts were 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). 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).

There were ten blast complaints during the period with six relating to vibration/overpressure impacts from blasting and a further four relating to dust plumes from blasting.

Groundwater – Measured groundwater levels in the Werrie Basalt are largely unchanged during the period, with many bores stable or showing an increase in water level, possibly a delayed effect from the good rainfalls in December 2015 and January 2016. However this stabilization in the Werrie Basalt wasn't also seen in the Quipolly Alluvium aquifer, with the water levels in bores continuing to decrease across the monitoring network. Despite the good rainfall in December and January, rainfall for the 12 months to March 2016 was still significantly below the long-term average, exacerbating the existing significant rainfall deficit. There was continuing media attention on this issue during the quarter.

Surface Water – Quarterly surface water monitoring was undertaken on 29th February 2016 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 longer term averages and the Site Water Management Plan trigger values.
Surface Water Discharges – There was one controlled discharge event in February 2016, related to the dewatering of SB9 following good rainfall in December 2015 and January 2016. Sampling of the discharge point, as well as upstream and downstream on Quipolly Creek was undertaken in accordance with licence conditions. All water quality results were in compliance with licence limits.
There were no surface water or groundwater complaints during February, March and April 2016.
Complaints – There were sixteen complaints received during the period, which are summarised below. Of the sixteen complaints, ten were related to blasting impacts, two related to lighting, two related to odour, one related to dust, and one related to noise.

Lindsay Bridge and Noel Taylor stated that noise levels in the Quipolly were higher lately than they had been for some time. Normally mining-related noise was not noticeable however it has been more noticeable lately, albeit not at nuisance levels.
James O'Brien raised the issue of odours observed at his residence in Werris Creek. Mark Hammond explained the process following the reception of odour complaints. It was acknowledged that a subjective approach was taken to odour complaint response, with the suggestion by James that some de-sensitisation of employees who are undertaking the subjective investigation may affect the quality of the investigations. Mark suggested that personal gas monitors that are used by workers to detect various noxious gases in certain areas of the pit can potentially be used as an objective measurement in the event of future odour complaints. This approach was encouraged by the committee.

Motion moved to accept the Environmental Monitoring Report for February, March, and April 2016.

Moved: Donna Ausling. Seconded: Lindsay. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Two projects with funding from the Community Enhancement Fund are currently underway. The Werris Creek Playground has commenced with earthworks just commencing. However may be impacted by the rain. Project is progressing well.
The second project involves installation of a shade structure at Spring Ridge. The DA for this project has been approved and the CA has been issued. Work is planned to start in the next fortnight to three weeks pending availability of builders. The project is planned to be close to completion by next CCC meeting.

b. Update on Recent Community/Media speculation on groundwater

Department of Primary Industries – Water (DPI-W) are currently undertaking a review of the past water balance modelling at WCC to assess the appropriateness and accuracy of this water balance model. This has been undertaken at the request of the Quipolly Water Action Group and forms a further method in examining modelled groundwater inflows to WCC.
Noel Taylor raised the issue that there has been little rain in past three months, yet the evaporators have continued to run the whole time. Mark Hammond stated that the evaporators have run for less than half of the past three months. Water storages were relatively full at the end of January 2016 but are now far lower due to the dry period and the use of the evaporators. Noel stated that another bore has gone dry in the Quipolly aquifer.
Lindsay Bridge stated that he has installed a new groundwater bore in the Werrie Basalt, which he would like included in the groundwater monitoring program.

Noel Taylor queried as to whether Tony Windsor was supplied water for domestic use. Mark Hammond stated that Tony Windsor has always extracted water from the Coal Measures aquifer via the existing groundwater bore, and when this bore went dry due to dewatering of the mining pit, water was supplied for domestic use to replace the loss of water in the bore.
James O'Brien requested clarification regarding the runoff into the mining pit. Mark Hammond stated that the Water Balance Model utilized a widely-accepted model based on an average for the disturbed areas of the mine. This model specifies that the first portion of rainfall will not run off; once this initial rainfall requirement is met, a certain proportion of all rainfall after than is calculated to run off into the pit. James queried the amount of hard surfaces that would cause runoff into the pit. Mark stated that the majority of the surface of the pit catchment had been compacted from earthmoving trucks travelling on the benches, ramps and dumps, which can be observed in the tour of the mine, and that an average runoff percentage is used which balances the smaller areas of loose material with the larger areas of compacted materials.
Commitment was made to include the findings of the DPI-W review of the water balance model at next CCC.

c. **Update on Water Supply Options**

Water Management Plan has been submitted to the Department of Planning and Environment (DPE) which is the final external approval required to provide water for agricultural purposes. Since the last CCC, the Environmental Protection Licence amendment has been approved which sets specific conditions on water quality monitoring of any water supplied, as well as measuring of quantities supplied. If the Water Management Plan is approved by the DPE, WCC will be in a position to consider requests for access to water.
Mark Hammond stated that parties have approached WCC with interest in accessing water, however no formal agreements have been made at this point regarding the supply of water. Parties interested in obtaining water for agricultural purposes are invited to apply to WCC. Rod Hicks clarified that WCC would not be looking to pump water vast distances, with the concept of providing water to interested parties at a public access in accordance with any approved Water Management Plan.

d. **Change of Personnel in Committee**

The committee welcomed the new Community Representative, James O'Brien, a resident of Werris Creek.
The committee thanked the contributions of Mark Hammond, Environmental Officer of Werris Creek Coal, who is leaving the company at the end of the week. The committee welcomed Lynden Cini, who is replacing Mark Hammond as Environmental Officer.

e. **CCC Guidelines**

Gae Swain summarized the submission made on behalf of the WCC CCC to the Department of Planning and Environment regarding the draft Community Consultative Committee Guidelines, following responses from last CCC meeting. A summary of the response is provided as follows:

Ref.	Paragraph commencing	Issue identified	Suggestion for improvement
Page 2, 2nd column	"The Committee may: 1. Provide advice…"	A Community Consultative Committee is generally not comprised of specialists in project design and impact mitigation. While CCC representatives may have useful suggestions in some areas, asking CCC members to provide advice on areas requiring higher level technical skills is not appropriate, especially regarding control measures to minimise impacts.	Clarify wording around point 1, to providing advice on community and related perceptions of the impacts of new projects.
Page 3, 1st point	"3. Review the performance…"	As per the above concern, the CCC is generally not comprised of technical specialists, and requiring the committee to	Suggest clarifying this paragraph to focus on those areas of environmental management and

		review the performance of many aspects of the project is likely to be beyond the expertise of the committee, especially in regards to environmental management.	community relations for which the CCC has relevant expertise. For example by adding "based on the qualifications and expertise of the committee".
Page 3, 2nd column	Membership of the Committee	The draft guidelines restrict council representation to one representative only. However this does not allow for effective representation from the council, especially where the project straddles council boundaries. By limiting representation to one council representative, it will reduce the council's ability to provide an effective contribution, as either a transient elected representative or an appropriate council employee will be able to represent the wider council, but not both.	It is suggested that to ensure continuity in council representation while also maintaining the input of the community's elected representatives, that the number of council representatives on the committee be expanded to 1-2 council representatives from each council within the project area.
Page 4, 1st column	"The Independent Chairperson will report annually…"	The guidelines do not provide sufficient detail on what should be reported by the chairperson as part of the annual reporting process.	Clarify annual reporting requirements.
Page 8, 1st column	Committee Training	The suggestions for training of committee members and the chairperson are too open-ended. Recruitment of committee members and the chairperson should take into account their existing qualifications and skills, rather than using the CCC for educational purposes.	Provide further clarification around the nature of the training, for example a one day course in best practice environmental management if required (as opposed to a university degree). Refine selection criteria of CCC representatives to encourage the recruitment of representatives with suitable knowledge and skills that may provide benefit to the CCC.

Meeting Closed 11:10am.

Next Meeting scheduled for Thursday 25th August 2016.

Copy to:

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Mike Lomax	Community Representative
Dave Goldman	Community Representative
James O'Brien	Community Representative

Donna Ausling	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Mark Hammond	Werris Creek Coal
Wayne Jones	DPE	Lynden Cini	Werris Creek Coal
John Trotter	DRE		
Elliot Picone	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

February, March and April 2016

This Environmental Monitoring Report covers the period 1st February to 30th April 2016 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

APPENDICES

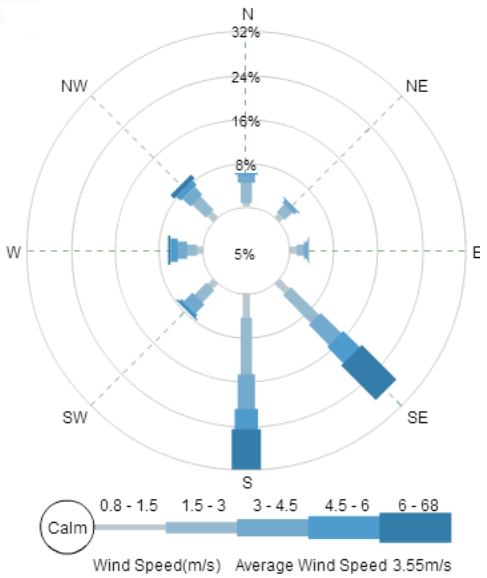
1.0 METEOROLOGY

1.1 WEATHER STATION

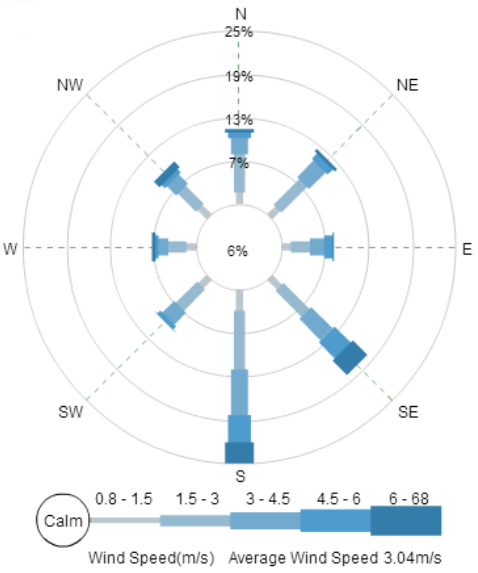
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. February through April 2016 were characterized by mild to hot temperatures with winds predominantly south to southeast. The period had significantly below average rainfall with a total deficit from the long term average of 188 mm across the three months.

Month	Quipolly Temp (°C)			Werris Creek Temp (°C)			WCC Temp (°C) 10m			Lapse Rate (°C/100m)		Rainfall (mm)			
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Quip	WC	Annual*
February 2016	10.3	23.8	37.9	14.1	24.9	37.1	15.7	24.8	36.1	-2.1	+6.9	8.2	6.8	4.6	557.2
March 2016	7.1	22.9	35.1	10.4	23.6	34.4	11.8	23.5	33.1	-2.1	+4.5	13.2	7.0	9.6	570.4
April 2016	7.2	19.2	32.2	10.4	23.6	34.4	11.5	20.7	30.9	-1.1	+6.4	16.8	11.4	9.6	16.8

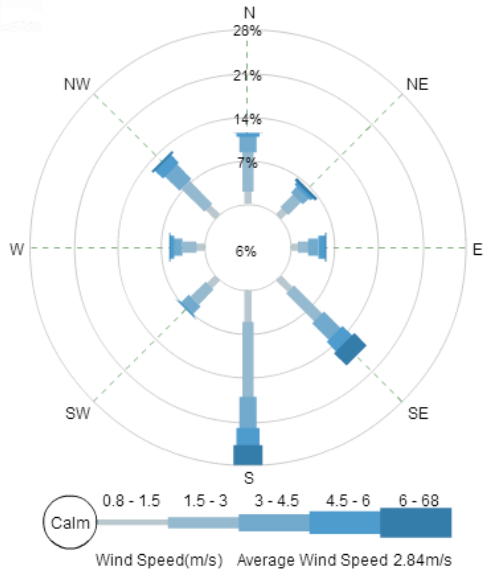
* Annual cumulative total since April each year from the onsite Weather Station at WCC.



February 2016



March 2016



April 2016

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10 & PM2.5)

WCC operates five High Volume Air Sampler (HVAS) measuring particulate matter less than 10 micron (PM10) and total suspended particulate (TSP) matter at four sites. HVAS sampling is scheduled for 24 hours every 6 days in accordance with Environment Protection Authority (EPA) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled. In addition, WCC operates a Tapered Element Oscillating Microbalance (TEOM) monitor in Werris Creek measuring real time PM10 and PM2.5 (particulate matter less than 2.5 micron) dust levels. Dust monitoring locations are identified in **Figure 1**.

PM2.5 – TEOM92 “Werris Creek”
PM10 – TEOM92 “Werris Creek”
PM10 – HVP20 “Tonsley Park”
PM10 – HVP1 “Escott”
PM10 – HVP20 “Glenara”
PM10 – HVP98 “Kyooma”
TSP – HVT98 “Kyooma”

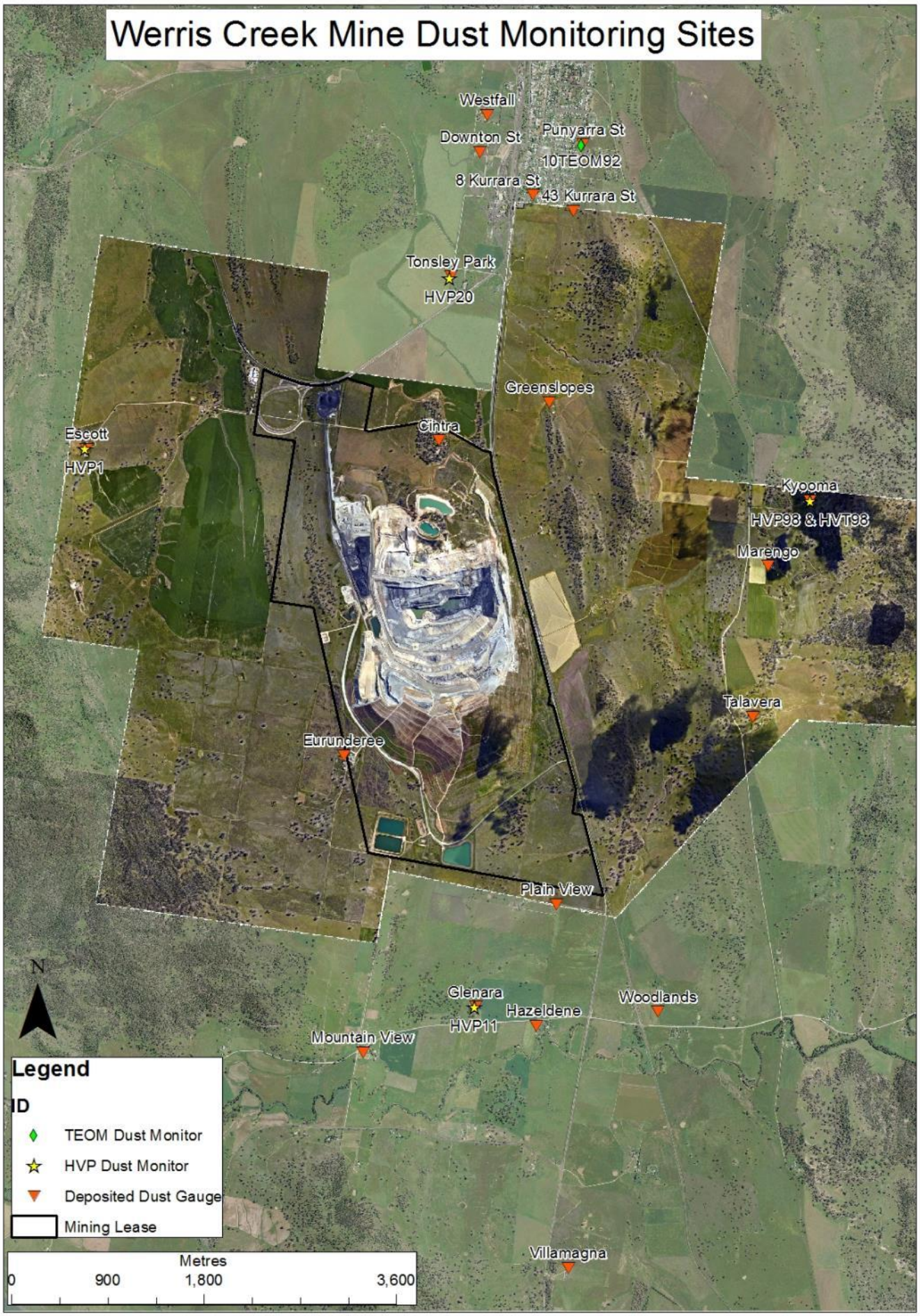


Figure 1 – WCC Dust Monitoring Locations

2.1.1 Monitoring Data Results

The average results for the last three months are provided in the table below; however see HVAS/TEOM monitoring data under **Appendix 1** for individual results.

Monitor Location	Daily Maximum (µg/m^3)	February 2016 (µg/m^3)	March 2016 (µg/m^3)	April 2016 (µg/m^3)	2015-2016 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	19.2	4.3	3.6	4.4	3.3	8	25
PM10 – TEOM92 "Werris Creek"	32.7	11.4	9.0	11.0	7.8	30	50
PM10 – HVP20 "Tonsley Park"	26.7	15.6	17.7	16.6	13.6	30	50
PM10 - HVP1 "Escott"	18.9	11.2	15.8	13.6	10.6	30	50
PM10 – HVP20 "Glenara"	**54.9**	25.3	28.4	29.2	18.2	30	50
PM10 – HVP98 "Kyooma"	22.1	10.5	10.4	12.4	8.2	30	50
TSP – HVT98 "Kyooma"	45.7	23.8	18.8	21.8	17.0	90	-

Yellow Bold – Elevated dust level.

2.1.2 Discussion - Compliance / Non Compliance

All TSP, PM10 and PM2.5 dust results were within criteria during the period with the exception of two results measured at "Glenara", on the 17th February 2016 and the 11th April. On both occasions, Werris Creek Coal Mine was not predominantly upwind of the monitor during the sampling period, with downwind monitors recording measurements well within compliance limits for air quality. As such, the exceedances were attributed to localized sources of dust generation, and not attributable to mining activities at Werris Creek Coal Mine.

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 three months are provided in the table below; however **Appendix 2** has more information on Deposited Dust Monitoring Results.

Monitor Location	February 2016 (g/m^2/month)	March 2016 (g/m^2/month)	April 2016 (g/m^2/month)	2015-2016 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.2	0.4	0.6	0.5	4.0
DG2 "Cintra"	1.4	2.1	2.8	2.0	4.0
DG3 "Eurunderee"	1.0	0.9	1.0	1.0	4.0
DG5 "Railway View"	2.5	1.0	1.5	**5.6**	4.0
DG9 "Marengo"	1.5	1.8	0.5*	0.9	4.0
DG11 "Glenara"	1.2	1.1	0.7	0.9	4.0
DG14 "Greenslopes"	0.4	0.4	0.6*	0.6	4.0
DG15 "Plain View"	1.4*	0.4	0.8	1.3	4.0
DG17 "Woodlands"	4.0*	3.4*	0.5*	3.2	4.0
DG20 "Tonsley Park"	0.9*	0.7	0.6	**5.1**	4.0
DG22 "Mountain View"	1.0	0.5	0.7	1.4	4.0
DG24 "Hazeldene"	1.2	0.7*	0.8	2.0	4.0
DG34 8 Kurrara St	**5.7**	0.8	**6.1**	**4.8**	4.0
DG62 Werris Creek South	0.3*	<0.1	0.2*	1.0	4.0
DG92 Werris Creek Centre	0.5	0.1	0.3*	0.6	4.0
DG96 "Talavera"	0.6	0.4	NS	0.6	4.0
DG98 "Kyooma"	0.1	0.4	0.2*	0.3	4.0
DG101 "Westfall"	1.6	0.8	1.9	1.2	4.0
DG103 West Street	0.5*	1.4	1.2*	1.2*	4.0

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

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 except for DG34 (8 Kurrara St) during February and April 2016. Consistently high dust levels at this gauge and low deposited dust levels at nearby gauges indicate a localized source of dust generation, unrelated to activities at Werris Creek Coal Mine. Both DG5 and DG20 were affected by one anomalous high dust deposition measurement during the 2015-2016 reporting year, which has resulted in the annual average of these monitoring sites exceeding the annual criteria. On both occasions, deposited dust levels remained low at nearby gauges, indicating a localized source of dust in each case, 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; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	November 2015		March 2016		April 2016		2015-2016 Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	0.9	<1%	1.5	No analysis - laboratory error	1.1	5%	1.8
DDW20	1.2	<1%	1.7		Station vandalised		1.0
DDW13	1.5	5%	1.6		0.9	5%	1.1
Train Line							
DDE13	1.2	<1%	1.5	No analysis - laboratory error	1.2	10%	1.8
DDE20	1.3	5%	1.8		2.3	<1%	1.0
DDE30	**4.2**	<1%	0.9		1.6	<1%	1.6

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 for all samples except one furthest from the railway line on the eastern side in February 2016) and comparable to the levels monitored around Werris Creek Coal Mine. Coal contributions to the dust fraction remain very low at all monitoring sites.

2.4 AIR QUALITY COMPLAINTS

There was one dust complaint recorded during the period relating to dust generated at the Train Load Out facility. Specific actions taken in relation to this complaint is outlined in **Section 6.**

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.

- A - “Rosehill” R5;
- B - “Almawille” (private agreement) R8;
- B - 83 Wadwells Lane (private agreement) R7;
- B - “Mountain View” (private agreement) R22;
- B - “Gedhurst” (private agreement) R9;
- C - “Meadholme” (private agreement) R10;
- C - “Glenara” (private agreement) R11;
- D - “Hazeldene” R24;
- E - “Railway Cottage” R12;
- F - “Talavera” R96;

- G - R97;
- H - "Kyooma" (private agreement) R98;
- I - Kurrara St, Werris Creek;
- J - Coronation Ave, Werris Creek;
- K - "Alco Park" (private agreement) R21; and
- L - R103.

In addition, noise monitoring was also undertaken at 'M – "Jaskim Park"' during April 2016 in response to a noise complaint at this location.

3.1.1 Monitoring Data Results

The WCC operations only noise level (not ambient noise) results for the last three months are outlined below; however see Monthly Noise Monitoring Reports under **Appendix 4** for more detail. Noise monitoring locations are identified in **Figure 2**.

Tuesday 23rd February 2016

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
G	R97	Inaudible	40	22#	40
H	**"Kyooma"** R98*	Inaudible	35	Inaudible#	35
I	**Kurrara St, WC**	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	40	Inaudible	40
K	**South St, WC** (R20*, R21*)	Inaudible	35	Inaudible	35
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) $L_{eq\ 15min}$

Wednesday 30th March and Thursday 31st March 2016

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	21#	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible#	40	23#	40
C	**Central Quipolly**(R10*,R11*)	Inaudible#	40	24#	40
D	**"Hazeldene"** R24	22#	37	27#	37
E	**"Railway Cottage"** R12	27	38	25#	38
F	**"Talavera"** R96	22#	38	43#	37
H	**"Kyooma"** R98*	26#	40	32#	40
I	**Kurrara St, WC**	Inaudible#	35	25#	35
J	**Coronation Ave, WC**	Inaudible#	35	35#	35
K	**South St, WC** (R20*, R21*)	28	40	21#	40
L	**West St, WC** (R103)	23	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) $L_{eq\ 15min}$

Tuesday 19th April 2016

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*)	23	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*	23	40	Inaudible#	40
I	**Kurrara St, WC**	21	35	21	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**South St, WC** (R20*, R21*)	24	40	22#	40
L	**West St, WC** (R103)	Inaudible	35	Inaudible	35

M	**"Jaskim Park"**	Inaudible	35	23	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) $L_{eq\ 15min}$

Figure 2 – WCC Noise Monitoring Locations

3.1.2 Discussion - Compliance / Non Compliance

Noise from Werris Creek Coal Mine was inaudible at most of the monitoring sites during the quarter. This is largely the result of mining operations situated predominately low in the pit during the quarter (especially during February and April 2016), and due to generally milder night time inversion conditions, with few strong temperature inversions present during the quarter. Elevated noise levels were recorded at the Kyooma monitor during the evening of 30th March 2016, however this was during a period of adverse wind and inversion conditions. As is sometimes the case, Werris Creek Coal Mine changed mining operations to reduce noise generation potential on this evening in response to noise levels measured at the real time noise monitors.

3.2 NOISE COMPLAINTS

There was one noise complaint recorded during the period, relating to noise impacts from mining operations in the Quipolly area. Specific actions taken in relation to this complaint are outlined in **Section 6.**

4.0 BLAST

During the period a total of thirty eight blasts were 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 three months are provided below; however see the blasting results database under **Appendix 5** for more detail.

February 2016		"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		0.14	100.6	0.64	99.5	0.27	98.0	0.17	98.3
Monthly Maximum		0.23	108.7	1.43	109.9	0.65	109.3	0.28	114.2
Annual Average		0.15	99.7	0.72	101.0	0.36	100.3	0.23	98.9
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s		5 out of 12 blast events							

March 2016		"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		0.10	99.0	0.47	100.4	0.25	97.9	0.16	100.0
Monthly Maximum		0.25	112.0	1.28	110.3	0.50	106.2	0.46	111.7
Annual Average		0.14	99.6	0.47	101.3	0.36	100.3	0.16	99.6
Criteria		5	115	5	115	5	115	5	115
% >115dB(L)	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
or 5mm/s	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s		4 out of 14 blast events							

April 2016		"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		0.19	98.8	0.68	102.2	0.32	97.1	0.19	98.1
Monthly Maximum		0.43	105.0	1.35	108.2	0.64	105.7	0.37	113.3
Annual Average		0.19	98.8	0.68	102.2	0.32	97.1	0.19	98.1
Criteria		5	115	5	115	5	115	5	115
% >115dB(L)	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
or 5mm/s	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# Blasts >0.5mm/s		10 out of 12 blast events							

Yellow – overpressure >115dB(L) or Werris Creek vibration >0.8mm/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).

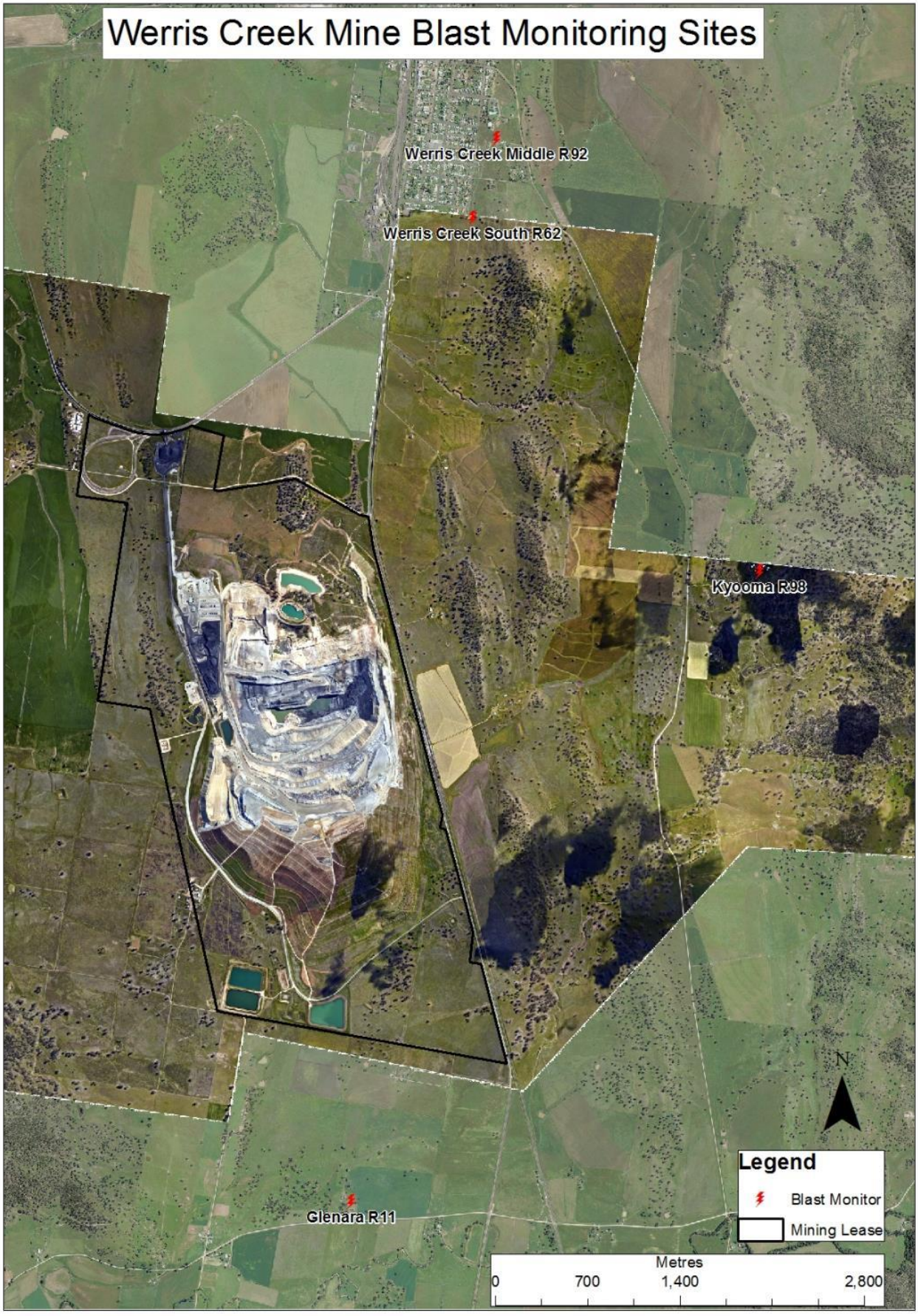


Figure 3 – WCC Blast Monitoring Locations

4.2 BLAST COMPLAINTS

There were ten blast complaints during the period with six relating to vibration/overpressure impacts from blasting and a further four relating to dust plumes from blasting. All blasts were in compliance with licence conditions. Specific actions taken in relation to these complaints are outlined in **Section 6.**

5.0 WATER

The groundwater monitoring program monitors groundwater levels bi-monthly and groundwater quality six monthly. Surface water monitoring is undertaken quarterly. There was one dirty water discharge event during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to identify if there are any impacts on groundwater quality and 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. Bi-monthly groundwater level survey was completed between the 14th and 22nd March 2016. Groundwater monitoring locations are identified in **Figure 4**.

5.1.1 Monitoring Data Results

A summary of groundwater monitoring results is provided below with the field sheets provided in **Appendix 6**.

Site		March 2016	
		mbgl	%
Werrie Basalt Near WCC	MW1	Dry	-
	MW2	43.40	-15%
	MW3	19.40	-1%
	MW4B	16.81	-1%
	MW5	12.55	-1%
	MW6	15.44	0%
	MW27*	53.43	+3%
	MW36A	23.92	+2%
	MW36B	23.69	+2%
Werrie Basalt	MW8*	19.75	-1%
	MW10	16.72	+2%
	MW14	20.57	-2%
	MW17B*	13.83	+1%
	MW19A*	12.32	-24%
	MW20*	21.66	0%
	MW38A	15.12	-1%
	MW38B*	10.25	0%
	MW38C*	23.27	1%
	MW38E*	10.68	-1%
#[1]	MW24A*	15.76	-1%
	MW29*	15.20	0%
Quipolly Alluvium	MW12*	13.93	-2%
	MW13*	Dry	-
	MW13B*	5.82	-2%
	MW13D*	5.79	-4%
	MW15*	7.05	-2%
	MW16*	Dry	-
	MW17A*	7.35	-1%
	MW18A*	Dry	-
	MW21A*	11.30	-1%
	MW22A*	Dry	-
	MW22B*	Dry	-
	MW23A*	4.53	-3%
	MW23B*	4.44	-1%
	MW26B*	9.75	-1%

	MW28A*	15.93	-2%
	MW32*	4.30	-2%
#[2]	**MW34***	11.88	-3%

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.

Figure 4 – WCC Groundwater Monitoring Locations

5.1.2 Discussion - Compliance / Non Compliance

Measured groundwater levels in the Werrie Basalt are largely unchanged during the period, with many bores stable or showing an increase in water level, possibly a delayed effect from the good rainfalls in December 2015 and January 2016. However this stabilization in the Werrie Basalt wasn't also seen in the Quipolly Alluvium aquifer, with the water levels in bores continuing to decrease across the monitoring network. Despite the good rainfall in December and January, rainfall for the 12 months to March 2016 was still significantly below the long-term average, exacerbating the existing significant rainfall deficit. There was continuing media attention on this issue during the quarter.

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 29th February 2016. Surface water monitoring locations are identified in **Figure 5**.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with the laboratory reports provided in **Appendix 7**.

Site	pH	EC	TSS	O&G	Change from Previous Quarter
ONSITE					
SB2	Dry	Dry	Dry	Dry	Dry.
SB9	8.8	630	36	11	EC reduced from 894; pH, TSS, and O&G increased from 8.2, <5 and <5 respectively.
SB10	Dry	Dry	Dry	Dry	Dry.
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry.
QCD	8.0	1210	<5	<5	pH and EC increased from 8.0 and 1210 respectively. O&G unchanged. TSS decreased from 23.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.1	1350	28	<5	pH and EC decreased from 8.41 and 1330 respectively. TSS and O&G decreased from 34 and 14 respectively.

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; Orange – Issue with water quality; Green – water quality OK.

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 29th February 2016 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 longer term averages and the Site Water Management Plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There was one controlled discharge event in February 2016, related to the dewatering of SB9 following good rainfall in December 2015 and January 2016. Sampling of the discharge point, as well as upstream and downstream on Quipolly Creek was undertaken in accordance with licence conditions.

Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
1/2/2016	**SB9**	7.1	538	6	9	Yes	Controlled	33.4
Criteria		**8.5**	**N/A**	**50**	**10**			

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; **Yellow** – indicates results outside criteria due to 5 day rain >39.2mm.

5.3.2 Discussion - Compliance / Non Compliance

All water quality results were in compliance with licence limits.

5.3 WATER COMPLAINTS

There were no surface water or groundwater complaints during February, March and April 2016.

Figure 5 – WCC Surface Water Monitoring Locations

6.0 COMPLAINTS SUMMARY

There were sixteen complaints received during the period, which are summarised below. Of the sixteen complaints, ten were related to blasting impacts, two related to lighting, two related to odour, one related to dust, and one related to noise.

#	Date	Complainant	Complaint	Investigation	Action Taken
501 & 506	26/02/2016 4:09pm	A Werris Creek & Anonymous (DPE) Werris Creek	The complainant stated that the mine blast shook their house, and commented on the volume of dust.	WCC blast #2016-025 (S20_B2021_RL365_TSB) was fired at 4:09pm on Friday 26th February 2016 on the western side of the pit 30 metres below natural surface, following a favourable weather check (7.5m/s @ 175°, with no inversion). Actual blast vibration results recorded at Werris Creek South were 0.48mm/s, in line with the prediction of 0.5mm/s, in compliance with licence conditions, and below levels that cause significant impact or amenity issues. Dust from the blast travelled north downwind off the mining lease, as such, the blast plume was visible from Werris Creek. There was no fume produced by the blast, and video footage demonstrates that the plume remained a minimum of 1.5 km from Werris Creek at all times, in line with wind predictions.	Email response provided to the complainant. Email response provided to the DPE.
502	7/3/2016 8:58pm	U Werris Creek	The complainant stated that dust was being generated from truck movements along the coal haul road.	The CPP night shift supervisor advised that issues related to water supply restricted road watering opportunities from around 5:30-6pm until around 8pm when the water supply problem was rectified. The shift supervisor advised that they did not believe dust levels at any time were excessive. PM10 dust levels recorded at the Werris Creek TEOM at the time (which was partially downwind at the time with wind direction ranging from 169° to 223°) ranged between 8.4µg/m3 and 12.9µg/m3, with a PM10 24hr average of 6.2µg/m3, well below compliance criteria and in line with background levels. PM10 levels were well below compliance criteria.	Complaint investigated. Response provided to complainant.
503	24/2/2016 1:09pm	Anonymous (DPE) Werris Creek	Complainant stated that a large volume of black dust was visible from a blast.	Blast #2016-024 (S16_B0910_UG_P3D) was a small underground collapse shot fired at 13:09 on 24/2/2016 after a favourable weather check. There was a light westerly wind blowing (2.7m/s @ 291°) and no inversion. The Blast Hazard Analysis identified an elevated risk of dust, and as such a road closure was in place. The dust plume dispersed while still within the area of the mining pit, with no visible sign of dust blowing offsite.	Complaint investigated. Email response provided to DPE
504	24/2/2016 Night	Anonymous (DPE) Werris Creek	Lights directed at the township of Werris Creek during the night	Footage from the Werris Creek lighting camera on this evening reveals lighting impacts from ARTC railway track work. Lights from Werris Creek Mine are not visible due to the dominance of the railway maintenance works.	Complaint investigated. Email response provided to DPE
505	10/3/2016 Night	Anonymous (DPE) Werris Creek	Lights directed at the township of Werris Creek during the night	Footage from the Werris Creek lighting camera on this evening identifies a single moving light source occasionally visible. This is related to a dozer operating on the far east of the overburden emplacement, as identified by the on duty Noise Compliance Officer. No fixed lighting plants were visible and the actual impact is minimal, and in line with Project Approval conditions.	Complaint investigated. Email response provided to DPE
507	17/3/2016 1:15pm	U Werris Creek	The complainant stated that the floor in the house moved and the house shook, and wished to lodge a complaint.	WCC shot #2016-034 (S14_B1416_RL245-250) was fired at 1:15pm on Thursday 17th March 2016 on the western side of the pit as a through-seam shot. The shot was designed with a pre blast vibration prediction for Werris Creek South of 0.4mm/s. Blast monitoring results were in compliance at all community monitoring locations. Actual blast vibration at the Werris Creek South monitor (closest to the complaint) of 0.50mm/s was slightly above the predicted vibration but equal to the anecdotal complaint threshold of 0.5mm/s. The frequency of the blast waves at this location ranged from 12-15 hz, which is similar to the natural vibration frequency of buildings.	Phone call and written response provided to complainant.
508	1/04/2016 1:37pm	Anon DPE Werris Creek	Complaint regarding a blast – ground vibration. Email received 7/4/2016 1:23pm	WCC shot #2016-042 (S15_B1112_UG_P5a) was a small underground collapse shot fired at 1:37pm on Friday 1st April 2016 and was in compliance. Actual blast vibration @ 0.15mm/s (Werris Creek South) was below the predicted vibration and well below the anecdotal threshold for vibration complaints of 0.5mm/s. Weather conditions were a light northwesterly wind (319°) @ 3.5m/s with no inversion present.	Written response provided to DPE.

509	8/4/2016 9:10am	BS Quipolly	The complainant advised that they could hear the roar of mining machinery and wished to complain	Audio streaming from the Quipolly noise monitor was reviewed in association with measured noise levels at the monitor. Noise levels during the period of the complaint were below 35dB(a) LF, with the exception of occasional short duration peaks. The audio stream combined with visual assessment confirmed these peaks to be attributed to a light aircraft flying in the area at the time. When the light aircraft was not audible through the audio stream noise levels returned to below 35dB(a) LF. WCC Operations Manager and Production Superintendent drove to the road adjacent to the complainants property to identify the noise sources and levels in this area. The principal noise source for most of the observation period related to the light aircraft identified in the audio stream. When the aircraft was not audible, general mining hum was audible, however it was identified to be close to background noise levels, and not at a level that would could a nuisance. A dozer operating on the top of the overburden emplacement was stopped for a short time, however this had negligible impacts on the measured noise levels and field observations. No further actions were taken at this time.	Environmental Officer called complainant back at 10:44am on 8/4/16 to advise of the progress of the investigations. Complainant advised that they no longer thought noise levels were excessive. EO requested notification next time complainant believed noise levels were excessive.
510	13/4/2016 4:08pm	U Werris Creek	The complainant stated that the roofing in the shed vibrated badly, and wished to lodge a complaint.	WCC shot #2016-049 (S14_B1617_RL245_TSB) was fired at 4:08pm on Wednesday 13th April 2016 on the western side of the pit as a through-seam shot. The shot was designed with a pre blast vibration prediction for Werris Creek South of 0.4mm/s. Blast monitoring results were in compliance at all community monitoring locations. Actual blast vibration at the Werris Creek South monitor (closest to the complaint) of 0.45mm/s was in line with the predicted vibration and below the anecdotal complaint threshold of 0.5mm/s. The shot was next to and at the same level as the previous complaint from the same complainant. Combined these two shots are the first in several months with significant blasting in the G-seam interburden.	Return phone call and email response provided to complainant with blast results.
511	18/4/2016 1:45pm	BI Werris Creek	Complainant advised that “house shook for quite a while on this blast, at least 10 seconds of moderate to high shaking”.	WCC shot #2016-050 (S15_B1720_RL260_TSB) was fired at 1:34pm on Monday 18th April 2016 on the western side of the pit as a through-seam shot. The shot was designed with a pre blast vibration prediction for Werris Creek South of 0.3mm/s. Blast monitoring results were in compliance at all community monitoring locations. Actual blast vibration at the Werris Creek Mid monitor (closest to the complaint) of 0.28mm/s was in line with the predicted vibration and below the anecdotal complaint threshold of 0.5mm/s. The shot was located in the F and G interburden, which may have contributed to the complaint given the relatively low measured vibration levels at the monitoring stations in Werris Creek. This shot was adjacent to two previous blasts resulting in complaints (complaint #507 and #510).	Email response to complainant with details of the blast. Offered to monitor vibration levels at complainant’s residence the next time blasting occurs in this area.
512	19/4/2016 9:02am	Y Werris Creek	Complainant advised that they could smell the “burning smell of coal, quite strong at my residence”	EO and Operations Manager visited the road adjacent to the complainants property immediately after receiving the complaint. No mine-related odour could be detected. Data from the site weather station was reviewed to confirm that the current location was directly downwind of the mine at the time of observation. Following a conversation with the complainant, EO then undertook a west-east transect of the mining area to ascertain any impact from the mine, with no odour detectable at any point along the transect. Weather conditions at 9:25am on 19/4/16 were a light southerly (191°) at 1m/s with no inversion present (weak overnight inversion broke down at 7:20am)	Phone discussion with complainant to inform of current mining sequence and progress of mining old underground workings. Requested to be notified if odour is detected in future, to allow continued monitoring.

513-515	20/4/2016 2:05pm	A Werris Creek & I Werris Creek	Complainant A advised that they felt the blast. Complainant I advised they felt the vibration and also had dust come over the property.	WCC shot #9 (blast #2016-052 S19_B1013_RL400 & #2016-051 S15_B0810_Gseam_PS) was fired at 1:58pm on Wednesday 20th April 2016. #2016-052 was an overburden blast located on natural surface in the middle of the strip, and #2016-051 was a presplit blast located on the eastern side of the strip. The blasts were designed with a pre blast vibration prediction for Werris Creek South of 0.5mm/s and 0.4mm/s respectively. Blast monitoring results were in compliance at all community monitoring locations. It is expected that #2016-052 was the cause of the overpressure/vibration complaints due to the location and monitoring results. Actual blast vibration at the Werris Creek South monitor of 0.37mm/s for #2016-052 was below the predicted vibration the anecdotal complaint threshold of 0.5mm/s. Overpressure was measured at 98.1 dB at the Werris Creek South monitoring site, well below the compliance limit. The pre-blast weather check was undertaken following a weather-related delay of 5 minutes, without favourable wind speed and direction of 3.0m/s at 158° (SSE) at time of firing. Monitoring of the dust plume following the blast shows the dust rising and travelling slowly across the closed Werris Creek road before dispersing.	Phone discussions with complainants, advising of the steps followed to minimise impacts on the community. Follow up letter including blast monitoring results to be provided.
516	20/4/2016 2:12pm	A Werris Creek	Complainant advised that they could smell fires burning for the past 3 weeks. Smell was not currently present.	WCC has been actively managing spontaneous combustion stemming from the underground workings of the former underground colliery. Actions taken include injecting flyash into roadways and sealing open headings with clay to reduce the oxygen intake leading to self-heating in the underground areas. In addition, additional watercarts have been manned during the mornings to reduce spontaneous combustion in ROM coal and partings material in the spoil, when inversion conditions may limit dispersion and exacerbate impacts. The former underground workings in strip 15 were mined out in the last week of April 2016, removing the source of the spontaneous combustion.	Phone discussion with complainant, advising of the current mining sequence. Follow up letter to be provided.

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.

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2015-2016

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	Monthly Summary	Rolling Annual Average	HVP98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	HVP1 Escott	Monthly Summary	Rolling Annual Average	HVP11 Glenara	EPL#29 Monthly Summary	Rolling Annual Average	HVT98 Kyooma	Monthly Summary	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
05-Apr-15		0.1			0.8		3	3.1	3.1	2	1.5	1.5	1	1.2	1.2	2	1.8	1.8	5	5.0	5.0	50	30	90
11-Apr-15		3.1	3.1		5.5	5.5	6	12.8	4.3	3.6	7.3	2.6	3.3	7.6	2.3	16	15.6	8.9	8	13.7	6.5	50	30	90
17-Apr-15		2.5			4.8		34	7.1	14.1	21	3.4	8.7	21	4.3	8.4	35	13.0	17.4	34	8.0	15.6	50	30	90
23-Apr-15		7.8			11.9		9	33.8	12.8	3	21.0	7.3	5	20.8	7.6	10	34.5	15.6	8	33.8	13.7	50	30	90
29-Apr-15							8		11.7	3		6.5	5		7.1	14		15.2	5		12.0	50	30	90
05-May-15		0.0			0.0		13	3.6	11.9	8	2.5	6.8	9	3.3	7.3	19	5.0	15.8	17.2	4.7	12.9	50	30	90
11-May-15		2.9	3.0		4.5	5.0	11	8.5	11.8	12	6.8	7.5	9	6.6	7.5	12	12.6	15.3	30	15.7	15.3	50	30	90
17-May-15		2.9			4.1		6	8.6	11.1	4	6.2	7.1	5	7.0	7.3	14	13.2	15.2	11.3	14.3	14.8	50	30	90
23-May-15		6.9			15.0		4	13.1	10.3	3	12.1	6.6	3	9.0	6.8	5	19.0	14.0	5	29.7	13.7	50	30	90
29-May-15							7		10.0	6		6.5	11		7.2	6		13.3	12		13.5	50	30	90
04-Jun-15		0.0			0.0		14	2.8	10.4	7	1.2	6.5	11	2.7	7.5	11	1.8	13.0	11	3.6	13.3	50	30	90
10-Jun-15		1.9	2.6		4.0	4.7	11	9.0	10.4	6	4.3	6.4	10	7.6	7.8	10	6.5	12.7	8	7.9	12.8	50	30	90
16-Jun-15		1.4			3.9		3	9.6	9.8	2	5.5	6.1	3	10.4	7.4	2	6.4	11.9	5	8.2	12.2	50	30	90
22-Jun-15		5.9			10.6		10	14.4	9.8	1	6.6	5.8	4	10.9	7.1	4	10.6	11.3	4	12.4	11.6	50	30	90
28-Jun-15							8		9.7	4		5.7	6		7.0	14		11.5	6		11.2	50	30	90
04-Jul-15		0.0			0.5		13	0.7	9.9	6	1.3	5.7	7	0.4	7.1	13	2.1	11.6	10	3.3	11.2	50	30	90
10-Jul-15		2.6	2.6		5.5	4.9	5	7.3	9.6	2	3.1	5.5	4	4.2	6.9	13	10.1	11.7	6	6.2	10.9	50	30	90
16-Jul-15		2.6			5.8		1	7.6	9.1	1	2.3	5.2	0	4.1	6.5	2	12.8	11.2	3	6.2	10.5	50	30	90
22-Jul-15		7.3			10.8		10	13.4	9.2	2	5.8	5.1	3	7.4	6.4	8	14.1	11.0	5	9.8	10.2	50	30	90
28-Jul-15							17		9.6	NS		5.1	6		6.3	12		11.1	NS		10.2	50	30	90
03-Aug-15		0.0			0.0		9	9.0	9.5	NS	8.6	5.1	8	5.8	6.4	10	9.9	11.0	NS	21.2	10.2	50	30	90
09-Aug-15		3.8	2.9		7.7	5.5	16	16.6	9.8	NS	14.2	5.1	11	11.0	6.6	21	19.8	11.5	NS	27.8	10.2	50	30	90
15-Aug-15		3.4			7.8		15	15.7	10.1	9	14.2	5.2	9	8.8	6.7	18	18.2	11.8	21	27.8	10.7	50	30	90
21-Aug-15		11.4			17.8		26	25.5	10.7	20	19.8	5.9	22	21.7	7.3	38	37.6	12.9	34	34.4	11.9	50	30	90
27-Aug-15							6		10.5	4		5.9	5		7.2	7		12.6	8		11.7	50	30	90
02-Sep-15		0.0			0.0		11	5.7	10.5	9	1.1	6.0	9	1.6	7.3	16	6.6	12.7	20	7.8	12.0	50	30	90
08-Sep-15		1.6	2.6		5.9	5.4	11	11.2	10.6	10	7.7	6.2	10	8.3	7.4	12	15.9	12.7	32	20.2	12.9	50	30	90
14-Sep-15		1.4			5.9		18	11.3	10.8	14	9.1	6.5	16	8.8	7.7	25	16.0	13.1	33	19.6	13.7	50	30	90
20-Sep-15		4.3			10.8		10	17.9	10.8	1	13.6	6.3	2	16.4	7.5	20	24.8	13.4	8	32.7	13.5	50	30	90
26-Sep-15							5		10.6	5		6.2	5		7.4	15		13.4	8		13.3	50	30	90
02-Oct-15		0.0			0.0		29	5.4	11.2	17	5.0	6.6	20	4.9	7.8	37	15.0	14.2	36	8.0	14.1	50	30	90
08-Oct-15		5.0			11.4		11	15.6	11.2	8	10.5	6.7	13	13.5	8.0	21	28.6	14.4	23	23.4	14.4	50	30	90
14-Oct-15		5.4	2.9		11.3	6.3	12	12.2	11.2	9	9.2	6.8	14	14.0	8.1	47	23.1	15.4	23	23.0	14.7	50	30	90
20-Oct-15		16.2			29.2		20	29.2	11.5	13	17.2	7.0	16	20.0	8.4	23	47.2	15.6	28	35.7	15.1	50	30	90
26-Oct-15							14		11.6	8		7.0	8		8.4	12		15.5	15		15.0	50	30	90
01-Nov-15		0.5			2.7		13	9.4	11.6	10	6.8	7.1	9	6.3	8.4	13	12.0	15.5	18	13.8	15.1	50	30	90
07-Nov-15		4.8	3.1		12.1	7.0	9	12.1	11.5	7	8.9	7.1	6	10.6	8.3	12	14.9	15.4	14	17.9	15.1	50	30	90
13-Nov-15		4.5			10.1		NS	13.2	11.5	7	8.0	7.1	11	8.9	8.4	13	12.8	15.3	15	14.5	15.1	50	30	90
19-Nov-15		12.8			36.9		NS	13.6	11.5	14	13.5	7.2	19	19.3	8.7	24	24.4	15.5	29	28.6	15.5	50	30	90
25-Nov-15									11.5	18		7.5	32		9.2	33		16.0	33		15.9	50	30	90
01-Dec-15		0.0			0.0		39	15.0	12.3	17	7.7	7.8	32	15.3	9.8	36	13.8	16.4	31	15.5	16.3	50	30	90
07-Dec-15		3.4	3.1		8.3	7.1	19	25.6	12.4	10	12.6	7.8	15	22.3	9.9	21	24.2	16.6	20	23.9	16.4	50	30	90
13-Dec-15		3.7			8.9		15	24.3	12.5	8	11.0	7.8	18	17.6	10.1	14	21.1	16.5	16	20.8	16.4	50	30	90
19-Dec-15		7.2			23.4		30	38.7	12.9	11	17.5	7.9	15	31.8	10.2	18	35.8	16.5	21	33.0	16.5	50	30	90
25-Dec-15							5		12.7	6		7.8	7		10.1	10		16.4	14		16.4	50	30	90
31-Dec-15		0.0			0.0		18		12.9	6		7.8	8		10.1	19		16.4	9		16.3	50	30	90
06-Jan-16		3.4	3.2		8.7	7.3	10	5.4	12.8	2	1.8	7.7	3	3.2	10.0	7	7.4	16.2	5	5.0	16.0	50	30	90
12-Jan-16		3.4			7.6		23	13.2	13.0	15	7.0	7.8	15	8.5	10.1	22	15.7	16.4	28	13.3	16.3	50	30	90
18-Jan-16		9.1			43.7		12	11.4	13.0	4	6.1	7.7	8	8.1	10.0	23	15.8	16.5	9	11.6	16.1	50	30	90
24-Jan-16							11	23.2	13.0	9	15.0	7.8	9	15.0	10.0	13	22.7	16.4	15	28.2	16.1	50	30	90
30-Jan-16							16		13.0	12		7.9	13		10.1	14		16.4	28		16.3	50	30	90
05-Feb-16		0.0			0.5		6	5.8	12.9	3	2.7	7.8	4	4.3	10.0	11	10.7	16.3	12	12.0	16.2	50	30	90
11-Feb-16		4.3	3.3		11.4	7.7	17	15.6	13.0	9	10.5	7.8	9	11.2	9.9	20	25.3	16.3	19	23.8	16.3	50	30	90
17-Feb-16		4.0			10.3		25	16.1	13.2	22	9.4	8.1	19	10.4	10.1	53	20.0	17.0	46	19.0	16.9	50	30	90
23-Feb-16		11.2			32.7		14	24.8	13.2	6	22.1	8.0	10	18.9	10.1	30	52.6	17.2	14	45.7	16.8	50	30	90
29-Feb-16							11		13.2	7		8.0	9		10.1	19		17.3	13		16.7	50	30	90
06-Mar-16		0.0			0.0		10	9.6	13.1	4	4.4	7.9	8	8.3	10.1	15	15.2	17.2	11	11.4	16.6	50	30	90
12-Mar-16		3.6	3.3		9.0	7.8	24	17.7	13.3	13	10.4	8.0	25	15.8	10.3	45	28.4	17.7	22	18.8	16.7	50	30	90
18-Mar-16		3.4			9.3		15	15.1	13.3	8	7.8	8.0	15	14.5	10.4	22	21.9	17.8	19	18.6	16.8	50	30	90
24-Mar-16		12.2			16.8		29	29.1	13.6	19	19.4	8.2	21	25.4	10.6	41	45.4	18.2	29	29.2	17.0	50	30	90
Min		**0.0**			**0.0**		**0.7**			**1.1**			**0.4**			**1.8**			**3.3**					
Median		**3.4**			**7.8**		**11.3**			**6.9**			**9.0**			**14.6**			**14.5**					
Max		**16.2**			**43.7**		**38.7**			**22.1**			**31.8**			**52.6**			**45.7**					
Capture							**95%**			**95%**			**100%**			**100%**			**95%**					

Werris Creek Coal
HVAS TEOM Dust Monitoring
2016-2017

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	Monthly Summary	Rolling Annual Average	HVP98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	HVP1 Escott	Monthly Summary	Rolling Annual Average	HVP11 Glenara	EPL#29 Monthly Summary	Rolling Annual Average	HVT98 Kyooma	Monthly Summary	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
30-Mar-16							11.0		11.0	8.2		8.2	12.4		12.4	11.1		11.1	13.1		13.1	50	30	90
05-Apr-16		0.0			0.0		18.2	11.0	14.6	18.3	7.7	13.3	16.4	7.2	14.4	45.4	6.9	28.3	34.3	10.7	23.7	50	30	90
11-Apr-16		**4.4**	4.4		**11.0**	11.0	26.7	**16.6**	18.6	14.0	**12.4**	13.5	15.5	**13.6**	14.8	**54.9**	**29.2**	37.1	29.9	**21.8**	25.8	50	30	90
17-Apr-16		3.4			10.8		16.0	16.0	18.0	13.7	13.7	13.6	16.4	15.5	15.2	27.6	27.6	34.8	20.9	20.9	24.6	50	30	90
23-Apr-16		19.2			26.5		11.1	26.7	16.6	7.7	18.3	12.4	7.2	16.4	13.6	6.9	54.9	29.2	10.7	34.3	21.8	50	30	90
29-Apr-16									16.6			12.4			13.6			29.2			21.8	50	30	90
05-May-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
11-May-16			4.4		**4.5**	7.7		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
17-May-16					4.1			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
23-May-16					15.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
29-May-16									16.6			12.4			13.6			29.2			21.8	50	30	90
04-Jun-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
10-Jun-16			4.4		**4.0**	6.5		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
16-Jun-16					3.9			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
22-Jun-16					10.6			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
28-Jun-16									16.6			12.4			13.6			29.2			21.8	50	30	90
04-Jul-16					0.5			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
10-Jul-16			4.4		**5.5**	6.3		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
16-Jul-16					5.8			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
22-Jul-16					10.8			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
28-Jul-16									16.6			12.4			13.6			29.2			21.8	50	30	90
03-Aug-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
09-Aug-16			4.4		**7.7**	6.6		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
15-Aug-16					7.8			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
21-Aug-16					17.8			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
27-Aug-16									16.6			12.4			13.6			29.2			21.8	50	30	90
02-Sep-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
08-Sep-16			3.4		**5.9**	6.4		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
14-Sep-16					5.9			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
20-Sep-16					10.8			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
26-Sep-16									16.6			12.4			13.6			29.2			21.8	50	30	90
02-Oct-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
08-Oct-16					**11.4**			**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
14-Oct-16			3.4		11.3	7.1		#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
20-Oct-16					29.2			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
26-Oct-16									16.6			12.4			13.6			29.2			21.8	50	30	90
01-Nov-16					2.7			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
07-Nov-16			3.4		**12.1**	7.7		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
13-Nov-16					10.1			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
19-Nov-16					36.9			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
25-Nov-16									16.6			12.4			13.6			29.2			21.8	50	30	90
01-Dec-16					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
07-Dec-16			3.4		**8.3**	7.8		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
13-Dec-16					8.9			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
19-Dec-16					23.4			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
25-Dec-16									16.6			12.4			13.6			29.2			21.8	50	30	90
31-Dec-16					0.0				16.6			12.4			13.6			29.2			21.8	50	30	90
06-Jan-17			3.4		**8.7**	7.9		0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
12-Jan-17					7.6			**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
18-Jan-17					43.7			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
24-Jan-17								0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
30-Jan-17									16.6			12.4			13.6			29.2			21.8	50	30	90
05-Feb-17					0.5			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
11-Feb-17			3.4		**11.4**	8.2		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
17-Feb-17					10.3			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
23-Feb-17					32.7			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
01-Mar-17									16.6			12.4			13.6			29.2			21.8	50	30	90
07-Mar-17					0.0			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
13-Mar-17			3.4		**9.0**	8.3		**#DIV/0!**	16.6		**#DIV/0!**	12.4		**#DIV/0!**	13.6		**#DIV/0!**	29.2		**#DIV/0!**	21.8	50	30	90
19-Mar-17					9.3			#NUM!	16.6		#NUM!	12.4		#NUM!	13.6		#NUM!	29.2		#NUM!	21.8	50	30	90
25-Mar-17					16.8			0.0	16.6		0.0	12.4		0.0	13.6		0.0	29.2		0.0	21.8	50	30	90
Min		**0.0**			**0.0**		**11.0**			**7.7**			**7.2**			**6.9**			**10.7**					
Median		**3.9**			**8.5**		**16.0**			**13.7**			**15.5**			**27.6**			**20.9**					
Max		**19.2**			**43.7**		**26.7**			**18.3**			**16.4**			**54.9**			**34.3**					
Capture							**8%**			**8%**			**8%**			**8%**			**8%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2015-2016

MONTH (g/m2/month)				April 2015	May 2015	June 2015	July 2015	August 2015	September 2015	October 2015	November 2015	December 2015	January 2016	February 2016	March 2016	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG1	Escott	Total Matter	0.3	0.2	0.1	0.1	0.2	1.9	0.3	0.8	1.0	0.2	0.2	0.4	0.5	0.6	0.1	1.9	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1	0.1	1.0	<0.1	<0.1	0.6	<0.1	0.1	0.2					
-	DG2	Cintra	Total Matter	1.2	2.7	1.5	1.6	2.1	3.3	3.4	2.5	0.9	1.5	1.4	2.1	2.0	1.7	0.9	3.4	4.0
			Ash Content	0.3	1.4	0.5	0.8	1.0	1.6	1.5	1.0	0.5	0.5	0.8	1.3					
-	DG3	Eurunderee	Total Matter	1.2	2.4	0.5	0.7	1.1	0.7	1.2	0.3	1.7	0.3	1.0	0.9	1.0	1.2	0.3	2.4	4.0
			Ash Content	0.8	0.7	0.2	0.2	0.7	0.3	0.6	<0.1	1.1	0.1	0.6	0.7					
-	DG5	Railway View	Total Matter	1.9	1.8	0.4	1.3	1.0	0.8	2.5	1.3	2.0	51.1	2.5	1.0	5.6	7.7	0.4	51.1	4.0
			Ash Content	1.1	0.7	0.2	0.7	0.6	0.3	1.1	0.6	1.2	32.5	1.5	0.6					
-	DG9	Marengo	Total Matter	1.6	0.8	0.1	0.4	1.2	0.4	0.7	0.6	1.3	0.5	1.5	1.8	0.9	1.0	0.1	1.8	4.0
			Ash Content	1.1	0.4	0.1	0.2	0.7	0.1	0.3	0.3	0.8	0.1	0.8	1.1					
EPL#29	DG11	Glenara	Total Matter	0.8	0.5	0.6	0.3	0.6	1.0	0.8	1.4	1.3	1.4	1.2	1.1	0.9	1.0	0.3	1.4	4.0
			Ash Content	0.4	0.2	0.4	<0.1	0.3	0.4	0.5	0.6	0.9	0.8	0.8	0.7					
-	DG14	Greenslopes	Total Matter	1.3	0.5	0.1	0.3	0.2	0.5	2.0	0.3	0.9	<0.1	0.4	0.4	0.6	0.7	<0.1	2.0	4.0
			Ash Content	0.8	0.2	<0.1	0.1	0.1	0.1	1.1	<0.1	0.5	<0.1	0.2	0.3					
-	DG15	Plain View	Total Matter	1.0	0.6	0.4	4.0	0.5	1.5	1.2	0.6	1.3	2.1	1.4	0.4	1.3	1.3	0.4	4.0	4.0
			Ash Content	0.5	0.3	0.1	2.0	0.3	0.7	0.6	<0.1	0.7	0.8	0.4	0.2					
-	DG17	Woodlands	Total Matter	2.6	4.8	8.3	1.0	0.8	1.6	1.3	7.1	2.6	1.4	4.0	3.4	3.2	1.6	0.8	8.3	4.0
			Ash Content	1.2	1.2	0.6	0.4	0.5	0.8	0.8	3.1	1.5	0.6	1.4	1.1					
-	DG20	Tonsley Park	Total Matter	4.4	11.9	3.1	27.6	4.2	1.4	2.0	2.1	2.0	1.2	0.9	0.7	5.1	2.3	0.7	27.6	4.0
			Ash Content	1.8	5.7	2.4	24.0	3.4	0.7	1.0	0.9	0.9	0.5	0.4	0.4					
-	DG22	Mountain View	Total Matter	4.3	2.2	1.2	0.3	0.6	2.2	0.6	2.0	1.6	0.2	1.0	0.5	1.4	1.3	0.2	4.3	4.0
			Ash Content	1.2	1.8	0.9	0.1	0.5	0.9	0.1	1.0	1.2	<0.1	0.7	0.4					
-	DG24	Hazeldene	Total Matter	5.1	4.5	0.6	0.5	1.3	0.4	2.6	3.6	2.5	0.5	1.2	0.7	2.0	1.4	0.4	5.1	4.0
			Ash Content	3.8	3.1	0.1	0.3	0.7	<0.1	0.8	1.6	1.4	0.2	0.8	0.3					
-	DG34	8 Kurrara Street	Total Matter	0.7	29.5	0.5	0.3	1.4	0.2	4.3	0.4	9.5	4.4	5.7	0.8	4.8	3.3	0.2	29.5	4.0
			Ash Content	0.3	20.7	0.2	0.1	1.0	<0.1	2.6	0.2	6.4	3.1	4.1	0.5					
-	DG62	Werris Creek South	Total Matter	7.7	0.8	0.1	0.5	0.3	0.3	0.8	0.4	1.1	0.2	0.3	<0.1	1.0	0.5	0.1	7.7	4.0
			Ash Content	0.8	0.3	<0.1	0.2	0.1	<0.1	0.4	<0.1	0.7	<0.1	0.1	<0.1					
EPL#30	DG92	Werris Creek Centre	Total Matter	1.0	0.4	0.1	2.7	0.3	0.6	0.5	0.1	0.6	<0.1	0.5	0.1	0.6	0.4	<0.1	2.7	4.0
			Ash Content	0.5	0.2	<0.1	0.7	0.1	0.1	0.1	<0.1	0.4	<0.1	0.3	0.1					
-	DG96	Talavera	Total Matter	0.2	0.5	NS	0.8	0.1	0.6	0.8	0.4	1.5	0.2	0.6	0.4	0.6	0.7	0.1	1.5	4.0
			Ash Content	<0.1	0.2	NS	0.2	<0.1	0.2	0.4	0.1	0.8	<0.1	0.3	0.2					
EPL#28	DG98	Kyooma	Total Matter	0.8	0.2	0.1	0.1	0.1	0.3	0.2	<0.1	0.8	<0.1	0.1	0.4	0.3	0.3	<0.1	0.8	4.0
			Ash Content	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.2					
-	DG101	Westfall	Total Matter	2.5	0.9	1.0	0.5	0.7	0.4	1.3	0.5	1.8	2.4	1.6	0.8	1.2	1.4	0.4	2.5	4.0
			Ash Content	1.1	0.4	0.4	0.2	0.3	0.1	0.7	0.2	1.0	0.9	0.8	0.6					
-	DG103	West Street	Total Matter	0.9	0.9	0.3	0.1	0.7	0.2	0.7	0.5	1.0	0.4	0.6	1.4	0.6	0.9	0.1	1.4	4.0
			Ash Content	0.6	0.4	0.1	<0.1	0.5	<0.1	0.3	0.2	0.7	0.1	0.3	0.8					

Note: All results are in the form of Insoluble Matter (g/m2/month); NS - Not sampled

BROWN - indicates sample is contaminated from a Non-Werris Creek Coal dust source

YELLOW - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e bird droppings and insects)

RED - result above 4g/m2/month

NS - No sample

Deposited Dust - Werris Creek Coal Mine 2016-2017

MONTH (g/m2/month)				April 2016	May 2016	June 2016	July 2016	August 2016	September 2016	October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG1	Escott	Total Matter	0.6												0.6	0.6	0.6	0.6	4.0
			Ash Content	0.4																
-	DG2	Cintra	Total Matter	2.8												2.8	2.8	2.8	2.8	4.0
			Ash Content	1.4																
-	DG3	Eurunderee	Total Matter	1.0												1.0	1.0	1.0	1.0	4.0
			Ash Content	0.7																
-	DG5	Railway View	Total Matter	1.5												1.5	1.5	1.5	1.5	4.0
			Ash Content	0.9																
-	DG9	Marengo	Total Matter	0.5												0.5	#DIV/0!	0.5	0.5	4.0
			Ash Content	0.2																
EPL#29	DG11	Glenara	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.4																
-	DG14	Greenslopes	Total Matter	0.6												0.3	#DIV/0!	<0.1	0.6	4.0
			Ash Content	0.2																
-	DG15	Plain View	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.5																
-	DG17	Woodlands	Total Matter	0.5												0.5	#DIV/0!	0.5	0.5	4.0
			Ash Content	0.1																
-	DG20	Tonsley Park	Total Matter	0.6												0.6	0.6	0.6	0.6	4.0
			Ash Content	0.3																
-	DG22	Mountain View	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.5																
-	DG24	Hazeldene	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.5																
-	DG34	8 Kurrara Street	Total Matter	6.1												6.1	6.1	6.1	6.1	4.0
			Ash Content	4.2																
-	DG62	Werris Creek South	Total Matter	0.2												0.1	#DIV/0!	0.2	0.2	4.0
			Ash Content	<0.1																
EPL#30	DG92	Werris Creek Centre	Total Matter	0.3												0.2	#DIV/0!	<0.1	0.3	4.0
			Ash Content	0.1																
-	DG96	Talavera	Total Matter	NS												#DIV/0!	#DIV/0!	0.0	0.0	4.0
			Ash Content	NS																
EPL#28	DG98	Kyooma	Total Matter	0.2												0.1	#DIV/0!	<0.1	0.2	4.0
			Ash Content	<0.1																
-	DG101	Westfall	Total Matter	1.9												1.9	1.9	1.9	1.9	4.0
			Ash Content	1.2																
-	DG103	West Street	Total Matter	1.2												1.2	#DIV/0!	1.2	1.2	4.0
			Ash Content	0.4																

Note: All results are in the form of Insoluble Matter (g/m2/month); NS - Not sampled
BROWN - indicates sample is contaminated from a Non-Werris Creek Coal dust source
YELLOW - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e bird droppings and insects)
RED - result above 4g/m2/month
NS - No sample

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2015-2016

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2015	1.0	10%	10%	80%	1.1	10%	10%	80%	0.8	5%	20%	75%	1.2	20%	40%	40%	1.1	10%	10%	80%	1.1	5%	30%	65%	4.0
May 2015	1.2	10%	5%	85%	1.0	10%	20%	70%	1.0	10%	20%	70%	3.9	10%	30%	40%	0.8	5%	20%	75%	1.2	5%	10%	85%	4.0
June 2015	4.8	10%	20%	70%	0.6	0%	10%	90%	0.5	5%	5%	90%	1.9	10%	20%	70%	0.9	15%	15%	70%	0.6	5%	10%	85%	4.0
July 2015	1.2	20%	30%	20%	0.6	40%	30%	10%	1.1	20%	20%	30%	2.4	40%	50%	10%	0.8	50%	40%	10%	0.4	10%	30%	20%	4.0
August 2015	1.8	10%	20%	70%	0.7	40%	10%	30%	1.8	40%	30%	20%	1.1	35%	35%	20%	0.7	35%	20%	15%	0.3	30%	30%	40%	4.0
September 2015	1.1	5%	25%	65%	0.6	20%	15%	65%	0.7	30%	15%	55%	0.4	10%	15%	75%	0.8	20%	10%	70%	0.6	5%	15%	75%	4.0
October 2015	1.1	5%	10%	85%	1.1	10%	10%	80%	1.1	15%	10%	75%	1.7	5%	10%	80%	0.6	5%	10%	85%	1.3	10%	10%	80%	4.0
November 2015	0.7	10%	30%	50%	0.8	10%	20%	60%	0.7	10%	15%	70%	2.0	0%	35%	10%	0.4	10%	25%	45%	1.1	10%	30%	50%	4.0
December 2015	4.0	5%	50%	25%	1.2	10%	45%	30%	1.6	25%	30%	45%	2.3	10%	35%	20%	1.3	5%	20%	65%	2.7	10%	35%	20%	4.0
January 2016	2.3	10%	20%	70%	1.0	30%	20%	50%	1.0	30%	15%	55%	2.5	0%	35%	60%	1.6	0%	20%	80%	4.7	0%	80%	10%	4.0
February 2016	0.9	0%	25%	65%	1.2	0%	30%	60%	1.5	5%	30%	55%	1.2	0%	30%	55%	1.3	5%	25%	65%	4.2	0%	30%	20%	4.0
March 2016	1.5	Lab error			1.7	Lab error			1.6	Lab error			1.5	Lab error			1.8	Lab error			0.9	Lab error			4.0
ANNUAL AVERAGE	**1.8**				**1.0**				**1.1**				**1.8**				**1.0**				**1.6**				**4.0**
Average Coal %	**8.6%**				**16.4%**				**17.7%**				**12.7%**				**14.5%**				**8.2%**				**-**
Average Coal g/m2	**0.16**				**0.16**				**0.20**				**0.23**				**0.15**				**0.13**				**-**
MINIMUM	**0.7**				**0.6**				**0.5**				**0.4**				**0.4**				**0.3**				**-**
MAXIMUM	**4.8**				**1.7**				**1.8**				**3.9**				**1.8**				**4.7**				**4.0**

Note: All results are in the form of Insoluble Matter (g/m2/month)

Deposited Dust - Quirindi Trains 2016-2017

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2016	1.1	5%	<1	95%	Station vandalised				0.9	5%	5%	90%	1.2	5%	10%	85%	2.3	1%	10%	90%	1.6	1%	5%	95%	4.0
May 2016																									4.0
June 2016																									4.0
July 2016																									4.0
August 2016																									4.0
September 2016																									4.0
October 2016																									4.0
November 2016																									4.0
December 2016																									4.0
January 2017																									4.0
February 2017																									4.0
March 2017																									4.0
ANNUAL AVERAGE	**1.1**				**#DIV/0!**				**0.9**				**1.2**				**2.3**				**1.6**				**4.0**
Average Coal %	**5%**				**#DIV/0!**				**5%**				**5%**				**<1%**				**<1%**				**-**
Average Coal g/m2	**0.06**				**#DIV/0!**				**0.05**				**0.06**				**<0.02**				**<0.02**				**-**
MINIMUM	**1.1**				**0.0**				**0.9**				**1.2**				**2.3**				**1.6**				**-**
MAXIMUM	**1.1**				**0.0**				**0.9**				**1.2**				**2.3**				**1.6**				**4.0**

Note: All results are in the form of Insoluble Matter (g/m2/month)

Appendix 4 – Noise Monitoring Results

26 February 2016

Ref: 04035/6372

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: FEBRUARY 2016 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 23rd of February, 2016 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Tuesday 23rd February 2016 had the 5600 excavator and one 1900 excavator in Strip 15 west at RL275m until end of shift at 2:40am. The 3600 excavator worked at Strip 16 east RL305m until end of shift at 2:40am. The second 1900 excavator was working closer to the surface in S20 west RL365m until end of shift at 2:40am. All trucks were utilising the low in-pit dumps (RL296m and RL320m), except the second 1900 excavator trucks which were block tipping on the RL445 out of pit dump. Both drills were operating in S17 west at RL365m 24 hours. No noise related issues were identified during the shift. The Coal Processing and Train Load Out facility operated until end of shift at 11:10pm with no trains loaded during the evening.

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**.

Table 2
WCC Noise Monitoring Results – 23 February 2016 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s),dir^{O}	Identified Noise Sources
A R5 Rosehill	1:48 pm	45	35	n/a	2.4,136	Birds (45), traffic (24), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	2:08 pm	35	40*	n/a	1.3,53	Birds & insects (34), wind (25), traffic (25), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	2:29 pm	36	40*	n/a	1.3,156	Birds & insects (36), traffic (25), **WCC inaudible (<20)**
D R24 Hazeldene	2:50 pm	42	37	n/a	2.2,98	Birds & insects (42), traffic (29), **WCC inaudible (<20)**
E R12 Railway Cottage	3:57 pm	38	38	n/a	1.5,196	Traffic (37), rail work (30), birds & insects (26), **WCC inaudible (<20)**
F R96 Talavera	12:47 pm	35	38	n/a	1.3,114	Birds & insects (35), **WCC inaudible (<20)**
H R98 Kyooma	1:54 pm	31	40*	n/a	1.9,75	Birds & insects (31), **WCC inaudible (<20)**
I R57 Kurrara St	2:37 pm	38	35	n/a	2.0,94	Rail work (35) birds & insects (32), traffic (31), **WCC inaudible (<20)**
J R57 Coronation Ave	2:18 pm	37	35	n/a	0.9,61	Traffic (34), birds & insects (32), rail work (28), **WCC inaudible (<20)**
K R21 Alco Park	4:04 pm	37	40*	n/a	0.9,222	Rail work (36), traffic (27), birds & insects (24), **WCC inaudible (<20)**
L R103	3:44 pm	37	35	n/a	0.7,218	Rail work (36), birds & insects (29), traffic (27), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

Table 3 WCC Noise Monitoring Results – 23 February 2016 (Evening/Night)						
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion ^{O}C/100m, Wind speed (m/s), dir^{O}**	**Identified Noise Sources**
A R5 Rosehill	7:15 pm	n/a	40	35	Lapse,5.3,175	Birds & insects (39), wind (30), traffic (26), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:34 pm	n/a	45	40*	Lapse,4.8,169	Birds & insects (45), wind (32), traffic (26), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	7:54 pm	n/a	48	40*	Lapse,4.1,156	Birds & insects (48), wind (31), rail work (29), traffic (28), **WCC inaudible (<20)**
D R24 Hazeldene	8:16 pm	n/a	53	37	+1.1,2.7,156	Insects (52), traffic (44), rail work (31), **WCC inaudible (<20)**
E R12 Railway Cottage	9:23 pm	n/a	48	38	+6.6,1.5,147	Insects (47), traffic (41), rail work (32), **WCC inaudible (<20)**
F R96 Talavera	6:50 pm	n/a	42	37	Lapse,5.6,174	Birds & insects (41), wind (33), traffic (26), **WCC inaudible (<20)**
H R98 Kyooma	7:56 pm	26	41	40*	Lapse,4.1,156	Birds & insects (41), **WCC (22)**
I R57 Kurrara St	8:37 pm	n/a	45	35	+2.7,2.6,140	Track work (44), insects (36), traffic (29), **WCC inaudible (<20)**
J R57 Coronation Ave	8:18 pm	n/a	40	35	Lapse,3.0,166	Rail work (37), birds & insects (33), traffic (28), **WCC inaudible (<20)**
K R21 Alco Park	10:03 pm	n/a	43	40*	+7.0,1.1,187	Rail work (42), frogs & insects (36), traffic (29), **WCC inaudible (<20)**
L R103	9:43 pm	n/a	50	35	+6.2,0.9,193	Frogs & insects (49), rail work (43), traffic (26), **WCC inaudible (<20)**

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels did not exceed the relevant noise criteria at any other time or location during the monitoring period.

Rail works being conducted along the Main Northern rail line with the subsequent noise emissions dominant for the receiver locations surrounding Werris Creek.

Operational noise from WCC was only audible at the Kyooma receiver location during the evening/night monitoring period. The noise was general mine hum.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for

each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

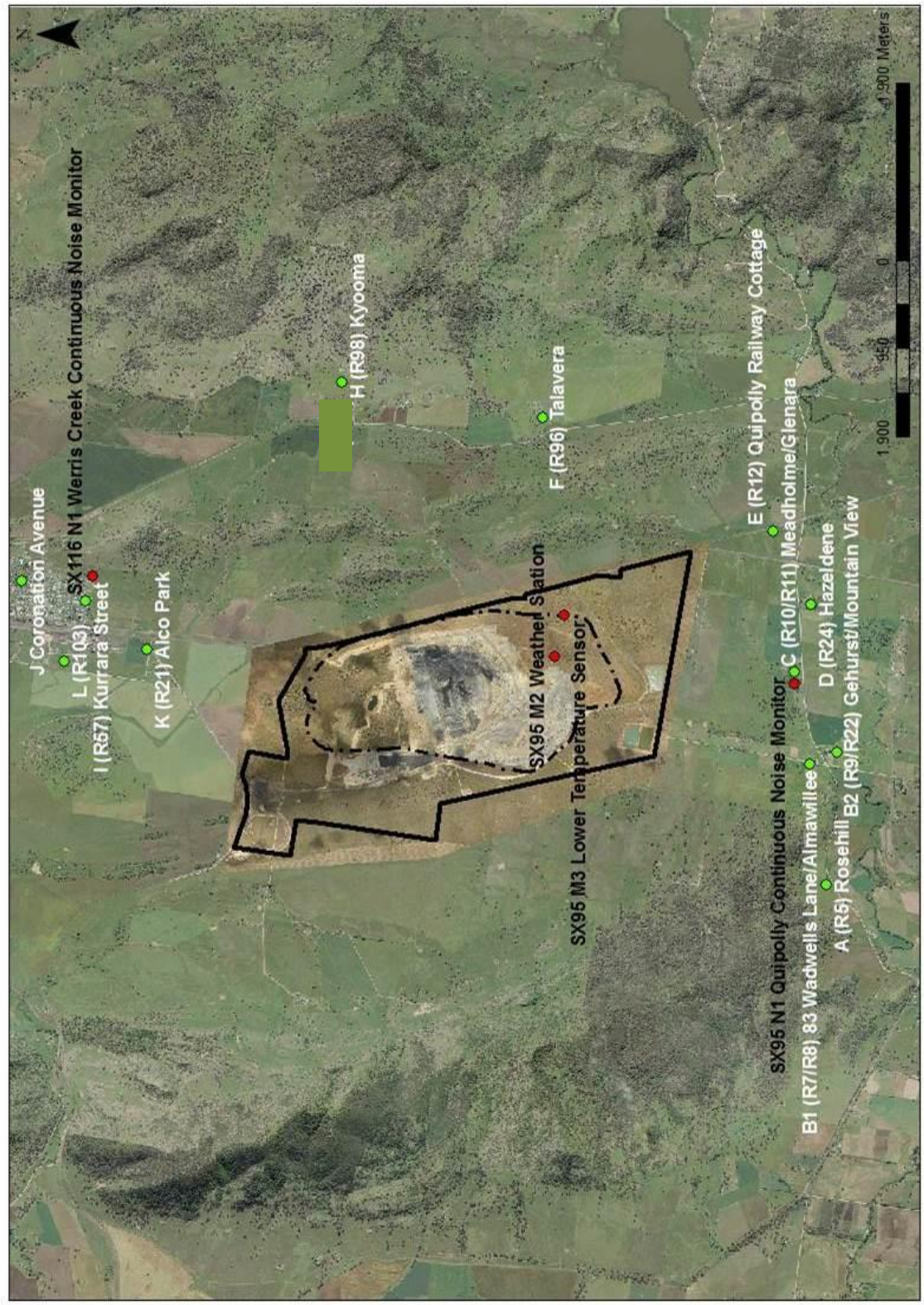
Author:

Tristan McCormick
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

7 April 2016

Ref: 04035/6423

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: MARCH 2016 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) commencing on Wednesday 30th of March, 2016 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Wednesday 30th March 2016 had the 5600 excavator and one 1900 excavator in Strip 20 west at RL365m until end of shift at 2:40am. The 3600 excavator worked at Strip 15 east RL290m until end of shift at 2:40am. The second 1900 excavator worked at S15 west RL275m until end of shift at 2:40am. The 3600 trucks and overburden from the second 1900 excavator were utilising the low in-pit dump (RL320m), while the 5600 excavator and first 1900 excavator trucks were running to the RL445m dump until 8:45pm, at which time they switched to the high in-pit dump (RL425m). Both 1900 excavators also hauled coal for part of the evening to the ROM. One drill only was operating in S15 west at RL275m until end of night shift at 2:40am. Noise impacts at the eastern monitoring station were identified at 7:20pm, with operations switching to silent horns at this time. Further noise impacts were identified at the Werris Creek monitoring station at 8:45pm, resulting in a change in truck dump location to minimise noise generation. The Coal Processing and Train Load Out facility operated until end of shift at 1:19pm with no trains loaded during the evening.

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**. The day time noise monitoring survey was postpones on 30th March due to rain. The day time survey was completed in the morning of March 31st.

Table 2
WCC Noise Monitoring Results – 30/31 March 2016 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed (m/s),dir°	Identified Noise Sources
A R5 Rosehill	1:02 pm	42	35	n/a	6.0,295	Birds (42), wind (28), traffic (25), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	3:21 pm	42	40*	n/a	5.4,301	Birds (40), wind (36), tractor (29), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	3:40 pm	39	40*	n/a	4.8,300	Wind (38), birds (31), traffic (25), **WCC inaudible (<20)**
D R24 Hazeldene	4:01 pm	37	37	n/a	4.5,294	Birds (36), traffic (29), **WCC (22)**
E R12 Railway Cottage**	7:25 am	42	38	n/a	0.4,226	Traffic (42), **WCC (27)**, birds (26)
F R96 Talavera	12:42 pm	39	38	n/a	4.5,306	Wind (37), birds (32), traffic (26), train (26), **WCC (22)**
H R98 Kyooma	3:17 pm	38	40*	n/a	5.6,296	Wind (35), birds (34), **WCC (26)**
I R57 Kurrara St	4:00 pm	41	35	n/a	4.5,294	Traffic (38) birds (37), train yard (31), **WCC inaudible (<20)**
J R57 Coronation Ave	3:40 pm	47	35	n/a	4.8,300	Birds (46), train yard (37), traffic (34), **WCC inaudible (<20)**
K R21 Alco Park**	7:48 am	48	40*	n/a	Calm	Birds (48), traffic (36), **WCC (28)**
L R103**	7:28 am	41	35	n/a	1.2,344	Train yard (38), traffic (37), birds (30), **WCC (23)**

* Private Agreement in place – see Appendix II

** Measurement conducted on March 31 due to inclement weather

Table 3 WCC Noise Monitoring Results – 30 March 2016 (Evening/Night)						
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion ^{O}C/100m, Wind speed (m/s), dir^{O}**	**Identified Noise Sources**
A R5 Rosehill	7:01 pm	23	41	35	Lapse,4.2,338	Birds & insects (41), traffic (26), **WCC (21)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:23 pm	26	37	40*	Lapse,4.3,331	Birds & insects (36), traffic (29), **WCC (23)**
C R10 Meadholme/ R11 Glenara	7:46 pm	27	35	40*	Lapse,4.3,336	Traffic (34), insects (26), **WCC (24)**
D R24 Hazeldene	8:09 pm	29	35	37	Lapse,4.1,353	Traffic (34), **WCC (27)**, insects (25)
E R12 Railway Cottage	9:15 pm	28	39	38	Lapse,3.7,340	Traffic (39), **WCC (25)**, insects (23)
F R96 Talavera	6:54 pm	50	44	37	Lapse,4.3,334	**WCC (43)**, insects (32), traffic (31)
H R98 Kyooma	8:00 pm	38	41	40*	Lapse,3.8,347	Train (40), **WCC (32)**, insects (26)
I R57 Kurrara St	8:43 pm	29	34	35	Lapse,3.8,347	Traffic (31), insects (30), **WCC (25)**
J R57 Coronation Ave	8:23 pm	40	40	35	Lapse,4.0,356	Traffic (38), **WCC (35)**, insects (25)
K R21 Alco Park	10:10 pm	24	34	40*	Lapse,3.4,338	Insects (32), traffic (28), train yard (24), **WCC (21)**
L R103	9:51 pm	n/a	40	35	Lapse,3.8,332	Insects (39), train yard (31), traffic (27), **WCC inaudible (<20)**

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels from WCC operations were higher than the relevant noise criteria at the Talavera monitoring location during the evening time period, however, this occurred during non-complying meteorological conditions with wind speeds greater than 3m/s (4.3m/s). Operational noise from WCC was therefore compliant throughout whole monitoring period. The evening survey at Talavera commenced at 6:54pm. As detailed earlier in this report mining operations were modified shortly after this time as a result of noise readings at the mine operated unattended noise loggers. The modifications were made to reduce noise emissions from the mine.

Operational noise from WCC was audible at a range of receiver locations particularly in the evening/night time period. The specific locations in which noise from WCC was most significant included Talavera, Kyooma and Coronation Avenue. The audible noise sources included truck revs, horns and dozer tracks.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC operations did go higher than 45 dB(A) at the Talavera monitoring location, however, this occurred before 10:00pm and during a time of non-compliant meteorological conditions with wind speeds greater than 3m/s. Operations were modified prior to 10:00pm to reduce noise emissions from the mine.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

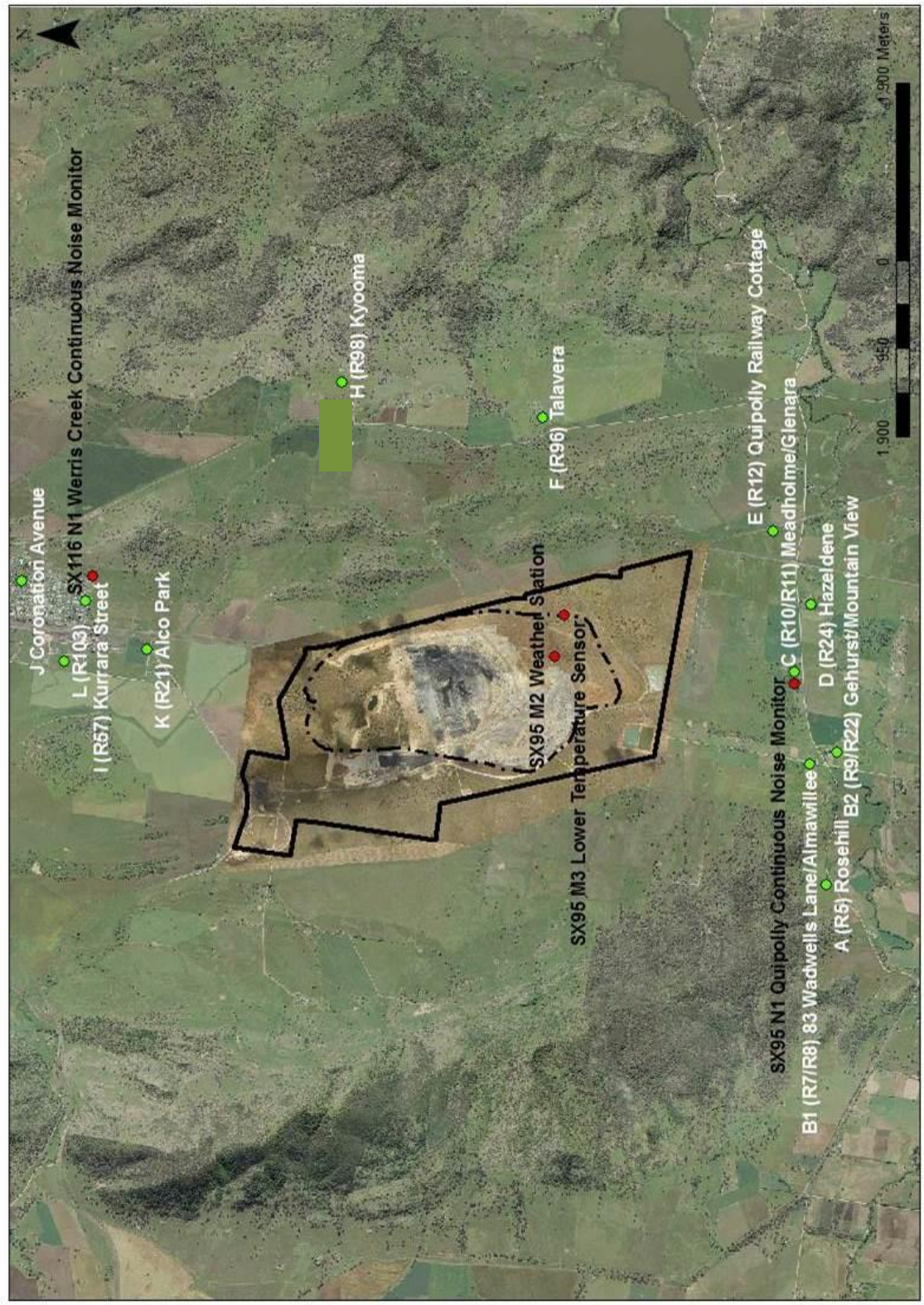
Author:

Tristan McCormick
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

29 April 2016

Ref: 04035/6436

Werris Creek Coal
1435 Werris Creek – Quirindi Road
Werris Creek NSW 2341

RE: APRIL 2016 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 19th of April, 2016 as required by the Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from the NMP). The monitoring locations and noise criteria for each are detailed in **Appendices I** and **II**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B	15 minutes[1]	R7*	83 Wadwells Lane	Private Agreement
		R8*	Almawillee	
		R9*	Gedhurst	
		R22*	Mountain View	
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street@	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue@	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R21*	Alco Park	Private Agreement
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ
M	15 minutes		Jaskim Park	PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

* - WCC has a private agreement for noise impacts with these property owners

@ - Kurrara Street is representative of sensitive receptors in southern Werris Creek while Coronation Avenue is representative of sensitive receptors in central Werris Creek.

NMZ - Noise Management Zone of properties with project specific noise criteria between 35dB(A) and 40dB(A);

Note 1: For each monthly monitoring event a total of 15 minutes (per location) during the day period, and 15 (per location) during the evening or night period;

Note 2: For each monthly monitoring event a total of 60 minutes (per location) during the day period, and 60 minutes (per location) during the evening or night period.

An additional monitoring location was added to the current survey. The monitoring was undertaken adjacent to the residence at Jaskim Park on Bridge Road (noted M in the tables).

EPL 12290 Condition L4.6 indicates that noise monitoring be conducted;

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

EPL 12290 Condition L4.3 indicates that the relevant noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Temperature inversion conditions of up to 12°/100m and wind speeds greater than 2m/s at 10m above ground level; or
3. Temperature inversion conditions greater than 12°/100m.

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the measured noise levels.

To determine compliance with the L1 (1 min) sleep disturbance noise criterion the noise measurement equipment must be located within 1m of a dwelling façade.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

The operational noise criteria for compliance with Condition L4.1 of EPL 12290 are based on a 15 minute Leq noise level. The procedures detailed in Condition M8.2 of EPL 12290 require noise monitoring at some locations for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Condition L4.1. The times shown in the tables correspond to the commencement time of the overall monitoring at each location.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level. Mine noise from WCC is shown in the tables in bold type. Where possible the significant audible noise sources from the mine are indicated in notes associated with the tables.

All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

When no mine noise was audible at a monitoring location during a one hour survey, representative 15 minute noise measurements were made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for a representative 15 minute period is that shown in the tables below.

Meteorological data used in this report were supplied by the mine from their automatic weather station M2 which is located on top of the overburden emplacement. Temperature inversion strength is extrapolated from gauges with 80m vertical separation.

WCC Operations

WCC night shift operations on Tuesday 19th March 2016 had the 5600 excavator, 3600 excavator, and both 1900 excavators spread out across Strip 15 around RL270m until end of shift at 2:40am. All trucks were utilising the in-pit dump (RL340m). One drill was operating in Strip 15 at RL270m while the second drill was operating in Strip 19 on natural ground (RL420m) until the end of night shift at 2:40am. No noise related issues were identified during the shift. The Coal Processing and Train Load Out facility operated until end of shift at 11:19pm with two trains loaded during the evening assisted by two stockpile dozers, the first arriving at 8:20pm and leaving at 11:20pm, with the second arriving at 12:30am on the 20th April and leaving at 4:18am.

Noise Compliance Assessment

The results of the noise measurements are shown below in **Tables 2** and **3**.

Table 2
WCC Noise Monitoring Results – 19 April 2016 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s),dir^{O}	Identified Noise Sources
A R5 Rosehill	1:37 pm	35	35	n/a	2.5,326	Birds (34), wind (27), tractor (22), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:57 pm	34	40*	n/a	2.0,313	Birds (33), wind (26), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	2:18 pm	35	40*	n/a	2.0,297	Birds (34), traffic (24), wind (24), **WCC (23)**
D R24 Hazeldene	2:38 pm	33	37	n/a	1.3,194	Birds (31), traffic (28), **WCC inaudible (<20)**
E R12 Railway Cottage	3:45 pm	32	38	n/a	1.0,241	Traffic (32), **WCC inaudible (<20)**
F R96 Talavera	12:49 pm	31	38	n/a	2.7,318	Birds (28), wind (26), traffic (23), **WCC inaudible (<20)**
H R98 Kyooma	1:55 pm	31	40*	n/a	2.2,324	Birds (29), traffic (23), **WCC (23)**
I R57 Kurrara St	2:38 pm	37	35	n/a	1.4,260	Traffic (33) birds (33), train yard (29), **WCC (21)**
J R57 Coronation Ave	2:18 pm	38	35	n/a	2.0,297	Traffic (37), birds (27), train yard (26), **WCC inaudible (<20)**
K R21 Alco Park	4:06 pm	35	40*	n/a	0.7,249	Traffic (33), birds (29), **WCC (24)**
L R103	3:46 pm	34	35	n/a	0.5,21	Traffic (31), train yard (30), birds (23), **WCC inaudible (<20)**
M Jaskim Park**	4:32 pm	29	35	n/a	1.6,231	Birds (28), traffic (22), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

** Additional location

Table 3
WCC Noise Monitoring Results – 19 April 2016 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m, Wind speed (m/s), dir°	Identified Noise Sources
A R5 Rosehill	9:25 pm	n/a	27	35	+4.3,2.0,136	Traffic (26), insects (21), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:36 pm	n/a	30	40*	+1.7,2.4,154	Train (26), traffic (25), insects (23), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	7:55 pm	n/a	32	40*	+1.4,2.7,149	Traffic (32), **WCC inaudible (<20)**
D R24 Hazeldene	8:20 pm	n/a	46	37	+4.2,1.4,149	Traffic (46), **WCC inaudible (<20)**
E R12 Railway Cottage	9:49 pm	n/a	37	38	+5.5,1.0,178	Traffic (37), insects (22), **WCC inaudible (<20)**
F R96 Talavera	7:02 pm	n/a	24	37	+2.2,2.4,148	Insects (22), traffic (20), **WCC inaudible (<20)**
H R98 Kyooma	8:09 pm	n/a	37	40*	+3.1,3.0,130	Insects (36), wind (29), **WCC inaudible (<20)**
I R57 Kurrara St	8:54 pm	25	28	35	+4.5,0.8,183	Traffic (26), insects (21), **WCC (21)**
J R57 Coronation Ave	8:36 pm	n/a	44	35	+4.6,1.3,154	Train yard (44), traffic (28), insects (24), **WCC inaudible (<20)**
K R21 Alco Park	7:02 pm	27	45	40*	+2.2,2.3,139	Traffic (45), insects (32), **WCC (22)**
L R103	10:02 pm	n/a	37	35	+5.7,1.2,194	Train yard (36), traffic (28), insects (23), **WCC inaudible (<20)**
M Jaskim Park**	10:29 pm	25	26	35	+5.7,0.7,162	Traffic (23), **WCC (23)**

1. L1 (1 min) from mine noise only
* Private Agreement in place – see Appendix II.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels did not exceed the relevant noise criteria at any other time or location during the monitoring period.

Operational noise from WCC was only faintly audible at a few receiver locations. The audible noise sources included the tracking of dozers on the stockpiled coal at the train loading facility and occasionally mine hum.

Data from those times where WCC operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) L1 (1 min)** between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between

the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

As shown in Table 3, during the night time measurement circuit the L1 (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

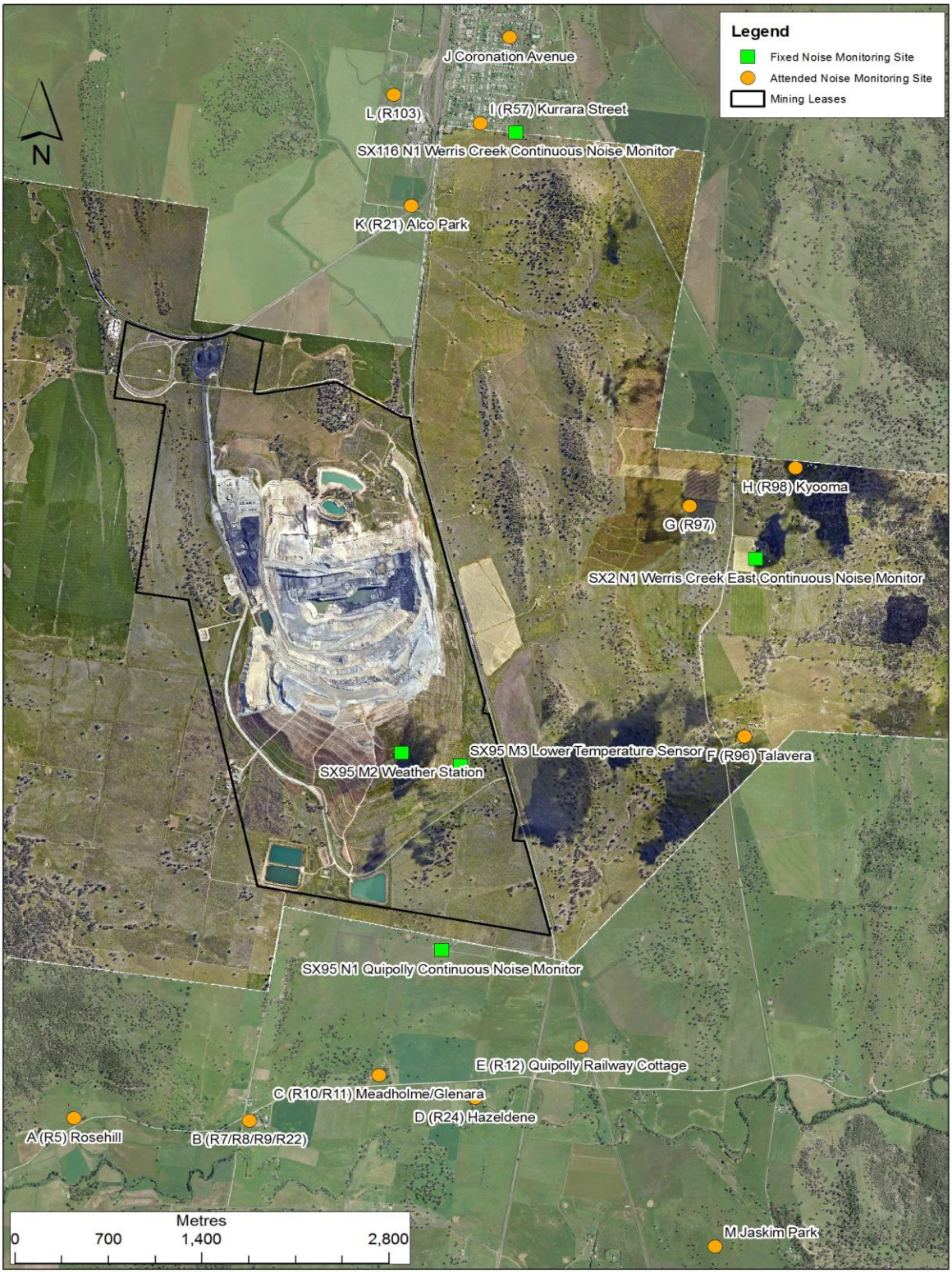
Tristan McCormick
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations



Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

"Talavera" property was listed in the EA under its previous property name of "Millbank"

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R7	83 Wadwells Lane	40	45
R8	"Almawillee"	40	45
R9	"Gedhurst"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R22	"Mountain View"	40	45
R98	"Kyooma"	40	45

Appendix 5 – Blasting Monitoring Results

Werris Creek Coal
Blast Monitoring
2015-2016

WERRIS CREEK COAL BLASTING RESULTS
FEBRUARY 2016

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
131	2016-013	3/02/2016	11:34	S15_B1320_RL260_PS	0.4	PS	0.17	97.6	0.83	91.8	0.26	94.8	0.25	92.8	10.00	120.0	Not Monitored		50.00	-4.3	265	1.2	3.2	3.1	4.2	2B	Onsite	0	0	0
132	2016-014	5/02/2015	9:17	S15_B1719_RL275_TSB	0.3	TSB	0.15	108.7	0.37	101.4	0.18	100.3	0.11	114.2	10.00	120.0	Not Monitored		50.00	-4.6	159	8.2	12.3	13.2	11.5	0	Onsite	0	0	0
133	2016-015	8/02/2016	16:49	S15_B1516_Dseam_P7-2	0.5	UG	0.16	103.3	0.44	97.0	0.29	101.1	0.14	99.8	10.00	120.0	Not Monitored		50.00	-4	161	6.3	10.1	10.6	16.4	0	Onsite	0	0	0
134	2016-016	9/02/2016	13:08	S16_B0809_UG_P3-2	0.3	UG	0.08	97.1	0.56	103.5	0.13	97.8	0.07	102.7	10.00	120.0	Not Monitored		50.00	-4.4	147	4.1	3.2	2.4	2.2	0	Onsite	0	0	0
135	2016-017	10/02/2016	12:11	S16_B0508_Gseam_PS	0.4	PS	0.23	90.7	1.40	88.4	0.38	88.7	0.26	85.5	10.00	120.0	5.59	110.9	50.00	-3.7	169	2.2	3.1	2.7	2.7	0	Onsite	0	0	0
136	2016-018	11/02/2016	11:52	S16_B0810_UG_P3	0.4	UG	0.05	103.0	0.39	98.0	0.14	98.6	0.12	98.8	10.00	120.0	Not Monitored		50.00	-3.8	71	1.1	1.8	2.2	2.3	0	Onsite	0	0	0
137	2016-019	15/02/2016	15:23	S16_B0507_RL305_TSB	0.5	TSB	0.18	103.0	1.43	100.5	0.65	95.2	0.28	94.2	10.00	120.0	Not triggered		50.00	-3.5	316	4.6	7.8	8.5	8.4	0	Offsite	0	0	0
138	2016-021&020	18/02/2016	11:44	16_B07_RL318_Wedge_Trim & S15_B1720_RL275_TS	0.3	TSB	0.19	99.5	0.41	103.1	0.24	98.5	0.20	98.5	10.00	120.0	Not Monitored		50.00	-3.9	134	0.9	11.8	13.4	13.4	0	Onsite	0	0	0
139	2016-022	19/02/2016	12:07	S16_B0910_UG_P3b	0.4	UG	0.08	99.5	0.42	101.9	0.13	92.5	0.12	96.5	10.00	120.0	Not Monitored		50.00	-4.3	347	2.8	1.8	2.4	2.4	0	Onsite	0	0	0
140	2016-023	23/02/2016	12:08	S16_B0910_UG_P3c	0.4	UG	0.08	100.2	0.40	94.8	0.15	96.6	0.09	93.1	10.00	120.0	Not Monitored		50.00	-3.9	94	4.1	2.2	2.4	2.3	0	Onsite	0	0	0
141	2016-024	24/02/2016	13:09	S16_B0910_UG_P3d	0.5	UG	0.09	102.2	0.34	103.1	0.20	102.1	0.13	100.0	10.00	120.0	Not Monitored		50.00	-4.3	291	2.7	2.1	2.4	2.4	0	Onsite	0	1	0
142	2016-025	26/02/2016	16:09	S20_B2021_RL365_TSB	0.5	TSB	0.20	102.7	0.67	109.9	0.48	109.3	0.28	104.0	10.00	120.0	Not Monitored		50.00	-3.8	175	7.5	10.8	10.3	15.4	0	Offsite	1	2	0

TOTALS	**FEBRUARY 2016**	**# BLAST**	**12**	**TARGET**	**AVERAGE**	**0.14**	**100.6**	**0.64**	**99.5**	**0.27**	**98.0**	**0.17**	**98.3**	**5.00**	**115.0**																
TOTALS	**FEBRUARY 2016**	**#>0.5mm**	**5**	**<1mm/s**	**HIGHEST**	**0.23**	**108.7**	**1.43**	**109.9**	**0.65**	**109.3**	**0.28**	**114.2**	**10.00**	**120.0**																
TOTALS	**ANNUAL**	**# BLAST**	**142**	**<115dBL**	**AVERAGE**	**0.15**	**99.7**	**0.72**	**101.0**	**0.36**	**100.3**	**0.23**	**98.9**	**5.00**	**115.0**																
TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**1.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**															
TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**															

#3+ 0
%0-2 98.6%

WERRIS CREEK COAL BLASTING RESULTS
MARCH 2016

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
143	2016-026	1/03/2016	13:03	S15_B1213_Dseam_PS	0.1	PS	0.08	86.0	0.46	87.9	0.18	86.4	0.11	84.0	50.00	120.0	Not monitored		50.00	-3.8	179	2.7	2.4	2.5	2.6	0	Onsite	0	0	0
144	2016-027	2/03/2016	11:34	S17_B1822_RL365_TSB	0.3	TSB	0.07	99.5	0.31	101.6	0.22	100	0.16	97.1	50.00	120.0	Not monitored		50.00	-3.7	345	1.4	10.5	10.8	9.7	0	Onsite	0	0	0
145	2016-028	3/03/2016	13:13	S16_B08_RL305_Ewedge	0.2	Wedge	DID NOT RECORD		0.51	98.3	0.36	99.3	0.16	99.1	50.00	120.0	Not monitored		50.00	-4.3	176	2.5	3.2	2.9	11.5	0	Onsite	0	0	0
146	2016-029	4/03/2016	13:22	S17_B1116_RL370	0.3	OB	0.12	98.8	0.44	100.2	0.38	98.3	0.23	106.6	50.00	120.0	Not monitored		50.00	-4.9	145	1.2	24	10.1	10	0	Offsite	0	0	0
147	2016-030	9/03/2016	13:14	S18_B1822_RL365_TSB	0.4	TSB	0.15	99.3	0.68	102.7	0.25	102.3	0.14	99.6	50.00	120.0	Not monitored		50.00	-2.1	359	1.8	12.4	10.3	13.1	0	Onsite	0	0	0
148	2016-031	10/03/2016	13:18	S16_B0910_UG_P3e	0.5	UG	0.06	98.7	0.25	102.7	0.10	93.0	0.06	92.4	50.00	120.0	Not monitored		50.00	-4.8	242	2.3	3.1	2.9	3.1	0	Onsite	0	0	0
149	2016-032	11/03/2016	13:12	S15_N1112_UG_P4a & S15_B08_RL305_Ewedge2	0.5	UG	0.06	100.5	0.34	106.9	0.14	106.2	0.09	104.8	50.00	120.0	Not monitored		50.00	-5.0	244	2.9	2.2	2.4	2.1	0	Onsite	0	0	0
150	2016-034	17/03/2016	13:10	S14_B1416_RL245-250	0.4	TSB	0.25	97.3	1.28	91.7	0.50	95.1	0.46	102.8	50.00	120.0	Not monitored		50.00	-4.2	255	4.0	11.7	15.0	11.6	2b	Onsite	1	0	0
151	2016-035	18/03/2016	13:13	S15_B1112_UG_P4b	0.5	UG	0.08	111.9	0.43	109.0	0.14	105.4	0.11	111.7	50.00	120.0	Not monitored		50.00	-4.4	323	8.6	3.3	2.4	2.5	0	Onsite	0	0	0
152	2016-036	21/03/2016	13:34	S18_B0710_RL385	0.6	OB	0.13	112.0	0.52	110.3	0.38	100.5	0.21	104.2	50.00	120.0	1.58	114.4	50.00	-4.5	158	7.7	9.1	2.2	10.7	0	Offsite	0	0	0
153	2016-037	22/03/2016	13:07	S15_B1112_UG_P4c	0.5	UG	0.08	102.7	0.47	106.9	0.14	105.1	0.11	104.0	50.00	120.0	Not monitored		50.00	-4.5	166	3.3	1.8	2.5	2.6	0	Onsite	0	0	0
154	2016-039	24/03/2016	14:02	S15_B0708_RL290_TSB	0.5	TSB	0.11	95.4	0.46	95.2	0.39	88.5	0.22	98.8	50.00	120.0	3.66	112.8	50.00	-4.2	286	2.7	18.8	12.3	10.6	1b	Onsite	0	0	0
155	2016-040	24/03/2016	15:25	S18_B1113_RL385_Bridge	0.3	OB	0.03	90.0	0.17	96.1	0.08	96.9	0.05	96.2	50.00	120.0	0.41	108.8	50.00	-3.9	287	4.4	0.0	2.8	0.0	3b	Offsite	0	0	0
156	2016-041	31/03/2016	13:08	S18_B1113_RL385_2	0.4	OB	0.13	95.3	0.28	95.9	0.26	93.7	0.17	98.2	50.00	120.0	Not monitored		50.00	-4.0	331	2.2	17.8	10.8	27.5	0	Onsite	0	0	0

TOTALS	**MARCH 2016**	**# BLAST**	**14**	**TARGET**	**AVERAGE**	**0.10**	**99.0**	**0.47**	**100.4**	**0.25**	**97.9**	**0.16**	**100.0**	**5.00**	**115.0**	DNT = Did not trigger															
TOTALS	**MARCH 2016**	**#>0.5mm**	**4**	**<1mm/s**	**HIGHEST**	**0.25**	**112.0**	**1.28**	**110.3**	**0.50**	**106.2**	**0.46**	**111.7**	**10.00**	**120.0**																
TOTALS	**ANNUAL**	**# BLAST**	**156**	**<115dBL**	**AVERAGE**	**0.14**	**99.6**	**0.47**	**101.3**	**0.36**	**100.3**	**0.16**	**99.6**	**5.00**	**115.0**																
TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**															
TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**															

#3+ 1
%0-2 98.1%

Werris Creek Coal
Blast Monitoring
2016-2017

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	WERRIS CREEK COAL BLASTING RESULTS APRIL 2016																							
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		WCS FREQUENCY			FUME	DUST	COMPLAINTS		
							Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	Inversion oC/100m	Direction	m/s	L Hz	V Hz	T Hz	0 to 5		OP/Vib	Dust/Fume	Other
1	2016-042	1/04/2016	13:37	S15_B1112_UG_P5a	0.5	UG	0.06	103.1	0.39	107.6	0.15	105.7	0.1	103.6	10.00	120.0	Not Monitored		50.00	-4.2	319	3.5	2.2	2.4	2.3	2C	OK	0	0	0
2	2016-043	5/04/2016	13:19	S15_B1416_Gseam_PS	0.3	PS	0.33	90.9	1.35	92.0	0.35	87.2	0.25	84.9	10.00	120.0	Not Monitored		50.00	-3.5	164	3	2.3	2.6	3.1	1A	Onsite	0	0	0
3	2016-044	6/04/2016	12:54	S15_B1112_UG_P5b	0.5	UG	0.04	103.1	0.29	104.0	0.07	98.6	0.05	97.5	10.00	120.0	Not Monitored		50.00	-4.1	315	2.9	0.0	2.6	2.5	1A	OK	0	0	0
4	2016-045	7/04/2016	13:08	S15_B1112_UG_P5c	0.5	UG	0.08	101.6	0.51	106.0	0.21	99.1	0.14	97.3	10.00	120.0	Not Monitored		50.00	-4.2	293	4.6	2.3	3.2	2.6	1A	Onsite	0	0	0
5	2016-046&047	8/04/2016	13:34	S15_B1112_UG_P5d & S15_B0708_RL290_TSB_2	0.5	UG&TSB	0.3	97.7	0.66	108.2	0.64	102.5	0.25	103	10.00	120.0	5.94	119.1	50.00	-3.8	303	2.4	10.3	9.9	10.3	3C	OK	0	0	0
6	2016-048	12/04/2016	12:33	S15_B1112_UG_P5e	0.2	UG	0.06	98.1	0.26	103.0	0.17	101.9	0.1	100	10.00	120.0	Not Monitored		50.00	-3.7	121	1.7	2.2	2.5	2.6	0	Onsite	0	0	0
7	2016-049	13/04/2016	16:08	S14_B1617_RL245_TSB	0.4	TSB	0.43	98.6	1.22	96.9	0.45	91.9	0.37	96.3	10.00	120.0	Not Monitored		50.00	-4.2	109	5.9	6.5	6	6	0	OK	1	0	0
8	2016-050	18/04/2016	13:34	S15_B1720_RL260_TSB	0.3	TSB	0.32	98.1	0.64	98.5	0.36	94.8	0.28	94.6	10.00	120.0	Not Monitored		50.00	-4.2	276	2.3	6.7	15	7.3	0	Onsite	1	0	0
9	2016-051	20/04/2016	13:58	S15_B0810_Gseam_PS	0.4	PS	0.1	95.8	0.64	95.5	0.22	87.2	0.12	91.1	10.00	120.0	Not Monitored		50.00	-3.6	158	3	3.1	3	3	0	Onsite	2	1	0
	2016-052			S19_B1013_RL400	0.5	OB	0.14	105	0.83	105.1	0.37	98.1	0.23	96.2	10.00	120.0	Not Monitored		50.00	-3.6	158	3	4.3	12.6	10.9	0	OK			
10	2016-053	22/04/2016	13:12	S15_B0910_RL290_wedge	0.4	IB	0.14	89.4	0.54	101.7	0.43	96.7	0.16	95.6	10.00	120.0	Not Monitored		50.00	-4	228	3.7	13.5	13.2	13.5	0	Onsite	0	0	0
11	2016-054	26/04/2016	13:04	S15_B16_Gseam_PS	0.3	PS	0.37	101.5	0.90	105.5	0.42	98.6	0.29	113.3	10.00	120.0	Not Monitored		50.00	-4.6	90	5.2	10.7	12.6	12.2	0	OK	0	0	0
12	2016-055	28/04/2016	13:07	S19_B0710_RL400	0.6	OB	0.09	101.9	0.56	104.7	0.29	100.2	0.16	101.4	10.00	120.0	Not Monitored		50.00	-4.8	236	1.7	2.9	2.9	10.9	0	Onsite	0	0	0
	TOTALS	**APRIL 2016**	**# BLAST**	**12**	**TARGET**	**AVERAGE**	**0.19**	**98.8**	**0.68**	**102.2**	**0.32**	**97.1**	**0.19**	**98.1**	**5.00**	**115.0**									#3+	1				
	TOTALS	**APRIL 2016**	**#>0.5mm**	**10**	**<1mm/s**	**HIGHEST**	**0.43**	**105.0**	**1.35**	**108.2**	**0.64**	**105.7**	**0.37**	**113.3**	**10.00**	**120.0**									%0-2	91.7%				
	TOTALS	**ANNUAL**	**# BLAST**	**12**	**<115dBL**	**AVERAGE**	**0.19**	**98.8**	**0.68**	**102.2**	**0.32**	**97.1**	**0.19**	**98.1**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Rolling year**													
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5%**	**5%**	**Current reporting year**													

Appendix 6 – Groundwater Monitoring Results

WO# 12223

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: B Phillips / C Elbourn. (March '16)

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

6 Monthly Natural, Nutrients, Orange TPH

Note: When taking water always use pump & purge on MW3

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
x	MW1	22/3	10:15	Dry		0.25	—									6 Monthly Hillview
x	MW2	22/3	11:35	43.40		0.15	Tap			922	7.4	21.8	Clear	Nil	Clear	6 Monthly Railway view
	MW3	14/3	9:35	19.40		0.95	Bail	20L		3020	6.8	20.3	Clear	Nil	Clear	6 Monthly (Always Purge)
	MW4	14/3	—	—						Broken stick up.						
	MW4B	14/3	12:45	16.81		0.7	Bail			1010	7.9	20.2	Clear	Nil	Clear	6 Monthly
	MW5	14/3	10:20	12.55		1.15	Bail			2000	7.3	20.9	Clear	Nil	Clear	6 Monthly
	MW5B	14/3	10:00	12.07		0.75	Bail.			2330	7.2	21.0	Cloudy	Nil	Clear	
x	MW6	22/3	12:00	15.94		1.05	Bail			1814	7.3	20.9	Turbid	Nil	Brown	6 Monthly 1111 W/C Rd
	MW9	—								Broken Stick up.						Rail Loop
x	MW10	22/3	10:30	16.72		0.7	Tap			1203	7.7	24.6	Clear	Nil	Clear	Escot In. - shed
	MW11	22/3	10:00	—	Pump Rate	Tap				1215	7.6	20.0	Clear	Nil	Clear	(gap)
	MW14	14/3	13:30	20.57		0.95	Bail			1130	7.7	21.8	Slightly Turbid	Nil	Grey	Real 1/0
	MW14B	14/3	13:10	20.32		0.75	Bail			527	7.4	21.8	Slightly Turbid	Nil	Grey	Real 1/0
	MW17B	15/3	13:50	13.83		0.65	Tank	(Running)		1120	8.0	25.9	Clear	Nil	Clear	Wadwell In - Windmill
	MW20	16/3	9:10	21.66		0.55	Tap			(No sample - No pressure at taps!)						Tonsley Park - pump.
	MW24A	15/3	9:30	15.76		0.5	Tap			2340	7.0	23.1	Clear	Nil	Clear	Maranoa - pump.
	MW25A	—														mine site
	MW25B	—														mine site.
x	MW27	22/3	10:55	53.43		0.45	Bail			1150	7.8	21.3	Slightly Turbid	Nil	Rusty	* Cintra - Escot In.
	MW29	15/3	9:05	15.20		—	Tank	(Not running)		996	8.6	24.1	Clear	Nil	Clear	* Kyeamba - Windmill.
	MW31	15/3	—							(No longer monitored)						Talawanta Windmill
	MW22C	16/3	12:20	8.47		0.4	Tap			508	7.0	23.4	Clear	Nil	Clear	308 Papes In (New pump)

SPECIAL COMMENTS: M

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD | QUOTATION No:

ADDRESS/OFFICE: | ACIRL LABORATORY:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS | Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

SAMPLER NAME: B.P./C.E. | 6 Monthly-Natural,Nutrients,Orange TPH

SITE: WERRIS CREEK MINE AND SURROUNDS

	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
Reportables / Analytes	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	15/3	11:00	19.75		0.2	Tap			1538	7.0	21.6	Clear	Nil	Clear	Rose neath - pump.
	MW12	16/3	13:20	13.93		0.5	Tap	(Inyard.)		564	7.4	26.7	Clear	Nil	Clear	Hazeldeane. (little shed)
	MW13	15/3.	11:35.	Dry		0.4	Bail	Only mud at bottom.								Wadwell In. - Well.
	MW13B	15/3	11:45	5.82		0.3				1145	8.0	21.2	Slight Turbid	Nil	Rusty Brown	Taylors In. - Opp Hay shed.
	MW13D	15/3	12:00	5.79		0.2				1293	7.8	20.9	"	"	Brown	Taylors In. - Windmill.
	MW15	15/3	13:40	7.05		0.2	Bail.	(Insufficient water to sample - wet sludge!)								Paynes In. - Windmill
	MW16	16/3	11:50	Dry		0.3	—									Montainview
	MW17A.	15/3	14:10	7.35		0.5	Tap	(No sample - No pressure at Tap.)								83 Wadwell In.
	MW18A	15/3	14:00	Dry		—	Tap			1483	7.3	25.6	Clear	Nil	Clear	82 Wadwell In.
	MW19A	15/3	11:15	12.32		0.15	Tap			872	8.6	23.6	Clear	Nil	Clear	Lintova - pump.
X	MW21A	16/3	12:35	11.30		0.3	—	(Windmill outlet Disconected!)								Glenara - Windmill
	MW22A	16/3	12:00	Dry		0.55	—									308 Paynes In. - House
	MW22B	16/3	11:45	Dry		0.45	—									" " " - Irrigation.
	MW23A	15/3	11:40	4.53		0.2	Tap	(Pump On!)		707	7.1	23.4	Clear	Nil	Clear	Pegg Easy - Horse yard
	MW23B	15/3	13:15	4.44		0.1	Bail	(Pump off)		740	7.3	22.0	Clear	Nil	Clear	Pegg Easy - Irrigation.
X	MW26	16/3	11:30	9.75		0.8	Tap	(At Tanks)		752	7.5	25.8	Clear	Nil	Clear	(NEW) "Meadholme Property" (Mrs Blackwell)
	MW28A	15/3/16	10:40	15.93		0.25	Bail	(Near bottom)		506	7.5	22.3	Turbid	Nil	Brown	Woodlands Rd (Windmill LHS)
	MW28B	15/3	10:20	Pump overboard			(Tank Behind House!)			623	7.6	25.7	Clear	Nil	Clear	" " (Pump RHS)

SPECIAL COMMENTS: M

X X MW29B. 16/3 13:00 12.53 0.55 (Tap at house) 471 7.5 25.4 Clear Nil Clear Glenara - Pump.

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: BP / CE

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

Bi-Monthly Ground Waters - SWL (Standing Water Level Only)

6 Monthly Natural, Nutrients, Orange TPH

ALS ACIRL

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW7						T.B.A.									Mrs Andersen - Irrigation
	MW7B						T.B.A.									" " - Windmill
	MW32	15/3	12:15	4.30			Tap.			762	7.0	22.8	Clear	Nil	Clear	"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	14/3	14:10	23.92			Bail			615	7.4	21.1	Clear	Nil	Clear	
	MW36B	14/3	13:50	23.61			Bail			457	8.1	21.1	Clear	Nil	Clear	
	MW35	—														
	MW34	15/3	14:30	11.88			Tap			1072	7.5	28.7	Clear	Nil	Clear	B.G. Rd. (Gome)
	MW5D	14/3	10:45	14.74		0.68	Bail			2640	7.3	21.6	Clear	Nil	Clear	Werris Ck. - Gap Rd.
	MW5C	14/3	11:10	12.35		0.93	Bail			4140	7.4	21.1	Clear	Slight Sulfur	Nil.	Mine Site
	MW5E	14/3	11:40	15.68		0.76	Bail			746	7.8	21.0	Slightly Turbid	Nil	Brown.	Mine Site
	MW5F	14/3	12:00	18.14		1.20	Bail			1354	7.6	21.0	"	"	"	Mine Site
	MW5G	14/3	12:25	16.44		0.85	Bail			1049	7.7	21.2	"	"	"	Mine Site
	MW57	15/3	10:00 (Pump running -	10.22		0.15	Tap			1298	7.9	20.9	Clear	Nil	Clear	Lawes Creek Rd. (Horseyard)
							sprinklers			& trough)						
	MW38A	16/3	11:00	15.12		0.45	—			(NB (Concrete tank leaking water)						Yarrilla - Brocker Mill (Back)
	MW38B	16/3	10:30	10.25		0.15	—			(Windmill over Bore)						" - Windmill (Back)
	MW38C	16/3	10:00	23.27		0.25	Tap.			1516	7.6	24.9	Clear	Nil	Clear	" - Solar pump
	MW38E	16/3	9:30	10.68		0.5	Bail.			1003	7.7	14.8	Clear	Nil	Clear	/ - Windmill (Front.
	Mine Windmill.	14/3	12:50	Dry		0.7										* Windmill on mine.

*Broken windmill over bore

SPECIAL COMMENTS:

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No:
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME:	6 Monthly Natural, Nutrients, Orange TPH
SITE: WERRIS CREEK MINE AND SURROUNDS	

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW22C	16/3	12:20	8.47		0.4	Tap			508	7.0	23.4	Clear	Nil	Clear	* 308 Paynes In. (New Pump - Behind Silo.)

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1604635**	Page	: 1 of 9
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: P TH	Contact	:
Address	: PO BOX 446 SUMMER PARK QLD 4074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: AWright@whitehavencoal.com.au	E-mail	:
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 12138	Date Samples Received	: 01-Mar-2016 13:00
C-O-C number	: ----	Date Analysis Commenced	: 02-Mar-2016
Sampler	: BYRON PHILLIPS	Issue Date	: 07-Mar-2016 15:51
Site	: ----		
		No. of samples received	: 9
Quote number	: ----	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Helen Simpson	Inorganic Chemist	ACIRL Sampling, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- AC04: Field observations supplied by ALS ACIRL.
- ACO3: Field test by ALS Coal Gunnedah 5-7 Talbot Rd Site No. 18941 and in accordance to NATA accreditation No. 15784. Approved signatory 'Matt Steele'.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB9	VWD1	VWD2	QCD	WCD
			Client sampling date / time	29-Feb-2016 11:00	29-Feb-2016 13:25	29-Feb-2016 11:50	29-Feb-2016 10:40	29-Feb-2016 09:25
Compound	CAS Number	LOR	Unit	ES1604635-001	ES1604635-002	ES1604635-003	ES1604635-004	ES1604635-005
				Result	Result	Result	Result	Result
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	592	1040	1000	1210	1350
pH	----	0.01	pH Unit	8.80	8.50	8.40	8.00	8.10
Temperature	----	0.1	°C	26.3	28.7	28.6	22.1	22.6
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.96	8.22	8.14	8.09	8.13
EA006: Sodium Adsorption Ratio (SAR)								
Sodium Adsorption Ratio	----	0.01	-	2.63	4.12	3.54	2.96	2.76
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	637	1120	1080	1290	1440
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	369	646	587	678	864
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	36	20	13	<5	28
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	119	151	169	340	388
Total Alkalinity as CaCO3	----	1	mg/L	119	151	169	340	388
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	50	157	154	5	57
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	74	144	121	195	181
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	34	58	76	85	74
Magnesium	7439-95-4	1	mg/L	12	18	16	50	70
Sodium	7440-23-5	1	mg/L	70	140	130	139	138
Potassium	7440-09-7	1	mg/L	9	10	11	4	6
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	134	219	256	418	473
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.02	0.06	0.22	0.35
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.001	0.002	0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB9	VWD1	VWD2	QCD	WCD
				Client sampling date / time	29-Feb-2016 11:00	29-Feb-2016 13:25	29-Feb-2016 11:50	29-Feb-2016 10:40	29-Feb-2016 09:25
Compound	CAS Number	LOR	Unit		ES1604635-001	ES1604635-002	ES1604635-003	ES1604635-004	ES1604635-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	**0.002**
Barium	7440-39-3	0.001	mg/L		**0.135**	**0.126**	**0.146**	**0.362**	**0.354**
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	**0.0006**
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	**0.001**	**0.001**
Copper	7440-50-8	0.001	mg/L		<0.001	**0.001**	<0.001	**0.039**	**0.032**
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	**0.005**	**0.012**
Manganese	7439-96-5	0.001	mg/L		**0.067**	**0.006**	**0.002**	**0.169**	**0.530**
Nickel	7440-02-0	0.001	mg/L		**0.001**	**0.001**	**0.002**	**0.006**	**0.005**
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	**0.01**
Zinc	7440-66-6	0.005	mg/L		**0.018**	**0.014**	<0.005	**0.432**	**0.520**
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	**0.34**	**0.28**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.2**	**0.2**	**0.7**	**0.8**
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.03**	**0.15**	**0.25**	**0.02**	**0.04**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	**0.02**	**0.02**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	**1.61**	**1.78**	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	**1.63**	**1.80**	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.8**	**0.5**	**0.7**	**0.4**	**0.8**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.8**	**2.1**	**2.5**	**0.4**	**0.8**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.18**	**0.02**	**0.02**	**0.10**	**0.19**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	**0.07**	**0.10**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	SB9	VWD1	VWD2	QCD	WCD
				Client sampling date / time	29-Feb-2016 11:00	29-Feb-2016 13:25	29-Feb-2016 11:50	29-Feb-2016 10:40	29-Feb-2016 09:25
Compound	*CAS Number*	*LOR*	*Unit*		**ES1604635-001**	**ES1604635-002**	**ES1604635-003**	**ES1604635-004**	**ES1604635-005**
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**5.51**	**10.3**	**10.0**	**12.4**	**14.0**
Total Cations	----	0.01	meq/L		**5.96**	**10.7**	**11.0**	**14.5**	**15.6**
Ionic Balance	----	0.01	%		**3.95**	**1.76**	**4.98**	**7.82**	**5.26**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**10**	**2**	**3**	**5**	**13**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		**11**	<5	**6**	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	VWD3	VWD4	SB8	SB5	----
			Client sampling date / time	29-Feb-2016 12:40	29-Feb-2016 13:00	29-Feb-2016 11:25	29-Feb-2016 12:15	----
Compound	CAS Number	LOR	Unit	ES1604635-006	ES1604635-007	ES1604635-008	ES1604635-009	--------
				Result	Result	Result	Result	Result
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	947	1020	880	406	----
pH	----	0.01	pH Unit	9.20	9.00	8.30	8.70	----
Temperature	----	0.1	°C	26.7	26.9	26.2	26.5	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.67	8.57	8.09	8.26	----
EA006: Sodium Adsorption Ratio (SAR)								
Sodium Adsorption Ratio	----	0.01	-	5.21	5.57	3.35	2.14	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1010	1090	945	424	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	580	567	480	284	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	45	15	32	25	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	10	7	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	80	99	158	99	----
Total Alkalinity as CaCO3	----	1	mg/L	90	106	158	99	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	142	147	110	30	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	159	167	115	37	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	34	36	58	25	----
Magnesium	7439-95-4	1	mg/L	18	18	20	7	----
Sodium	7440-23-5	1	mg/L	151	164	116	47	----
Potassium	7440-09-7	1	mg/L	11	12	5	5	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	159	164	227	91	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.05	0.10	0.06	----
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.001	0.002	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	VWD3	VWD4	SB8	SB5	----
				Client sampling date / time	29-Feb-2016 12:40	29-Feb-2016 13:00	29-Feb-2016 11:25	29-Feb-2016 12:15	----
Compound	CAS Number	LOR	Unit		ES1604635-006	ES1604635-007	ES1604635-008	ES1604635-009	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Beryllium	7440-41-7	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L		**0.111**	**0.112**	**0.129**	**0.146**	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	**0.006**	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L		**0.009**	**0.004**	**0.009**	**0.017**	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	**0.002**	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		**0.006**	<0.005	<0.005	**0.057**	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	**0.06**	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.2**	**0.2**	**0.6**	**0.5**	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.09**	**0.10**	**0.04**	**0.05**	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.05**	**0.01**	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**1.33**	**0.36**	<0.01	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**1.38**	**0.37**	<0.01	**0.01**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.5**	**0.5**	**0.5**	**0.4**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.9**	**0.9**	**0.5**	**0.4**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.03**	**0.03**	**0.03**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	VWD3	VWD4	SB8	SB5	----
				Client sampling date / time	29-Feb-2016 12:40	29-Feb-2016 13:00	29-Feb-2016 11:25	29-Feb-2016 12:15	----
Compound	CAS Number	LOR	Unit		ES1604635-006	ES1604635-007	ES1604635-008	ES1604635-009	--------
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**9.24**	**9.89**	**8.69**	**3.65**	**----**
Total Cations	----	0.01	meq/L		**10.0**	**10.7**	**9.71**	**4.00**	**----**
Ionic Balance	----	0.01	%		**4.07**	**4.01**	**5.55**	**4.56**	**----**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**3**	**4**	**3**	**4**	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**7**	**8**	**8**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB9 - 29-Feb-2016 11:00:00	Slight Turbid
AC04: Appearance	VWD1 - 29-Feb-2016 13:25:00	Clear
AC04: Appearance	VWD2 - 29-Feb-2016 11:50:00	Clear
AC04: Appearance	QCD - 29-Feb-2016 10:40:00	Clear
AC04: Appearance	WCD - 29-Feb-2016 09:25:00	Slight Turbid
AC04: Appearance	VWD3 - 29-Feb-2016 12:40:00	Clear
AC04: Appearance	VWD4 - 29-Feb-2016 13:00:00	Clear
AC04: Appearance	SB8 - 29-Feb-2016 11:25:00	Clear
AC04: Appearance	SB5 - 29-Feb-2016 12:15:00	Clear
AC04: Odour	SB9 - 29-Feb-2016 11:00:00	Nil
AC04: Odour	VWD1 - 29-Feb-2016 13:25:00	Nil
AC04: Odour	VWD2 - 29-Feb-2016 11:50:00	Nil
AC04: Odour	QCD - 29-Feb-2016 10:40:00	Nil
AC04: Odour	WCD - 29-Feb-2016 09:25:00	Nil
AC04: Odour	VWD3 - 29-Feb-2016 12:40:00	Nil
AC04: Odour	VWD4 - 29-Feb-2016 13:00:00	Nil
AC04: Odour	SB8 - 29-Feb-2016 11:25:00	Nil
AC04: Odour	SB5 - 29-Feb-2016 12:15:00	Nil
AC04: Colour	SB9 - 29-Feb-2016 11:00:00	Greenish
AC04: Colour	VWD1 - 29-Feb-2016 13:25:00	Clear
AC04: Colour	VWD2 - 29-Feb-2016 11:50:00	Clear
AC04: Colour	QCD - 29-Feb-2016 10:40:00	Clear
AC04: Colour	WCD - 29-Feb-2016 09:25:00	Brown
AC04: Colour	VWD3 - 29-Feb-2016 12:40:00	Clear
AC04: Colour	VWD4 - 29-Feb-2016 13:00:00	Clear
AC04: Colour	SB8 - 29-Feb-2016 11:25:00	Clear
AC04: Colour	SB5 - 29-Feb-2016 12:15:00	Clear

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1604695**	Page	: 1 of 5
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: GUN LAB	Contact	:
Address	: PO BOX 446 SUMMER PARK QLD 4074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: gun.lab@alsglobal.com	E-mail	:
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 12138	Date Samples Received	: 02-Mar-2016 12:45
C-O-C number	: ----	Date Analysis Commenced	: 02-Mar-2016
Sampler	: BYRON PHILLIPS	Issue Date	: 09-Mar-2016 14:18
Site	: ----		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Bijal Patel	Committal Officer	ACIRL Sampling, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- AC04: Field observations supplied by ALS ACIRL.
- ACO3: Field test by ALS Coal Gunnedah 5-7 Talbot Rd Site No. 18941 and in accordance to NATA accreditation No. 15784. Approved signatory 'Matt Steele'.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	VWD6	----	----	----	----
			Client sampling date / time	01-Mar-2016 10:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1604695-001	--------	--------	--------	--------
				Result	Result	Result	Result	Result
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	989	----	----	----	----
pH	----	0.01	pH Unit	8.40	----	----	----	----
Temperature	----	0.1	°C	25.7	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.45	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1220	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	570	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	5	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	6	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	125	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	132	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	147	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	146	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	48	----	----	----	----
Magnesium	7439-95-4	1	mg/L	14	----	----	----	----
Sodium	7440-23-5	1	mg/L	136	----	----	----	----
Potassium	7440-09-7	1	mg/L	10	----	----	----	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	178	----	----	----	----
Sodium Adsorption Ratio	----	0.01	-	4.44	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.140	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	VWD6	----	----	----	----
				Client sampling date / time	01-Mar-2016 10:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1604695-001	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.001**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.008**	----	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.06**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.02**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**1.98**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**2.00**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**2.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**9.82**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**VWD6**	----	----	----	----
				Client sampling date / time	01-Mar-2016 10:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1604695-001**	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L		**9.72**	----	----	----	----
Ionic Balance	----	0.01	%		**0.51**	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**3**	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		**16**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
AC04: Field Observations		
AC04: Appearance	VWD6 - 01-Mar-2016 10:00:00	Clear
AC04: Odour	VWD6 - 01-Mar-2016 10:00:00	Nil
AC04: Colour	VWD6 - 01-Mar-2016 10:00:00	Clear

Appendix 8 – Discharge Monitoring Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1602210**	Page	: 1 of 2
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: GUNNEDAH LAB	Contact	:
Address	: PO BOX 446 SUMMER PARK QLD 4074	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: gunnedah.lab@alsglobal.com	E-mail	:
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 11885	Date Samples Received	: 02-Feb-2016 10:50
C-O-C number	: ----	Date Analysis Commenced	: 02-Feb-2016
Sampler	: M Hammond	Issue Date	: 08-Feb-2016 10:57
Site	: ----		
		No. of samples received	: 3
Quote number	: ----	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SB9**	**QCU**	**QCD**	**----**	**----**
			Client sampling date / time	01-Feb-2016 12:20	01-Feb-2016 13:15	01-Feb-2016 12:50	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES1602210-001**	**ES1602210-002**	**ES1602210-003**	**--------**	**--------**
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.98**	**7.59**	**8.09**	**----**	**----**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**538**	**423**	**1090**	**----**	**----**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	**286**	**7**	**----**	**----**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.02**	<0.01	**----**	**----**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.06**	**0.04**	**0.02**	**----**	**----**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.08**	**0.06**	**0.02**	**----**	**----**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	**1.7**	**0.2**	**----**	**----**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.2**	**1.8**	**0.2**	**----**	**----**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	**0.57**	**0.15**	**----**	**----**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	**0.12**	**0.11**	**----**	**----**
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	**9**	**140**	**10**	**----**	**----**

Werris Creek Coal Community Consultative Committee

MINUTES

40th Meeting of the Committee, Thursday 31st August 2016.

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met onsite at Werris Creek Coal Mine from 9:30am for the quarterly meeting followed by a pit tour of the mine site inspecting operations from the southern lookout.

Meeting Opened at 9:37am.

1. Record of Attendance:

Present

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Dave Goldman	Community Representative
James O'Brian	Community Representative
Donna Ausling	LPSC Director Environmental & Economic Development Services
Rod Hicks	WCC Operations Manager
Shannon Reid	WCC Site Clerk and Minute Taker
Lynden Cini	WCC Environmental Officer

Apologies

Mike Lomax	Community Representative
Cr Col Stewart	LPSC

1. Declaration of Pecuniary or Other Interests

Gae Swain declared that her son-in-law is an employee for Whitehaven Coal at Narrabri Coal.

2. Minutes of Previous Meeting

Minutes of the previous meeting on the 26th May 2016 were reviewed by the committee. Motion moved to accept the meeting minutes as a true and accurate representation of business conducted on that day.

Moved: Lindsay Bridge. Seconded: James. Motion carried.

3. Matters Arising

a) Actions from Previous Meeting

None

b) Other Matters Arising

None

4. New Matters for Discussion under General Business

Noel – Community request for monitoring water levels of Mr. Ron Blackwell's bore.

Lynden (on Behalf of Col Stewart) – Committee membership. Consideration to Mr Col Stewart retained on the committee as a community representative, as he is not running for Council.

5. Environmental Monitoring Report: May - July 2016

Lynden provided commentary on each aspect of the report.

Further discussion on an investigation undertaken by the EPA with regard to a licensed water release undertaken in late June. LC advised, all water quality parameters were checked prior to and during the release, as required. The EPA investigation was well publicised and WCC worked with the EPA to assist in the investigation. We were well within compliance. Downstream neighbours advised the EPA of the release and we are working with these neighbours to improve future communication of water release events going forward.

Noel Taylor – water coming through Lynden has worked with the Blackwell's and will be communicating with them regarding this.

They weren't notified that there was a discharge coming, they didn't expect it a notice to them would be the neighbourly thing to do.

Lynden – As I understand it historically there has not been any notification prior to a controlled release, however I have gone through it with them, and we have spoken often since the event. We will work with them going forward. In addition I would be more than happy to have them come to site at any time and show them the process, the type of water runoff collected and the different water streams, including the extent of the offsite clean water catchment which naturally runs through their property.

Motion to accept the report. Moved: Lindsay. Seconded: Donna. Motion Carried.

6. General Business

a. Community Enhancement Fund (CEF) Update

Homepark build was completed in Single Street Werris Creek. WHC provided funding towards the construction of the parks. Opening was last Wednesday 24th. Great feedback received from Werris Creek locals and non-local residence coming to town to utilise the park.

Donna has also received positive feedback – "A great place for Werris Creek and regional families".

Spring Ridge Park has been approved ready for erection of the shade structure. Installation has been halted by bad weather.

b. Update on Water Supply Options

Lynden Cini - Further discussion and review of the draft has occurred by various Departments. DP&E would like us to include additional items in this document and is an ongoing process. We currently do not have finalised authority for offsite void water usage.

James O'Brian - In future who gets to use the water after the mine has closed? Lynden – This will be considered under the mine closure planning and approval processes with ultimate consideration given to the environment. We are years away from any closure process.

c. New matters for Discussion

Noel Taylor – The Blackwell's would like to have their bore monitored and would like information sent to them from the 1/1/16 till current.

Lynden – I will look into it, I believe we are already monitoring their bore for standing water levels. If there is data there for them I will pass on.

Post meeting – Current data for the Blackwell's bore for the requested period was printed off and issued to Noel to provide.

d. Change of Personnel in Committee

Lynden - Col Stewart has asked me to advise the committee that he will not be running for Council in the upcoming local election. Col has indicated he would like to remain on the committee as an interested party and local community member. I support this request and which to put it to the committee for vote.

Moved: Lynden. Seconded: Lindsay. Motion Carried.

Meeting Closed 10.20am.

Next Meeting scheduled for Wednesday 30th November 2016.

Site tour following the meeting was undertaken, focussing on water management and mining processes.

Copy to:

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Mike Lomax	Community Representative
Dave Goldman	Community Representative
James O'Brien	Community Representative
Donna Ausling	LPSC
Cr Col Stewart	LPSC

The minutes will also be posted on the Whitehaven Coal Website
http://www.whitehavencoal.com.au/environment/werris_creek_mine_environmental_management.cfm

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

May, June and July 2016

This Environmental Monitoring Report covers the period 1st May to 31st July 2016 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

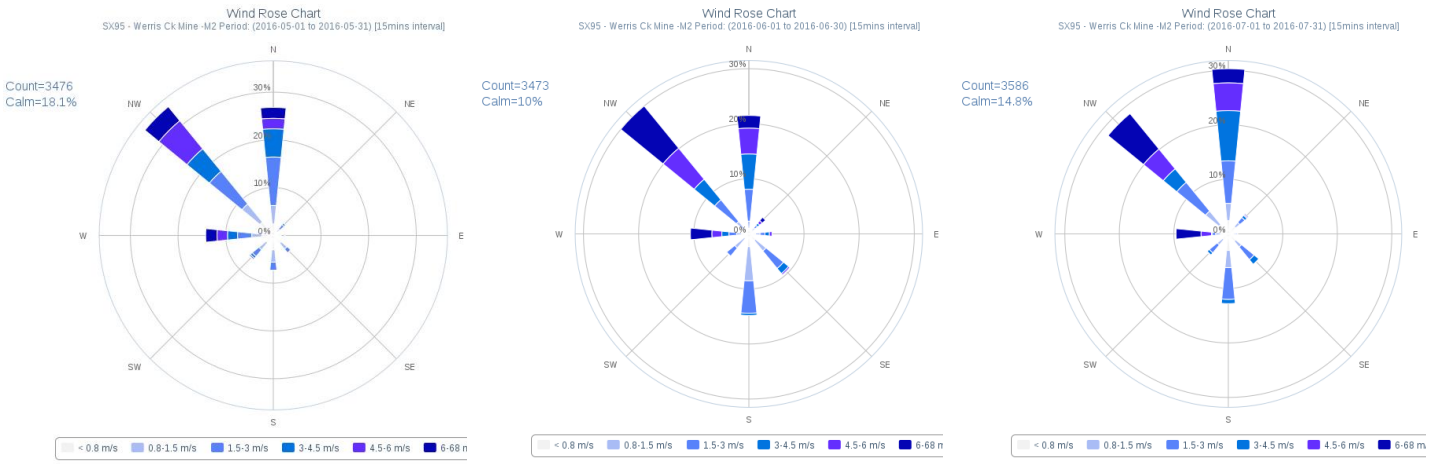
1.0 METEOROLOGY

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 three months and wind directional data is presented in wind-rose figures below. Rainfall for June was significantly high with the total for the month being three times the long term average. Prevailing wind predominantly from the north to northwest.

Month	Rainfall (mm)	
	Onsite	Annual*
May 2016	42.0	58.8
June 2016	150.2	209.0
July 2016	58.2	267.2

* Annual cumulative total since April each year from the onsite Weather Station at WCC.



May 2016 **June 2016** **July 2016**

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10 & PM2.5)

WCC operates five High Volume Air Samplers (HVAS) measuring particulate matter less than 10 micron (PM10) and total suspended particulate (TSP) matter at four sites. HVAS sampling is scheduled for 24 hours every 6 days in accordance with Environment Protection Authority (EPA) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled. In addition, WCC operates a Tapered Element Oscillating Microbalance (TEOM) monitor in Werris Creek measuring real time PM10 and PM2.5 (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 three months are provided in the table below.

Monitor Location	Daily Maximum (µg/m^3)	May 2016 (µg/m^3)	June 2016 (µg/m^3)	July 2016 (µg/m^3)	2016-2017 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	18.4	3.1	3.8	5.4	4.2	8	25
PM10 – TEOM92 "Werris Creek"	33.8	9.2	1.2	3.3	6.2	30	50
PM10 – HVP20 "Tonsley Park"	37.7	19.9	2.2	6.6	11.3	30	50
PM10 - HVP1 "Escott"	12.0	9.6	0.4	2.9	6.6	30	50
PM10 – HVP20 "Glenara"	47.2	26.5	4.9	6.9	18.0	30	50
PM10 – HVP98 "Kyooma"	14.5	11.6	0.6	6.0	7.7	30	50
TSP – HVT98 "Kyooma"	35.1	20.0	2.4	3.1	12.3	90	-

Yellow Bold – Elevated dust level.

2.1.2 Discussion - Compliance / Non Compliance

All TSP, PM10 and PM2.5 dust results were within criteria during the period.

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 three months are provided in the table below.

Monitor Location	May 2016 (g/m^2/month)	June 2016 (g/m^2/month)	July 2016 (g/m^2/month)	2016-2017 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.8	0.5	0.9	0.7	4.0
DG2 "Cintra"	4.2	1.1	0.9	2.3	4.0
DG3 "Eurunderee"	1.8	2.2	1.2	1.6	4.0
DG5 "Railway View"	3.2	1.4	1.0	1.8	4.0
DG9 "Marengo"	0.9	1.2	4.5#	1.8	4.0
DG11 "Glenara"	0.8	0.9	2.0	1.1	4.0
DG14 "Greenslopes"	0.8	0.5	0.2	0.4	4.0
DG15 "Plain View"	1.0	0.4	0.4	0.7	4.0
DG17 "Woodlands"	1.8	0.8	0.4	0.9	4.0
DG20 "Tonsley Park"	1.2	3.3	1.6	1.7	4.0
DG22 "Mountain View"	1.1	0.8	0.6	0.8	4.0
DG24 "Hazeldene"	1.0	0.6	0.5	0.7	4.0
DG34 8 Kurrara St	2.8	0.6	0.4	2.5	4.0
DG62 Werris Creek South	5.6#	1.2	1.5	1.7	4.0
DG92 Werris Creek Centre	0.4	0.3	0.6	0.3	4.0
DG96 "Talavera"	NS	NS	NS		4.0
DG98 "Kyooma"	0.4	0.2	0.3	0.2	4.0
DG101 "Westfall"	1.3	1.3	9.5#	3.5	4.0
DG103 West Street	1.6	2.4	0.8	1.5	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.

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 except for DG62 (Werris Creek South) during May, DG9 (Marengo) and DG101 (Westfall) during July. With consistently low dust levels at all nearby dust gauges, in particular gauges located between WCC operations and the sites in question, localised sources of dust generation, unrelated to activities at Werris Creek Coal Mine has influenced data at these monitoring points.

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	May 2016		June 2016		July 2016		2016-2017 Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.0	<1%	0.9	30%	0.8	10%	1.0
DDW20	1.2	10%	1.0	20%	0.3	10%	0.8
DDW13	1.2	<1%	0.9	40%	0.2	10%	0.8
Train Line							
DDE13	1.1	5%	1.1	10%	0.8	10%	1.1
DDE20	1.2	<1%	0.6	10%	0.5	15%	1.2
DDE30	2.2	<1%	0.9	10%	0.7	15%	1.4

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 for all samples and comparable to the levels monitored around Werris Creek Coal Mine. Coal contributions to the dust fraction remain generally low with an increase experienced during June.

2.4 AIR QUALITY COMPLAINTS

There were three dust complaints recorded during the period relating to dust generated from the open cut operations. Specific actions taken in relation to these complaints are outlined in Section 6.

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 below, with noise monitoring locations are identified in **Figure 2**.

Tuesday 24th May 2016

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	<20#	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	22	38	21	37
H	**"Kyooma"** R98*	26	40	35	40
I	**Kurrara St, WC**	Inaudible#	35	25	35
J	**Coronation Ave, WC**	Inaudible#	35	22	35
K	**South St, WC** (R20*, R21*)	Inaudible	40	31	40
L	**West St, WC** (R103)	Inaudible	35	26#	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) $L_{eq\ 15min}$

Tuesday 28th June 2016

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	28	37
H	**"Kyooma"** R98*	23	40	Inaudible	40
I	**Kurrara St, WC**	Inaudible	35	26	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**South St, WC** (R20*, R21*)	Inaudible	40	27	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) $L_{eq\ 15min}$

Friday 29th July 2016

	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	23	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible	40	20#	40
C	**Central Quipolly**(R10*,R11*)	23	40	25#	40
D	**"Hazeldene"** R24	22	37	24#	37
E	**"Railway Cottage"** R12	23	38	Inaudible	38
F	**"Talavera"** R96	24	38	23#	37
H	**"Kyooma"** R98*	27	40	24	40
I	**Kurrara St, WC**	Inaudible	35	28#	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible#	35
K	**South St, WC** (R20*, 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) $L_{eq\ 15min}$

3.1.2 Discussion - Compliance / Non Compliance

Noise from Werris Creek Coal Mine was inaudible at most of the monitoring sites during the quarter. This is largely the result of mining operations situated low in the pit during and changing operating locations during the night time periods. Throughout June and July Werris Creek Coal Mine changed 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 period a total of twenty-four blasts were 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 three months are provided below.

May 2016		"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		0.24	98.0	0.82	97.6	0.45	93.5	0.23	93.6
Monthly Maximum		0.61	108.1	1.36	103.5	0.62	106.4	0.45	105.9
Annual Average		0.21	98.4	0.75	99.9	0.38	95.3	0.21	95.9
Criteria		**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

June 2016		"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		0.22	101.0	0.77	99.5	0.35	95.5	0.20	96.4
Monthly Maximum		0.37	107.5	2.01	102.1	0.72	103.0	0.30	103.9
Annual Average		0.22	99.3	0.76	99.8	0.37	95.4	0.21	96.0
Criteria		**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

July 2016		"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		0.14	102.9	0.75	104.7	0.37	102.5	0.25	100.1
Monthly Maximum		0.33	112.7	1.46	109.3	0.81	108.0	0.64	104.8
Annual Average		0.20	100.2	0.75	101.0	0.37	97.1	0.22	97.0
Criteria		5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	Rolling ave	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting yr	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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 twelve blast complaints during the period with eleven relating to vibration impacts from blasting and another complaint regarding a blast in general. All blasts were in compliance with licence conditions and details were provided back to the complainant. Specific actions taken in relation to these complaints are outlined in Section 6.

5.0 WATER

The groundwater monitoring program monitors groundwater levels bi-monthly and groundwater quality six monthly. Surface water monitoring is undertaken quarterly. There was one dirty water discharge event during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to identify if there are any impacts on groundwater quality and 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. Bi-monthly groundwater level survey was completed between the 16th to 18th May 2016 and 1st to 7th July 2016. 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		May 2016		July 2016	
		mbgl	%	mbgl	%
Werrie Basalt Near WCC	MW1	Dry	-	Dry	-
	MW2	41.87	-7%	40.70	3%
	MW3	19.61	-1%	19.67	0%
	MW4B	15.51	6%	15.03	3%
	MW5	12.73	-1%	12.82	-1%
	MW6	15.9	0%	15.92	0%
	MW27*	52.40	2%	53.76	-3%
	MW36A	22.73	3%	21.17	7%
	MW36B	22.67	4%	21.14	7%
Werrie Basalt	MW8*	19.94	-1%	20.02	0%
	MW10	16.59	1%	16.43	1%
	MW14	20.81	-1%	19.71	6%
	MW17B*	13.71	1%	17.52	-22%
	MW19A*	10.61	16%	9.72	9%
	MW20*	21.73	0%	21.88	-1%
	MW38A	15.13	0%	No Access, Too Wet	-
	MW38B*	10.26	0%	No Access, Too Wet	-
	MW38C*	23.32	0%	23.14	1%
	MW38E*	10.84	-1%	No Access, Too Wet	-
#[1]	MW24A*	15.95	-1%	16.06	-1%
	MW29*	14.88	2%	14.85	0%
Quipolly Alluvium	MW12*	13.31	5%	14.15	-6%
	MW13*	Dry	-	Dry	-
	MW13B*	5.97	-3%	5.84	2%
	MW13D*	5.86	-1%	5.49	7%
	MW15*	7.19	-2%	Dry	-
	MW16*	Dry	-	Dry	-
	MW17A*	7.55	-3%	7.61	-1%
	MW18A*	Dry	-	Dry	-
	MW21A*	Dry	-	Dry	-
	MW22A*	Dry	-	Dry	-
	MW22B*	Dry	-	Dry	-
	MW23A*	4.43	2%	4.32	3%
	MW23B*	4.37	2%	No Access, Too Wet	
	MW26B*	9.78	0%	10.05	-3%
	MW28A*	16.24	-1%	16.40	-1%
	MW32*	4.23	2%	4.15	2%
#[2]	MW34*	Unable to monitor – hose fixed in bore head		11.01	8%

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 are largely unchanged during the period, with many bores stable or showing an increase in water level, especially in the July recording, this could be associated with the good rainfalls in June 2016. However, bore MW17b recorded a deficit of 22% from May to July 2016. The field notes indicated the windmill was in use and pumping.

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 11th May 2016. Surface water monitoring locations are identified in **Figure 5**.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below.

Site	pH	EC	TSS	O&G	Change from Previous Quarter
ONSITE					
SB2	8.3	2810	<5	<5	Previous quarter this location was Dry. Field sheet notes very low water level
SB9	Dry	Dry	Dry	Dry	Dry
SB10	Dry	Dry	Dry	Dry	Dry
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry
QCD	7.8	1200	5	<5	Water quality very stable since last quarter only minor changes.
WCU	Dry	Dry	Dry	Dry	Dry
WCD	7.8	1440	43	<5	pH very slightly decreased, EC very slightly increased, TSS increased from 28 to 43 and O&G unchanged.

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; Orange – Issue with water quality; Green – water quality OK.

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 11th May 2016 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 longer term averages and the Site Water Management Plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There was one controlled discharge event at the end of June 2016, related to the dewatering of SB9 following good rainfall in June 2016. Sampling of the discharge point, as well as upstream and downstream on Quipolly Creek was undertaken in accordance with licence conditions.

Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
4/7/2016	**SB9**	8.2	571	<5	<5	Yes	Controlled	52.4
Criteria		8.5	N/A	50	10			

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; **Yellow** – indicates results outside criteria due to 5 day rain >39.2mm.

5.3.2 Discussion - Compliance / Non Compliance

All water quality results were in compliance with licence limits.

5.3 WATER COMPLAINTS

There were no surface water or groundwater complaints recorded during the period.

6.0 COMPLAINTS SUMMARY

There were sixteen complaints received during the period, which are summarised below. Of the sixteen complaints, twelve were related to blasting impacts, three related to dust, and one related to odour.

#	Date	Complainant	Complaint	Investigation	Action Taken
517	5/5/2016	A Werris Creek	Complainant advised that they could smell burning coal yesterday (4/5/2016) at 11:30am and on Monday (2/5/2016) and wanted to know how much longer it was going on.	Several locations around Werris Creek immediately checked for nuisance odours, including Escott Road and multiple locations on Kurrara St. No odour associated with burning coal could be detected. A eucalyptus scent was detectable along Escott Road and a curry smell detectable at the eastern end of Kurrara Street. An analysis of wind direction on the days leading up to the 5th May 2016 indicates that Werris Creek was downwind of Werris Creek Coal Mine for less than 5% of the period of the complaint, with northerly and northwesterly winds predominant during this period. As such, the source of the odour cannot reasonably be attributed to Werris Creek Coal Mine.	Follow up letter provided to complainant.
518	13/5/2016	A Werris Creek	Complainant advised they felt the blast. A low rumble at the residence	WCC blast 061 fired at 12.22pm on the 13th May. Monitoring results were under compliance limits for blasting at all locations.	Follow up phone call to provide information on the compliant blast. Structural assessment to be undertaken on the property.
519	13/5/2016	U Werris Creek	Complaint made regarding the blast generally. Complainant requested details of the blast.	WCC blast 061 fired at 12.22pm on the 13th May. Monitoring results were under compliance limits at all locations.	EO provided blast results and a description of the blast to the complainant via email.
520	13/5/2016	Anonymous (DPE) Werris Creek	Vibration complaint – no further detail provided. Request for details on the blast by DPE	WCC blast 061 fired at 12.22pm on the 13th May. Monitoring results were under compliance limits at all locations.	Details of the blast were provided to DPE as requested.
521	13/5/2016	A Werris Creek	Request for blast data. Property vibrated	WCC blast 061 fired at 12.22pm on the 13th May. Monitoring results were under compliance limits at all locations.	EO provided blast results to the complainant.
522	13/5/2016	AH Werris Creek	Complainant advised they felt the blast at their residence.	WCC blast 061 fired at 12.22pm on the 13th May. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
523	16/5/2016	BS Quipolly	The complainant advised that the mine was generating excessive dust, with the dust visible to the northeast of the mine.	A visual inspection and photographs were taken immediately after complaint. Meteorological conditions and dust suppression activities were also reviewed. Dust suppression activities were in operation and little to no atmospheric dust was observed.	EO called the complainant to advised findings of the investigation.
524	18/5/2016	Anonymous, EPA	Report of orange-brown dust at Werris Creek Mine	Detailed review of routine operations, photography, meteorological conditions and dust suppression activities.	An email was provided to the EPA outlining the details of the investigation and reported compliance with the Air Quality and Greenhouse Gas Management Plan.
525	25/5/2016	M	Complainant advised they felt the blast at their residence.	WCC blast 066 fired at 11.39am on the 25th May. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
526	25/5/2016	U	Complainant advised they felt the blast at their residence.	WCC blast 066 fired at 11.39am on the 25th May. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
527	25/5/2016	AH	Complainant advised they felt the blast at their residence.	WCC blast 066 fired at 11.39am on the 25th May. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
528	29/6/2016	BS	Complainant advised they had noticed excessive atmospheric dust levels around the north east corner of the mine.	EO and Operations Manager viewed the mine from the complainant's residence taking photographs and noting a small dust plume north of WCC operations. On site operations were also inspected, photographs taken, dust suppression activities were in use. No point source could be observed on site. Meteorological data reviewed temperature inversion present.	EO called the complainant to discuss outcomes of inspections. Second follow up phone call and email sent to the complainant.
529	15/7/2016	AW	Complainant advised they felt the blast at their residence.	WCC blast 078 fired at 1.05pm on the 15th July. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
530	15/7/2016	AH	Complainant advised they felt the blast at their residence.	WCC blast 078 fired at 1.05pm on the 15th July. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.
531	26/7/2016	U	Complainant advised they felt the blast at their residence. Requested blast data	WCC blast 079 fired at 1.13pm on the 15th July. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance. Blast data sent through to complaint.
532	26/7/2016	AL	Complainant advised they felt the blast at their residence.	WCC blast 079 fired at 1.13pm on the 26th July. Monitoring results were under compliance limits at all locations.	EO advised blast was in compliance.

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.

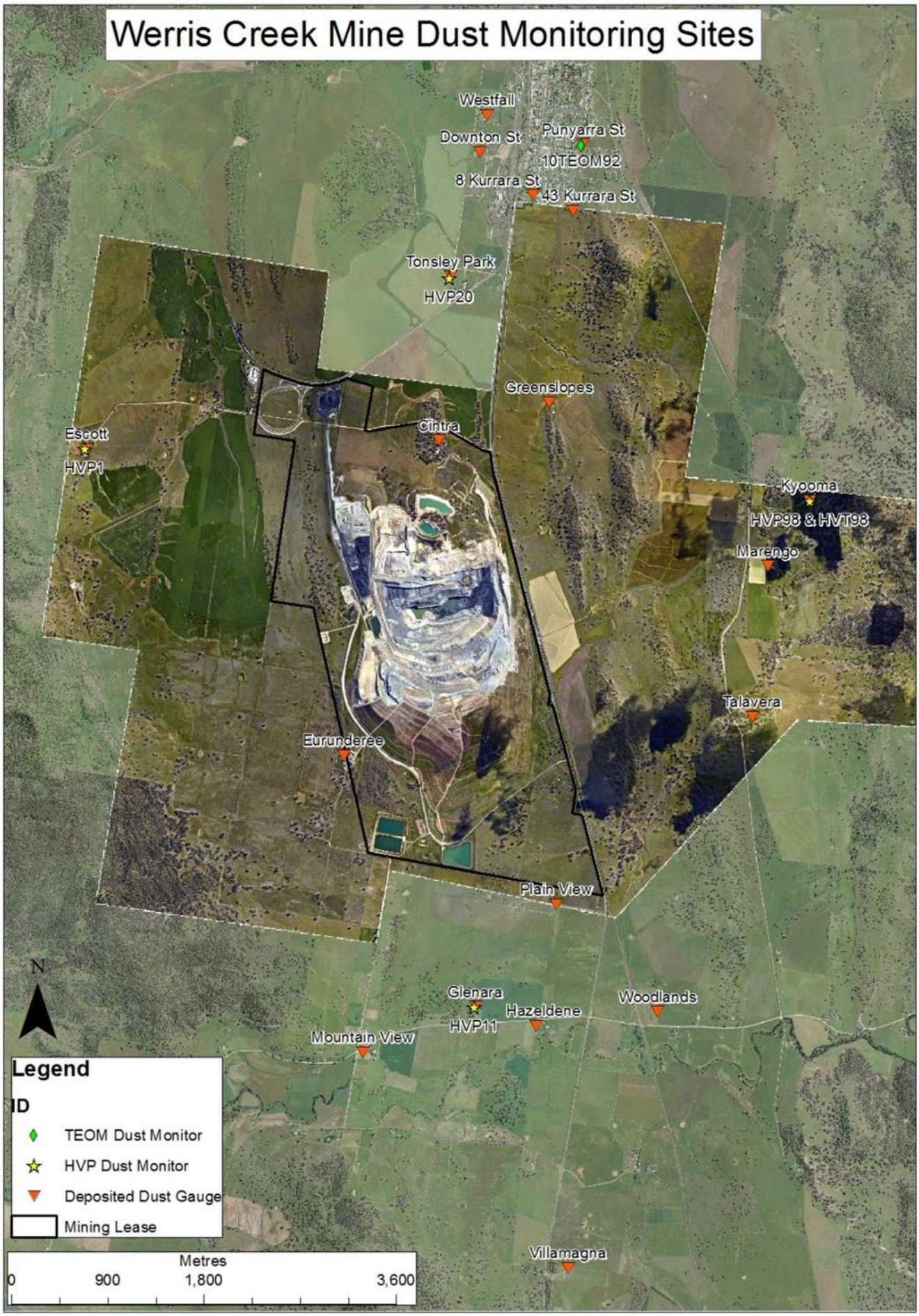


Figure 1 – WCC Dust Monitoring Locations

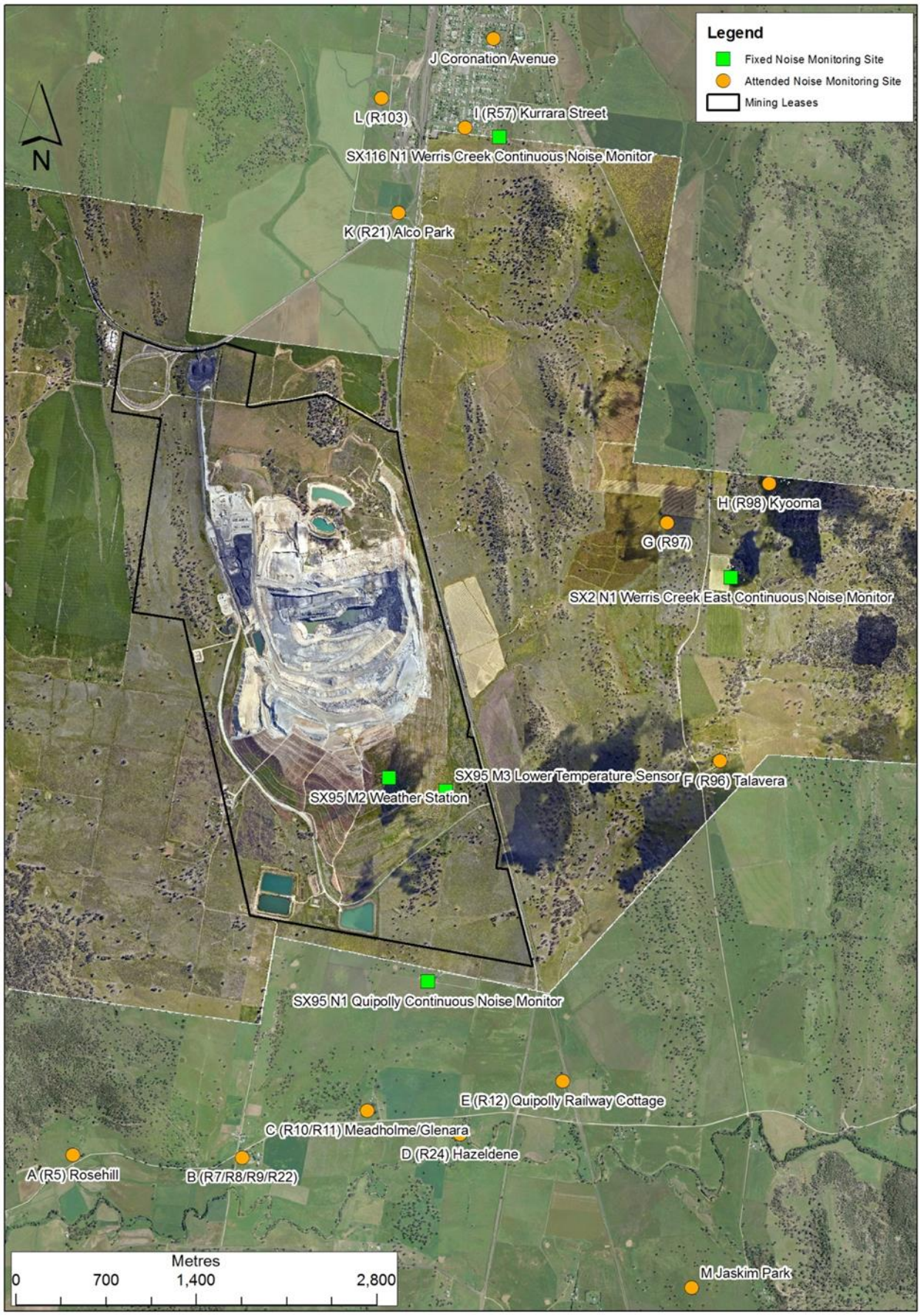


Figure 2 – WCC Noise Monitoring Locations

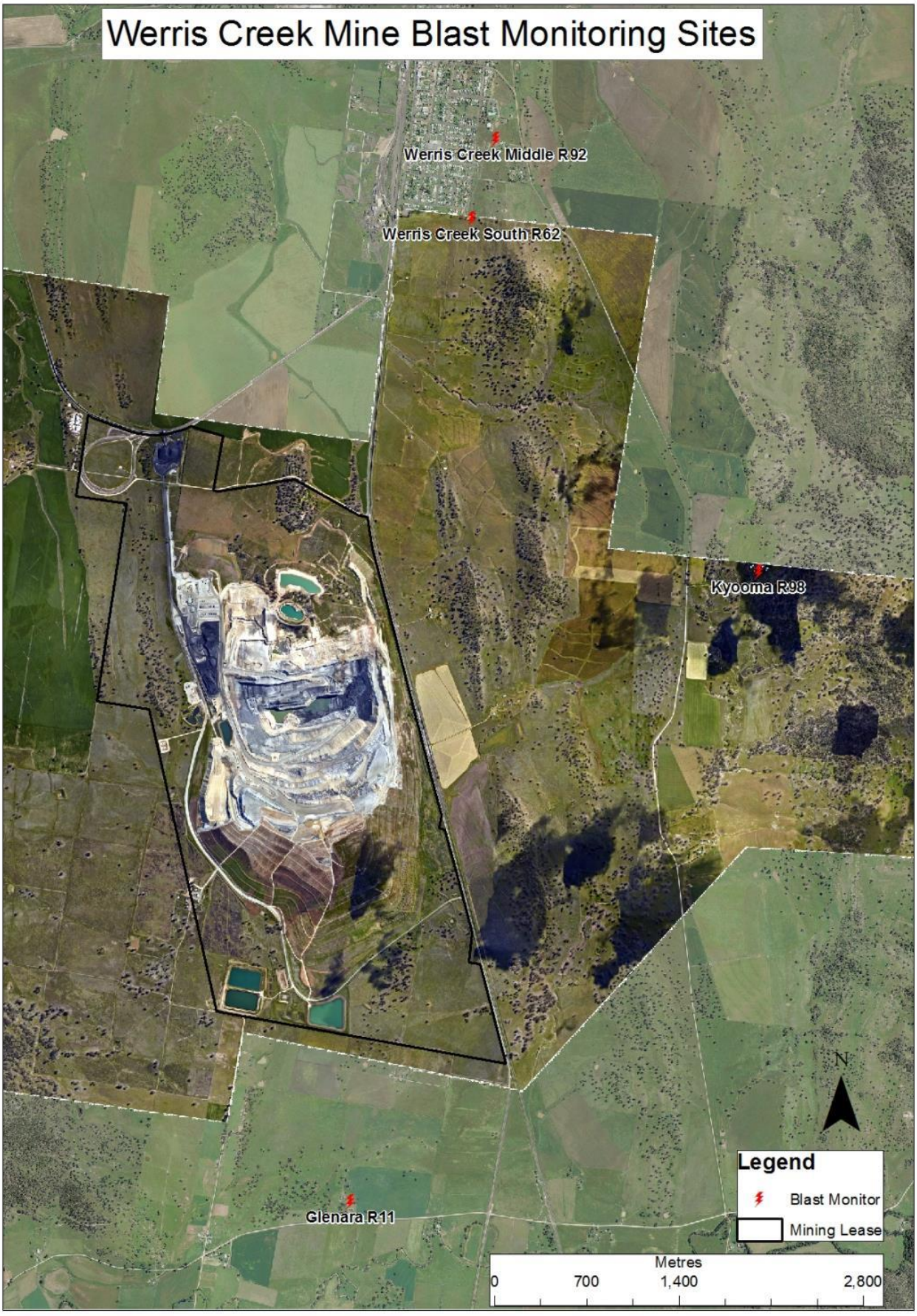


Figure 3 – WCC Blast Monitoring Locations

Figure 4 – WCC Groundwater Monitoring Locations

Figure 5 – WCC Surface Water Monitoring Locations

Werris Creek Coal Community Consultative Committee

MINUTES

41st Meeting of the Committee, 30th November 2016.

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met on site at Werris Creek Coal Mine from 9:30am for the quarterly meeting followed by a pit tour of the mine site, inspecting operations.

Meeting Opened at 9:45am.

1. Record of Attendance:

Present

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Mike Lomax	Community Representative
James O'Brian	Community Representative
Donna Ausling	LPSC Director Environmental & Economic Development Services
Rod Hicks	WCC Operations Manager
Shannon Reid	WCC Site Clerk and Minute Taker
Lynden Cini	WCC Environmental Officer
Lexie Frankham	WHC Group Superintendent – Environment (Operations)
Cr Virginia Black	LPSC Councillor
Col Stewart	Interested Party – Community Member

Apologies

Dave Goldman	Community Representative

1. Declaration of Pecuniary or Other Interests

Gae Swain declared that her son-in-law is an employee for Whitehaven Coal at Narrabri Coal.

2. Minutes of Previous Meeting

Minutes of the previous meeting on the 31st August 2016 were reviewed by the committee. Motion moved to accept the meeting minutes as a true and accurate representation of business conducted on that day.

Moved: Lindsay. Seconded: Noel. Motion carried.

3. Matters Arising

a) Actions from Previous Meeting

1. Noel Taylor requested bore information for the Blackwells. This had been actioned at the closure of the previous meeting by LC.

b) Other Matters Arising

None

4. New Matters for Discussion under General Business

Noel – Groundwater general discussion

Donna – Committee membership. Introduction of Councillor Virginia Black to the Committee.

5. Environmental Monitoring Report

LC provided commentary on each aspect of the report.

Groundwater section of the document prompted discussion from various parties:

NT – Advised his bore had not recovered after the September flood and stated the bore is still declining.
LB – Advised the same
ML – Stated, "The dam has the biggest influence on the aquifer. There was always water leaking from the dam, now this has been fixed and the dam upgraded, downstream bores have started drying out".
NT – "These bores have been pumped for years, why are they drying out now?"
GS – Adjudicated on the discussion, advising further discussion on this topic will be held under New Matters for Discussion. Also noting these discussions have been previously held at length in subsequent CCC meetings.

Action – Donna Ausling to provide further information to the Committee on the volume of water released from Quipolly Dam during the localised flooding in September.

Motion to accept the report. Moved: Virginia. Seconded: Donna. Motion Carried.

6. General Business

a. Community Enhancement Fund (CEF) Update

Donna - Work at Spring Ridge Park is underway, completion early 2017. Opening in February 2017.
Noel – Wished to be on the record stating he was always against the spending of community enhancement funds at Spring Ridge as the town isn't effected by the mines.

b. Off-site Water Supply Options

General discussion within the committee on who will access the water once approved.

LC – Provided commentary on the expected approval pathway
ML – The wider community won't benefit from this. If approved there is no practical way to get any of the water offsite. Whitehaven own most of the land around the mine so there isn't any other way for others to get it other than trucking it off.
RH – The Departments are not pushing us to do this, this is something we have chosen to look into and agreed upon within this committee.
NT – We are the worst affected and will not benefit from it.
Chairperson – Noel are you suggesting Whitehaven stop pursuing this because you may not benefit but others might?
ML – Very few will benefit. Can Council assist in providing some infrastructure?
VB – No, this cannot be a Council commitment.
Chairperson – Posed the question to the Committee, are we happy to continue with this process or look to stop it now?
Majority agreement to continue. Chairperson closed the discussion and moved on to next topic.

c. New matters for Discussion

<u>Groundwater</u>

NT – Advised he is not seeing a rise within the water level of his bore.
LC – Advised that the vast majority of bores monitored by the mine are displaying an increase in standing water levels as a result of recent rainfall and flows within the Werris and Quipolly systems. Logged data from Quipolly bores has recently been picked up and I am confident these results will echo the results of dipped bores.
LB – Advised the EPA are monitoring groundwater levels closely.
Chairperson – Noel do you have any information to supply the Committee supporting this claim?
NT – No
Chairperson – As a Committee we need evidence to support claims and the EPA are monitoring this closely.
LC – Advised sampling is undertaken by a third party contractor providing transparency to the process. This data is publicised within the environmental monitoring report produced for this Committee and within the Annual Review. The Departments do review this data.

d. Change of Personnel in Committee

DA – Provided an introduction for Councillor Virginia Black to the Committee. Cr Black will be the new Council representative at the Committee.
LC – Advised that the CCC Guidelines indicate one Council representative. Historically there have been two at this CCC. Asked the Chairperson if the Committee could vote on approval for two Council Representatives (Cr Black and Donna Ausling) to be present as required.
Chairperson – vote within the committee to accept Cr Black and approval within the Committee for two Council representatives as required.

Moved: Lindsay. Seconded: Lynden. Motion Carried.

Meeting Closed 10.44am.

Next Meeting scheduled for Wednesday 22nd February 2017.

Site tour following the meeting was undertaken, focussing on water management and mining processes.

Copy to:

All Committee members

The minutes will also be posted on the Whitehaven Coal Website
http://www.whitehavencoal.com.au/environment/werris_creek_mine_environmental_management.cfm

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

August, September and October 2016

This Environmental Monitoring Report covers the period 1st August to 31st October 2016 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

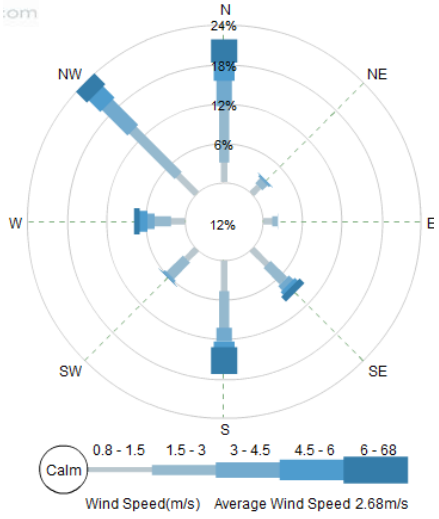
1.0 METEOROLOGY

1.1 WEATHER STATION

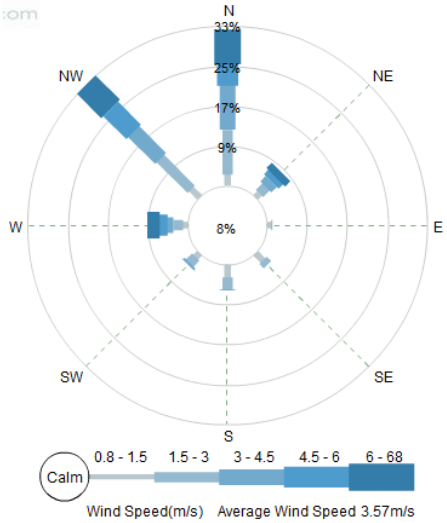
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement. The following table summarises rainfall data for the last three months. Monthly totals during the quarter were more than twice the historical average. Directional wind data, presented in the wind-rose figures below, indicate the prevailing wind direction was predominantly from the north to northwest.

Month	Rainfall *(mm)*		
	Onsite	***Historical Average***	***Annual Total****
August 2016	79.2	37.4	346.4
September 2016	129.4	50.2	475.8
October 2016	104.8	48.6	580.6

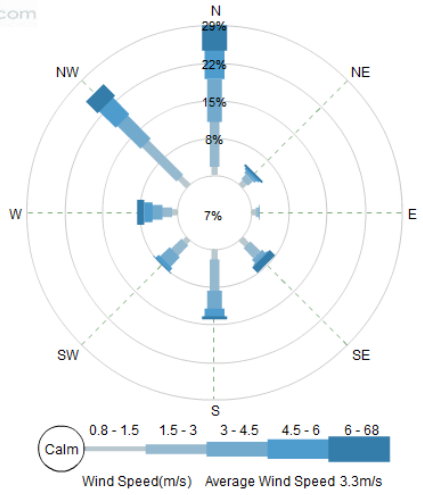
* Annual cumulative total since April each year from the onsite Weather Station at WCC.



August 2016



September 2016



October 2016

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 three months are provided in the table below.

Monitor Location	Daily Maximum *($\mu g/m^3$)*	August 2016 *($\mu g/m^3$)*	September 2016 *($\mu g/m^3$)*	October 2016 *($\mu g/m^3$)*	2016-2017 Average *($\mu g/m^3$)*	Criteria *($\mu g/m^3$)*	
						Annual	Daily
$PM_{2.5}$ – TEOM92 "Werris Creek"	10.1	4.9	5.4	4.5	3.8	8	25
PM_{10} – TEOM92 "Werris Creek"	16.2	7.8	8.9	8.9	6.4	30	50
PM_{10} – HVP20 "Tonsley Park"	27.0	9.3	8.1	13.9	10.9	30	50
PM10 - HVP1 "Escott"	8.2	5.2	5.8	5.0	6.1	30	50
PM_{10} – HVP20 "Glenara"	25.5	12.0	9.9	9.7	14.8	30	50
PM_{10} – HVP98 "Kyooma"	8.6	5.0	6.3	6.4	6.6	30	50
TSP – HVT98 "Kyooma"	18.8	9.7	12.4	14.7	12.4	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.

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 three months are provided in the table below.

Monitor Location	August 2016 *(g/m^2/month)*	September 2016 *(g/m^2/month)*	October 2016 *(g/m^2/month)*	2016-2017 Average *(g/m^2/month)*	Annual Criteria *(g/m^2/month)*
DG1 "Escott"	0.5	0.5	0.3	0.6	4.0
DG2 "Cintra"	<0.1	1.5	2.4	2.2	4.0
DG3 "Eurunderee"	0.4	1.8	1.4	1.4	4.0
DG5 "Railway View"	0.6	1.5	2.2	1.6	4.0
DG9 "Marengo"	0.6	0.6	1.1	1.5	4.0
DG11 "Glenara"	0.1	1.2	1.6	1.0	4.0
DG14 "Greenslopes"	<0.1	0.9	1.1	0.7	4.0
DG15 "Plain View"	0.4	0.6	1.0	0.7	4.0
DG17 "Woodlands"	0.6	0.8	0.9	0.9	4.0
DG20 "Tonsley Park"	3.0	1.6	0.9	1.7	4.0
DG22 "Mountain View"	0.5	3.6*	2.4	1.0	4.0
DG24 "Hazeldene"	<0.1	0.5	0.5	0.7	4.0
DG34 8 Kurrara St	0.2	0.6	0.6	1.6	4.0
DG62 Werris Creek South	0.8	1.1	1.0	1.9	4.0
DG92 Werris Creek Centre	1.2	0.5	0.5	0.6	4.0
DG96 "Talavera"	NS	NS	NS	NA	4.0
DG98 "Kyooma"	<0.1	0.4	0.5	0.4	4.0
DG101 "Westfall"	0.3	1.2	2.5	2.6	4.0
DG103 West Street	1.1	1.4	0.9	1.4	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.

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.

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	August 2016		September 2016		October 2016		2016-2017 Average *(g/m^2/month)*
	g/m^2/month	*% Coal*	*g/m^2/month*	*% Coal*	*g/m^2/month*	*% Coal*	
DDW30	0.7	<1%	1.0	15%	1.5	10%	1.0
DDW20	0.9	<1%	0.5	10%	1.4	5%	0.9
DDW13	0.7	5%	0.8	5%	0.8	<1%	0.8
Train Line							
DDE13	0.8	25%	1.1	10%	0.9	10%	1.0
DDE20	0.4	5%	0.5	25%	0.5	<1%	0.9
DDE30	1.9	<1%	3.7	10%	1.8	<1%	1.8

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 for all samples and comparable to the levels monitored around Werris Creek Coal Mine. Coal contributions to the dust fraction remain generally low.

2.4 AIR QUALITY COMPLAINTS

There was one dust complaint recorded during the period relating to dust generated from the open cut operations. Specific actions taken in relation to these complaints are outlined in Section 6.

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**.

Tuesday 30th August 2016

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	23	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible	40	26	40
C	**Central Quipolly**(R10*,R11*)	Inaudible	40	28	40
D	**"Hazeldene"** R24	Inaudible	37	29	37
E	**"Railway Cottage"** R12	Inaudible	38	25#	38
F	**"Talavera"** R96	26	38	Inaudible#	37
H	**"Kyooma"** R98	25	38	22	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) $L_{eq\ 15min}$

Tuesday 27th and Wednesday 28th September 2016

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	22	38	20	37
H	**"Kyooma"** R98	25	38	39	38
I	**Kurrara St, WC** R57	32	35	20#	35
J	**Coronation Ave, WC**	25	35	27	35
K	**Alco Park** (R21*)	34	40	25#	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) $L_{eq\ 15min}$

Thursday 13th and Friday 14th October 2016

	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	25	38	Inaudible#	37
H	**"Kyooma"** R98	Inaudible	38	Inaudible#	38
I	**Kurrara St, WC** R57	28	35	25	35
J	**Coronation Ave, WC**	Inaudible	35	26#	35
K	**Alco Park** (R21*)	28	40	Barely audible (<25)#	40
L	**West St, WC** (R103)	25	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) $L_{eq\ 15min}$

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.
A 1dB exceedance was identified at the Kyooma property on the evening of the 27th September. This exceedance was reported to the relevant Departments and investigated internally. 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 twenty-eight 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 three months are provided below.

August 2016		"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		0.16	106.0	0.73	103.8	0.33	100.9	0.21	99.5
Monthly Maximum		0.49	111.3	1.86	109.0	0.60	107.9	0.37	104.5
Annual Average		0.19	101.3	0.75	101.6	0.36	97.9	0.22	97.5
Criteria		**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	**Rolling Ave**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting Year	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

September 2016		"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	103.0	0.52	102.1	0.32	98.9	0.23	99.3
Monthly Maximum		0.23	107.5	0.95	108.5	1.01	106.6	0.39	105.1
Annual Average		0.18	101.6	0.71	101.7	0.36	98.1	0.22	97.8
Criteria		**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	**Rolling Ave**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting Year	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

October 2016		"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		0.14	100.6	0.65	104.7	0.41	103.4	0.29	101.4
Monthly Maximum		0.22	105.3	1.45	112.2	0.92	110.5	0.78	109.5
Annual Average		0.17	101.5	0.70	102.1	0.36	98.8	0.23	98.3
Criteria		**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	**Rolling Ave**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Reporting Year	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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 two blast complaints during the period with both relating to vibration impacts from blasting. All blasts were in compliance with licence conditions and details were provided back to the complainant. Specific actions taken in relation to these complaints are outlined in Section 6.

5.0 WATER

The groundwater monitoring program monitors groundwater levels bi-monthly and groundwater quality six monthly. Surface water monitoring is undertaken quarterly. There were four dirty water discharge events during the period.

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 12th, 13th, 19th and 22nd September 2016 and 6th to 7th October 2016. 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		September-16		Site		October-16	
		mbgl	%			**mbgl**	%
Werrie Basalt near WCC	**MW1**	Dry		Werrie Basalt near WCC	**MW1**	Dry	
	MW2	40.77	0%		**MW2**	37.26	9%
	MW3	19.68	0%		**MW3**	19.48	1%
	MW4B	15.64	-4%		**MW4B**	15.65	0%
	MW5	12.6	2%		**MW5**	12.17	4%
	MW6	15.94	0%		**MW6**	16.14	-1%
	MW27*	55.93	-4%		**MW27***	55.94	0%
	MW36A	21.14	0%		**MW36A**	20.15	5%
	MW36B	21.09	0%		**MW36B**	20.13	5%
Werrie Basalt	**MW8***	19.21	4%	Werrie Basalt	**MW8***	16.96	13%
	MW10	14.39	14%		**MW10**	14.13	2%
	MW14	17.77	11%		**MW14**	16.86	5%
	MW17B*	12.76	37%		**MW17B***	12.66	1%
	MW19A*	9.17	6%		**MW19A***	8.31	10%
	MW20*	21.81	0%		**MW20***	21.74	0%
	MW38A	11.02	37%		**MW38A**	10.94	1%
	MW38B*	9.38	9%		**MW38B***	9.19	2%
	MW38C*	22.10	5%		**MW38C***	21.85	1%
	MW38E*	9.56	13%		**MW38E***	9.34	2%
#[1]	**MW24A***	15.16	6%	#[1]	**MW24A***	15.14	0%
	MW29*	13.44	10%		**MW29***	11.79	14%
Quipolly Alluvium	**MW12***	11.39	24%	Quipolly Alluvium	**MW12***	8.83	29%
	MW13*	7.07	5%		**MW13***	4.69	51%
	MW13B*	5.11	14%		**MW13B***	3.34	53%
	MW13D*	4.99	10%		**MW13D***	4.46	12%
	MW15*	5.08	54%		**MW15***	4.89	4%
	MW16*	6.61	32%		**MW16***	6.32	5%
	MW17A*	6.41	19%		**MW17A***	5.62	14%
	MW18A*	6.29	9%		**MW18A***	5.48	15%
	MW21A*	10.13	12%		**MW21A***	9.63	5%
	MW22A*	7.40	11%		**MW22A***	6.52	13%
	MW22B*	7.00	12%		**MW22B***	6.61	6%
	MW23A*	3.35	29%		**MW23A***	3.54	-5%
	MW23B*	3.80	15%		**MW23B***	3.84	-1%
	MW26B*	8.77	15%		**MW26B***	8.51	3%
	MW28A*	15.27	7%		**MW28A***	9.21	66%
	MW32*	4.03	3%		**MW32***	3.73	8%
#[2]	**MW34***	9.36	18%	#[2]	**MW34***	9.07	3%

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

A significant increase to measured groundwater levels has been identified during September and October. This has been attributed to above average rainfall and localised flooding through the Quipolly Creek and Werris Creek systems.

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 18th and 22nd August 2016. 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.

Site	pH	EC	TSS	O&G	Change from Previous Quarter
ONSITE					
SB2	8.2	1742	<5	<5	pH slightly decreased, EC decreased, TSS and O&G were unchanged. Field sheet notes very low water level
SB9	8.0	560	12	<5	Previous quarter this location was Dry.
SB10	Dry	Dry	Dry	Dry	Dry
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry
QCD	7.9	956	12	<5	pH very slightly increased, EC very slightly decreased, TSS stable and O&G unchanged.
WCU	8.0	813	11	<5	Previous quarter this location was Dry. Field sheet water pooled.
WCD	8.2	1180	25	<5	pH very slightly increased, EC very slightly decreased, TSS decreased from 43 to 25 and O&G unchanged. Field sheet notes water just 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; Orange – Issue with water quality; Green – water quality OK.

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 18th and 22nd August 2016 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

5.3.1 Monitoring Data Results

There were four discharge events during early and mid-September 2016 following above average rainfall during the month. Sampling conducted within the Quipolly and Werris Creek systems was also during the discharge in accordance with licence conditions.

Sample Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
12/09/2016	**SB2**	7.8	730	7	<5	Yes	Wet Weather - Controlled	11.6
12/09/2016	**SB9**	7.7	510	7	<5	Yes	Wet Weather - Controlled	11.6
14/09/2016	**SB10**	7.4	130	**89**	<5	Yes- TSS Ok because rainfall >39.2mm	Wet Weather - Passive	47.6
15/09/2016	**SB10**	7.5	140	**77**	<5	Yes- TSS Ok because rainfall >39.2mm	Wet Weather - Controlled	48.4
Criteria		8.5	N/A	50	10			

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; **Bold** – indicates results outside criteria due to 5 day rain trigger >39.2mm.

5.3.2 Discussion - Compliance / Non Compliance

Total Suspended Solids (sediment) levels were slightly increased on samples from the 14th and 15th however sampling results were in compliance with WCC's Environmental Protection Licence due to the rainfall trigger of 39.2mm. There were no impacts observed or monitored in Quipolly and Werris Creek systems as a result of the water discharge events.

5.3 WATER COMPLAINTS

There were two water release complaints during the period both relating to controlled water releases. All water releases were undertaken in compliance with licence conditions and details were provided back to the complainant. Specific actions taken in relation to these complaints are outlined in Section 6.

6.0 COMPLAINTS SUMMARY

There were five complaints received during the period, which are summarised below. Of the five complaints, two were related to blasting impacts, one related to dust, and two related to water release.

#	Date	Complainant	Complaint	Investigation	Action Taken
533	31/8/2016	AW	Complainant advised they felt the blast at their residence. Requested blast data	WCC blast 092 fired at 1.13pm on the 26th July. Monitoring results were under compliance limits at all locations.	EO returned phone call to discuss the details of the blast. Further discussion was held regarding undertaking a structural assessment of the property. The property owners had cancelled their previous assessment however requested to undertake a new assessment. This has been scheduled for the 7th September.
534	31/8/2016	BI	Complainant advised they felt the blast at their residence.	WCC blast 092 fired at 1.13pm on the 26th July. Monitoring results were under compliance limits at all locations.	EO responded via email confirming blast was within limits and providing a copy of the blast data.
535	19/9/2016	AG	Complainant advised they were disappointed and frustrated with the controlled water release.	EO advised that the controlled water release was undertaken in accordance with the Environmental Protection Licence and was a result of increased rainfall experienced during September.	Prior to the controlled water release the complainant (and others including the EPA were consulted). The complainant also attended a site visit to view the process of release on the 6th September.
536	20/9/2016	AG	Complainant advised they were not impressed with the controlled water release. The complainant requested the water release was ceased.	EO advised that the controlled water release was undertaken in accordance with the Environmental Protection Licence and was a result of increased rainfall experienced during September.	EO advised the complainant that the water release to the south of operations had ceased on the 20th.
537	6/10/2016	BS	Complainant advised they had viewed dust lifting off operations on the eastern side of the WCC pit.	EO called OCE and advised complaint had been made. OCE took pictures of the area and ceased operations until the water cart could make its way back to the area. Operations continued with ongoing cycling of water cart usage as normal.	EO advised the complainant of the steps undertaken to manage the dust lift off in the area. Complainant thanked WCC for the quick response to the complaint.

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.

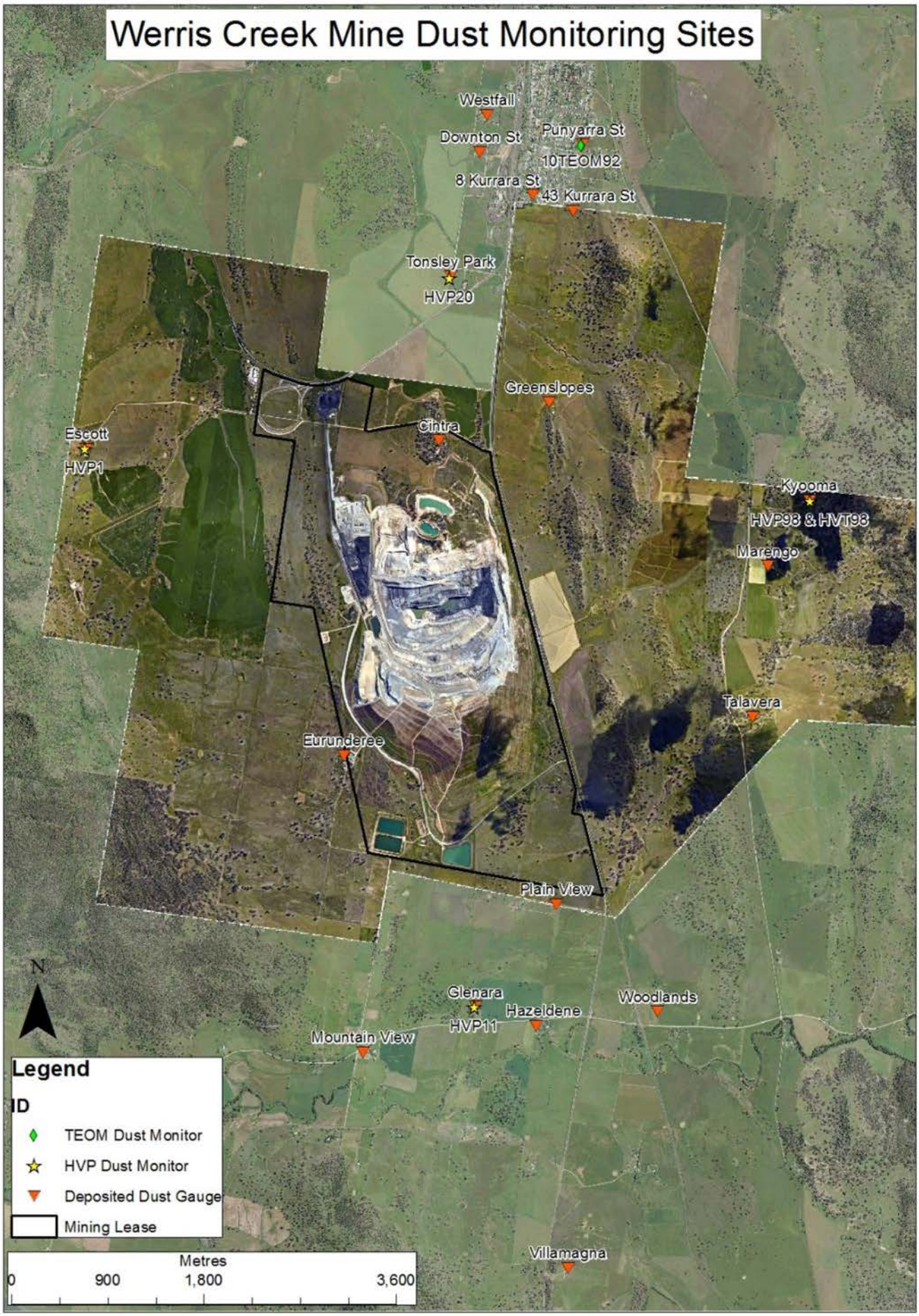


Figure 1 – WCC Dust Monitoring Locations

Figure 2 – WCC Noise Monitoring Locations

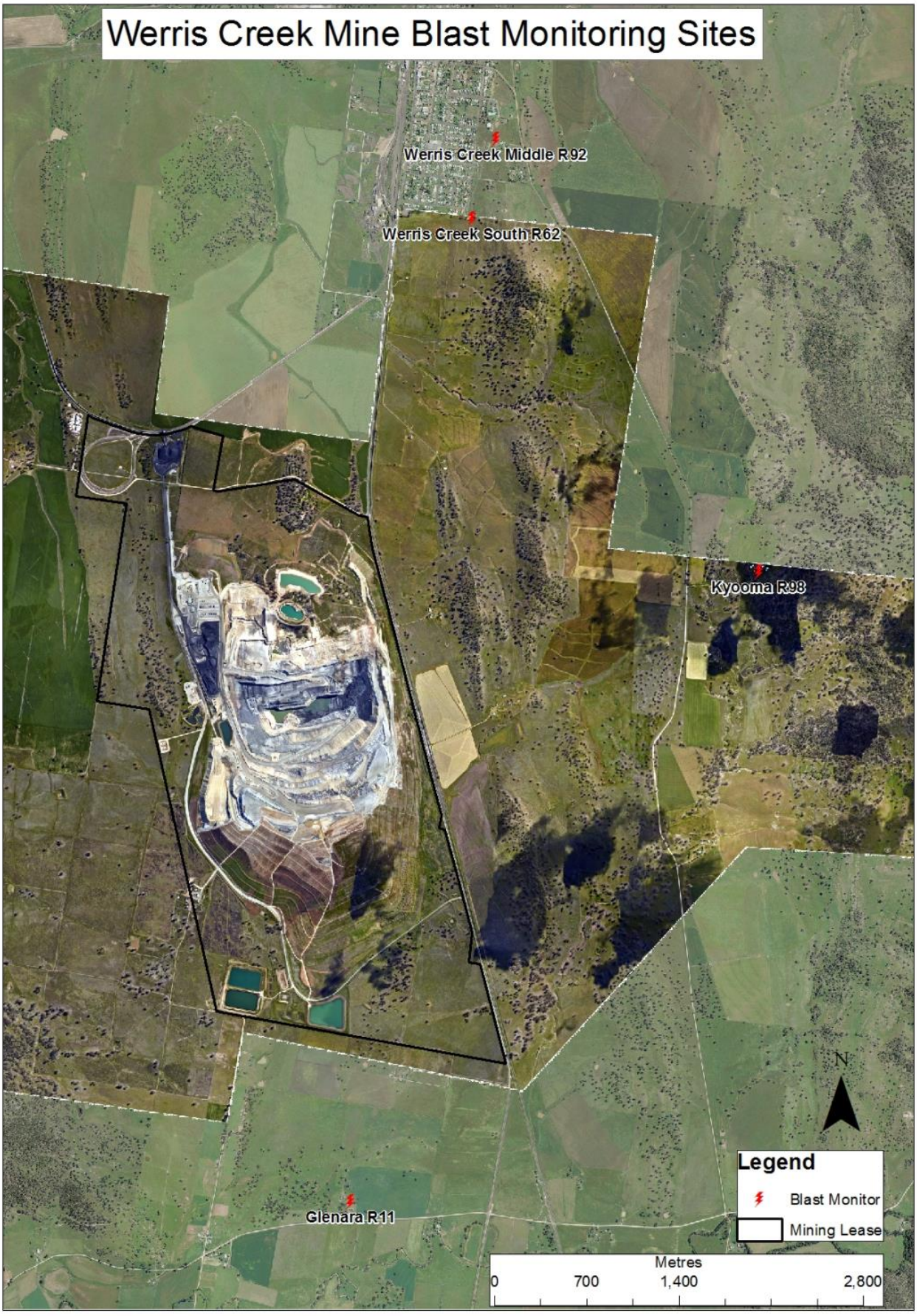


Figure 3 – WCC Blast Monitoring Locations

Figure 4 – WCC Groundwater Monitoring Locations

Figure 5 – WCC Surface Water Monitoring Locations