Werris Creek Coal Community Consultative Committee

Thirty Fourth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 26th February 2015

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site inspecting operations from the eastern and southern lookouts before the meeting. Gae Swain welcomed Rod Hicks, Mike Lomax, Dave Goldman and Donna Ausling to their first CCC meeting.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Geoff Dunn (Community Representative); Mike Lomax and Dave Goldman (Guests – Perspective Community Representatives); Donna Ausling (Liverpool Plains Shire Council (LPSC) – Acting Director Environmental Services); Ron Van Katwyk (LPSC – Acting General Manager); Rod Hicks (WCC – Operations Manager) and Andrew Wright (WCC – Environmental Officer and Minute Taker).

Apologies: Col Stewart (LPSC – Councilor).

2. Declaration of Pecuniary or Other Interests

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

3. New Matters for Discussion under General Business

Two items:

a) Proposed Project Approval Modification for WCC;
b) Discussion on Quipolly Creek Alluvium Groundwater decline.

4. Minutes of Previous Meeting

Minutes of the previous meeting on the 4th December 2014 were reviewed by the committee.

Motion moved to accept the meeting minutes on the 4th December 2014 as a true and accurate representation of business conducted on that day.

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

5. Matters Arising

a) Actions from Previous Meeting

Andrew Wright discussed that the Water Fact Sheet had not yet been completed due waiting on the results of a Water Balance Model.

b) Other Matters Arising

None.

6. Environmental Monitoring Report: November and December 2014, January 2015

Meteorology – The prevailing wind direction was from the south in November, north north west in December and south south east in January. Rainfall was variable across the period with November 2014 well below average, while December 2014 and January 2015 were above average rainfall.

Air Quality – An easing of the dry conditions resulted in the ambient dust levels to improve across the period from quite high levels recorded in November 2014. The PM10 annual averages are below the annual air quality criteria. However the "Glenara" HVAS twice recorded dust levels on 31st October 2014 (62.4µg/m^3) and 17th January 2015 (65.6µg/m^3) as well as the Werris Creek TEOM on 15th November 2014 (55.5µg/m^3) above the daily limit of 50µg/m^3 which were not considered an exceedance because the source of dust was not from WCC. The Werris Creek PM2.5 dust level annual average is still elevated but is improving and is expected to be below 8.0µg/m^3 annual average criteria by the end of March 2015.

Dust deposition gauge annual averages are below the annual criteria of 4.0g/m2/month except for DG20 ("Tonsley Park"). DG20 is being impacted by adjacent bare paddock with no groundcover except for stubble (source of organic contamination). Also DG20 was impacted non-mining dust source with a fire started by a lighting strike burning the stubble in an adjacent paddock. Excluding the non-mining and organic matter contamination, DG20 would be below 4.0g/m2/month.

There were five dust complaints during the period. Two of the dust complaints were for dust from digging into an area of spontaneous combustion adjacent to former underground mine on 30th October 2014. The excavator was immediately relocated, water cart used to cool the area and dust dissipated within 15 minutes. The other three dust complaints were for activities unrelated to WCC from harvesting on 29th October 2014 and lighting strike fire on 24th November 2014.

Noise – There were no noise exceedances during November and December 2014 and January 2015. The last recorded noise exceedance was in October 2014. There were two noise complaints during the period from two Werris Creek residents that alleged noise impacts from the WCC Train Load Out facility but were found to be due to rail traffic in the Werris Creek rail yard.

Blasting – During the period a total of thirty eight blasts were fired by WCC. All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s) with no blast overpressure levels above 115dB(L) or vibration levels over 5mm/s for the three month period. There were only two blast complaints during the period with only one complaint (4th November) due to perceived vibration being too high; while the other blast complaint was for alleged blast damage not from a specific event. This complaint was investigated by a Structural Engineer who found the cosmetic damage was due to soil movement.

Groundwater – Continuing dry conditions have resulted in no rainfall recharge to aquifers with the majority of monitoring bore groundwater levels declining over the period. The groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced. Previous investigations have found that no Quipolly Alluvium aquifer bores are being impacted by mining and that the current dry conditions and reduced rainfall recharge are the cause of the declining groundwater levels. There was one groundwater complaint during the period due to declining groundwater levels.

Surface Water – Quarterly surface water monitoring found onsite and offsite water quality to be within longer term averages and the Site Water Management Plan trigger values.

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 were eleven complaints received during the period, down from 25 complaints in the previous period; with the details summarised below. There were five complaints related to dust; two complaints relating to noise; two complaints related to blasting (only one complaint for blast vibration); one complaint related to road closures and one complaint relating to groundwater. There were seven different complainants during the period with six complaints from Werris Creek residents; one complaint from a Quipolly resident and four from anonymous complainants.

Motion moved to accept the Environmental Monitoring Report for November and December 2014, January 2015.

Moved: Geoff Dunn. Seconded: Noel Taylor. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Annual Review

Andrew Wright discussed the amendments made to the draft CEF document as part of the annual review process for 2014. CPI for 2014 increased the unexpended funds within the CEF by $2773.23 to $163,131.32 remaining. Funds committed to projects but yet to be expended included recently completed works at the Australian Rail Journeys Museum as well as LPSC working on additional public seating in Werris Creek. The committee accepted that the two existing proposed playground projects for 2016 and 2017 remain unchanged.

Motion moved to support the CEF Project Schedule (v5) and be sent to LPSC for endorsement as part of the annual review.

Moved: Noel Taylor. Seconded: Geoff Dunn. Motion Carried.

b. CCC Community Representative Vacancy

Andrew Wright advised the CCC that the two guests present at the meeting; Mike Lomax and Dave Goldman were perspective Community Representatives to fill the two current vacancies. If Mike Lomax and Dave Goldman wish to proceed as Community Representatives; Andrew Wright will coordinate a letter to be sent to the Department of Planning and Environment requesting for that they be accepted to the WCC CCC.

c. WCC Project Approval Modification Application

Andrew Wright presented to the committee on the current application to modify the Project Approval for WCC which includes minor amendments to the overburden emplacement area and allows for water from the mine to be used on adjacent land for agricultural use. The use of mine (void) water for agriculture promoted a lot of discussion by the committee especially around the issue that local groundwater was continuing to decline and many farmers were faced with issues around water security.

Motion moved for the CCC to outline their support for the Project Approval Modification Application in relation to the option for agricultural use of surplus void water on adjacent farms to the WCC site.

Moved: Lindsay Bridge. Seconded: Geoff Dunn. Motion Carried.

d. Quipolly Valley Groundwater Levels

Noel Taylor raised that a number of Quipolly farmers were facing issues with declining groundwater levels in his opinion due partially to the mine as well as dry weather and Quipolly Dam. The groundwater level in his bore meant that he was not able to use all sprays while irrigating; and would appreciate WCC producing a fact sheet on water usage so that local residents would be able to understand the water situation at the mine compared to Quipolly.

Meeting Closed 12:00pm.

Next Meeting scheduled for Thursday 28th May 2015.

Copy to:

Gae Swain	Independent Chairperson		
Noel Taylor	Community Representative		
Lindsay Bridge	Community Representative		
Geoff Dunn	Community Representative		
Ron Van Katwyk	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Andrew Wright	Werris Creek Coal
Steve O'Donoghue	DPE		
John Trotter	DRE		
Kharl Turnbull	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

November, December 2014 and January 2015

This Environmental Monitoring Report covers the period 1st November 2014 to 31st January 2015 for the Werris Creek No.2 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

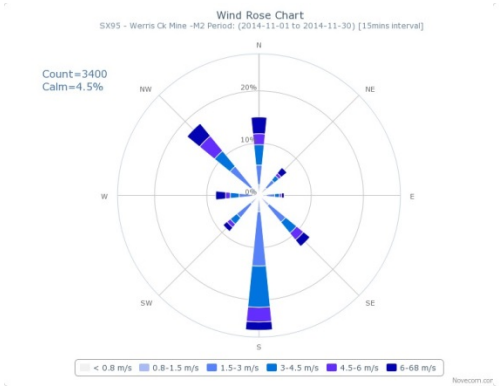
1.0 METEOROLOGY

1.1 WEATHER STATION

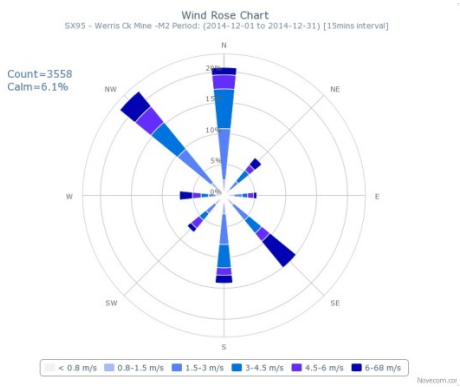
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. For the last three months the prevailing wind direction was from the south in November, north north west in December and south south east in January. Rainfall was variable across the period with November 2014 below average, December 2014 was well above average and January 2015 nearly level with the longer average rainfall for the month.

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 2014	6.6	23.6	40.8	11.7	24.5	40.2	10.4	23.9	43.0	-0.3	+5.9	31.2	28.2	16.8	242.2
December 2014	10.4	23.2	36.5	12.3	23.5	35.6	12.8	23.1	35.6	-1.0	+2.9	145.2	124.6	171.6	387.4
January 2015	8.2	23.4	35.2	11.1	23.7	34.5	11.9	23.7	33.3	-0.5	+4.8	74.6	58.6	69.8	462.0

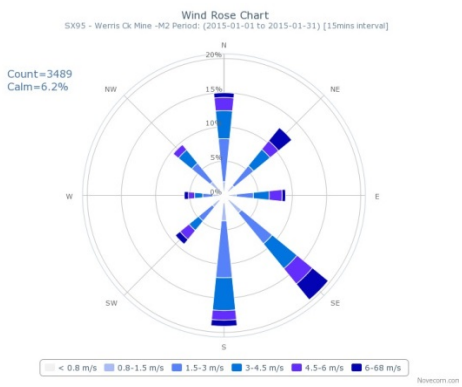
* Annual cumulative total since July 2014 to June 2015 from a composite data set based on the onsite Weather Station at WCC.



November 2014



December 2014



January 2015

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”

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.

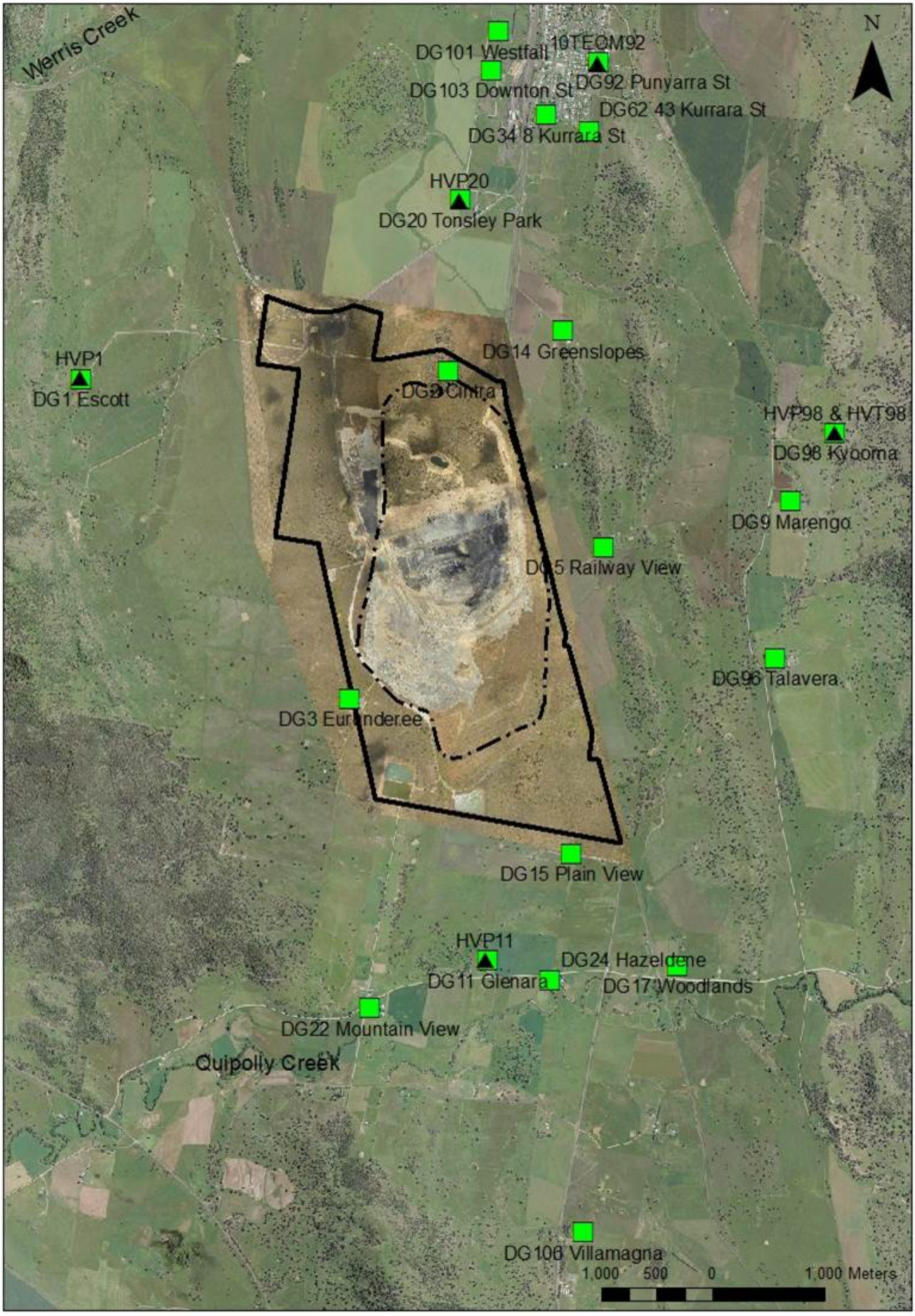


Figure 1 – WCC Dust Monitoring Locations

Monitor Location	Daily Maximum (µg/m^3)	November 2014 (µg/m^3)	December 2014 (µg/m^3)	January 2015 (µg/m^3)	2014-2015 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	18.9	10.2	6.5	4.9	**8.1**	8	25
PM10 – TEOM92 "Werris Creek"	**55.5**	20.0	11.8	6.8	13.1	30	50
PM10 – HVP20 "Tonsley Park"	42.1	29.9	10.8	13.0	15.0	30	50
PM10 - HVP1 "Escott"	29.7	19.0	11.4	9.9	9.4	30	50
PM10 – HVP20 "Glenara"	**62.4/65.6**	**32.7**	15.1	22.6	19.0	30	50
PM10 – HVP98 "Kyooma"	23.3	16.9	10.7	8.0	9.2	30	50
TSP – HVT98 "Kyooma"	45.9	31.6	19.2	16.1	16.4	90	-

Yellow Bold – Elevated dust level.

2.1.2 Discussion - Compliance / Non Compliance

An easing of the dry conditions resulted in the ambient dust levels to improve across the period from quite high levels recorded in November 2014. The PM10 annual averages are below the annual air quality criteria. However the "Glenara" HVAS recorded two dust levels on 31st October 2014 (62.4µg/m^3) and 17th January 2015 (65.6µg/m^3) and Werris Creek TEOM on 15th November 2014 (55.5µg/m^3) above the daily limit of 50µg/m^3. WCC does not believe that on the 31st October 2014 was an exceedance of the PM10 criteria because a regional dust event occurred which also caused elevated dust levels at the other three HVAS monitoring locations as well as elevated dust levels measured at the Werris Creek TEOM and the EPA's PM10 dust monitor in Tamworth. The 17th January 2015 was not an exceedance of the PM10 criteria because the "Glenara" property was upwind of WCC (moderate south westerly wind up to 6.5m/s at 6pm) and given the low dust levels recorded at the other three HVAS monitoring locations and at the Werris Creek TEOM indicates a localised dust impact specific to Glenara. A regional dust event occurred on 15th November 2014 which was also measured in Tamworth resulting in the EPA's dust levels to also be above 50µg/m^3 and therefore is not considered an exceedance. The Werris Creek PM2.5 annual average is trending downwards but still measured to be 8.1µg/m^3 reflecting the prevailing climatic conditions and is only fractionally above the annual criteria based on the interim guideline published in the relevant National Environment Protection Measure but did not exceed any air quality criteria outlined in the Project Approval.

2.2 WERRIS CREEK MINE DEPOSITED DUST

Deposited dust monitoring measures particulate matter greater than 30 micron in size that readily settles out of the air related to visual impact. Dust deposition is monitored at 19 locations around WCC. Sampling is scheduled monthly in accordance with EPA guidelines and results are reported as grams per metre squared 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 2014 (g/m^2/month)	December 2014 (g/m^2/month)	January 2015 (g/m^2/month)	2014-2015 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.9	0.8	1.1*	0.5	4.0
DG2 "Cintra"	2.8	3.0*	2.1*	2.7	4.0
DG3 "Eurunderee"	0.3*	**6.6***	2.1	1.8	4.0
DG5 "Railway View"	2.5	3.6	0.5*	1.9	4.0
DG9 "Marengo"	0.9	1.2*	**7.9***	1.4	4.0
DG11 "Glenara"	2.2	1.5	0.8	1.0	4.0
DG14 "Greenslopes"	2.7*	3.4	1.1	1.3	4.0
DG15 "Plain View"	1.2	0.8	**21.3***	2.9	4.0
DG17 "Woodlands"	**7.6***	1.8	1.5	1.7	4.0
DG20 "Tonsley Park"	**6.7***	**7.0**	**10.1***	**4.6**	4.0

Monitor Location	November 2014 (g/m^2/month)	December 2014 (g/m^2/month)	January 2015 (g/m^2/month)	2014-2015 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG22 "Mountain View"	3.9	0.7	**8.7***	2.4	4.0
DG24 "Hazeldene"	2.8	1.7	0.6	1.0	4.0
DG34 8 Kurrara St	0.1*	1.3	1.1	3.4	4.0
DG62 Werris Creek South	1.0	1.3	0.8	1.3	4.0
DG92 Werris Creek Centre	0.7*	1.7	0.5	0.5	4.0
DG96 "Talavera"	2.5*	1.5*	1.1*	0.9	4.0
DG98 "Kyooma"	0.9	0.9	3.4*	3.7	4.0
DG101 "Westfall"	1.1*	2.0	1.4	1.0	4.0
DG103 West Street	0.8	2.2	0.8	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.

2.2.2 Discussion - Compliance / Non Compliance

Dust deposition gauge annual averages are below the annual criteria of 4.0g/m2/month except for DG20 ("Tonsley Park"). DG20 is being impacted by adjacent bare paddock with no groundcover except for remnant stubble (source of organic contamination). Also DG20 was impacted non-mining dust source with a fire started by a lighting strike burning the stubble in an adjacent paddock. Excluding the non-mining and organic matter contamination, DG20 would be below 4.0g/m2/month. The majority of dust results were the highest in November and have subsequently lowered as average rain fell in December and January demonstrating that the climate has greater influence on dust levels than mining activities. The majority of elevated results were on properties owned by WCC with two elevated results in November, two elevated results in December and four elevated results in January; with only one (DG20 in December) not contaminated by organic matter.

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 2014		December 2014		January 2015		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	2.3	25	1.2	5	0.7	5	1.4
DDW20	3.1	40	3.1	10	1.2	<1	1.7
DDW13	1.6	80	1.8	30	1.0	<1	1.3
Train Line							
DDE13	3.9	20	2.8	30	1.0	5	1.6
DDE20	2.1	40	2.1	35	3.8	5	1.7
DDE30	2.9	50	1.8	15	1.1	<1	1.7

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fallout levels adjacent to the train line are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC. The annual average for 2014-2015 is trending higher than the previous year reflecting the regional increase in dust levels due to the below average rainfall.

2.4 AIR QUALITY COMPLAINTS

There were five dust complaints during the period. Two of the dust complaints were for dust from digging into an area of spontaneous combustion adjacent to former underground mine on 30th October 2014. The excavator was immediately relocated, water cart used to cool the area and dust dissipated within 15 minutes. The other three dust complaints were for activities unrelated to WCC from harvesting on 29th October 2014 and lighting strike fire on 24th November 2014. 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.

- A - "Rosehill" R5;
- B1 - "Almawille" (private agreement) R8;
- B1 - 83 Wadwells Lane R7;
- B2 - "Mountain View" R22;
- B2 - "Gedhurst" 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**.

Wednesday 26th November 2014

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*	25#	37/36[1]	32#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	27#	39	33#	39
D	**"Hazeldene"** R24	28#	37	25#	37
E	**"Railway Cottage"** R12	Inaudible#	38	25	38
F	**"Talavera"** R96	Inaudible#	38	32	37
G	R97	23#	35	35#	35
H	**"Kyooma"** R98*	24#	36	33#	36
I	**Kurrara St, Werris Creek**	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, Werris Creek**	Inaudible#	35	25#	35
K	**South St, WC** R21*	25#	39	23#	37
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) $L_{eq\ 15min}$

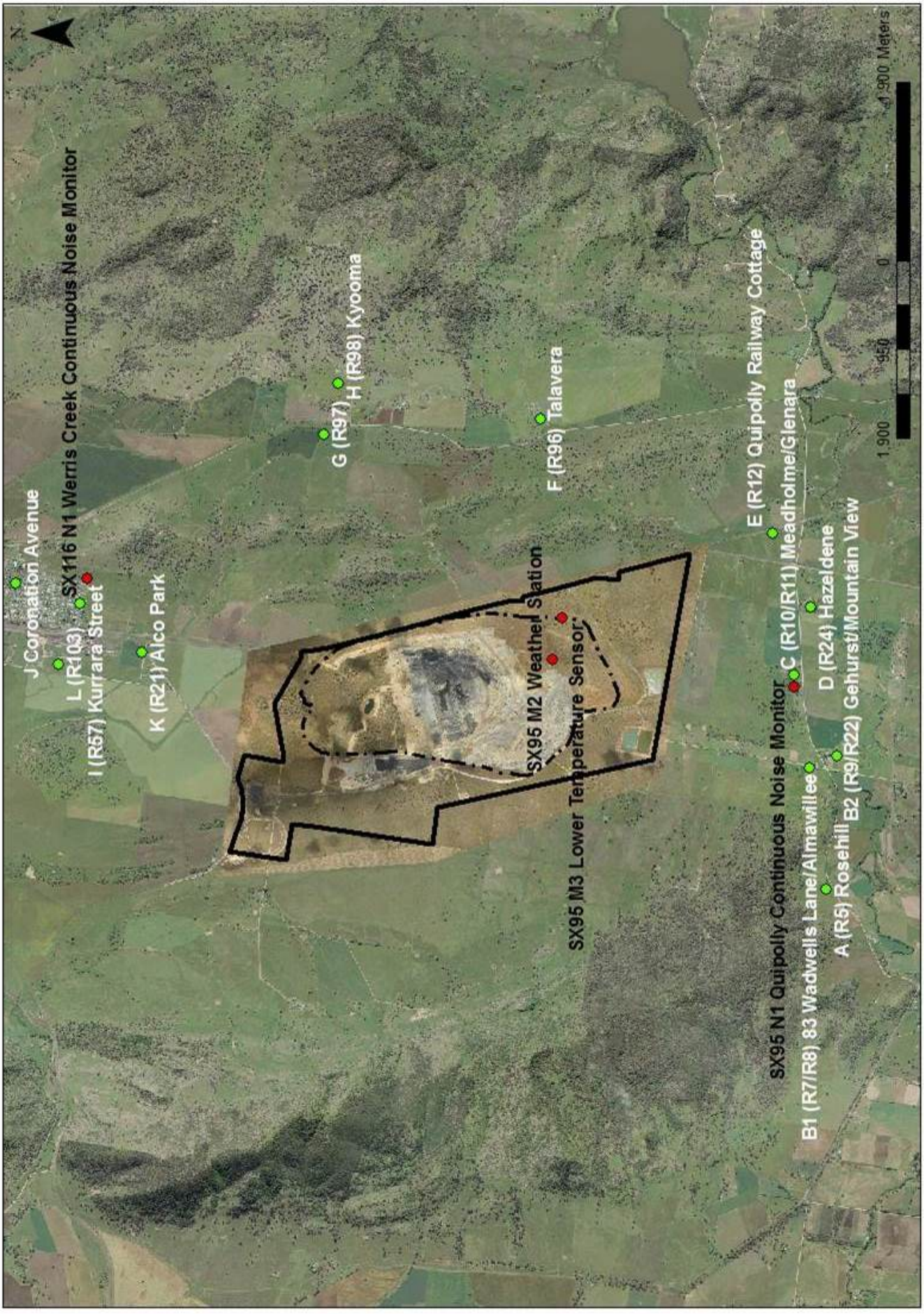


Figure 2 – WCC Noise Monitoring Locations

Thursday 4th and Monday 8th December 2014

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	23#	35	Inaudible	35
B	**West Quipolly** R7*, R8*, R9* & R22*	Faintly audible#	37/36[1]	Faintly audible	37/36[1]
C	**Central Quipolly**(R10*,R11*)	25#	39	Inaudible	39
D	**"Hazeldene"** R24	24#	37	Inaudible	37
E	**"Railway Cottage"** R12	23#	38	Inaudible	38
F	**"Talavera"** R96	Faintly audible#	38	29	37
G	R97	Inaudible#	35	25	35
H	**"Kyooma"** R98*	Inaudible#	36	32	36
I	**Kurrara St, Werris Creek**	Inaudible#	35	25	35
J	**Coronation Ave, Werris Creek**	Inaudible#	35	24	35
K	**South St, WC** R21*	Inaudible#	39	Inaudible	37
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 15th January 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*	23	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Faintly audible	39	Inaudible#	39
D	**"Hazeldene"** R24	Faintly audible	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible	38
F	**"Talavera"** R96	Inaudible#	38	28	37
G	R97	26	35	27#	35
H	**"Kyooma"** R98*	Faintly audible	36	37#	36
I	**Kurrara St, Werris Creek**	Inaudible	35	Inaudible#	35
J	**Coronation Ave, Werris Creek**	Inaudible	35	Inaudible#	35
K	**South St, WC** R21*	Faintly audible	39	Inaudible#	37
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

There were no noise exceedances during November and December 2014 and January 2015. The last recorded noise exceedance was in October 2014.

3.2 NOISE COMPLAINTS

There were two noise complaints during the period from two Werris Creek residents that alleged noise impacts from the WCC Train Load Out facility but were found to be due to rail traffic in the Werris Creek rail yard. Specific actions taken in relation to these complaints 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.

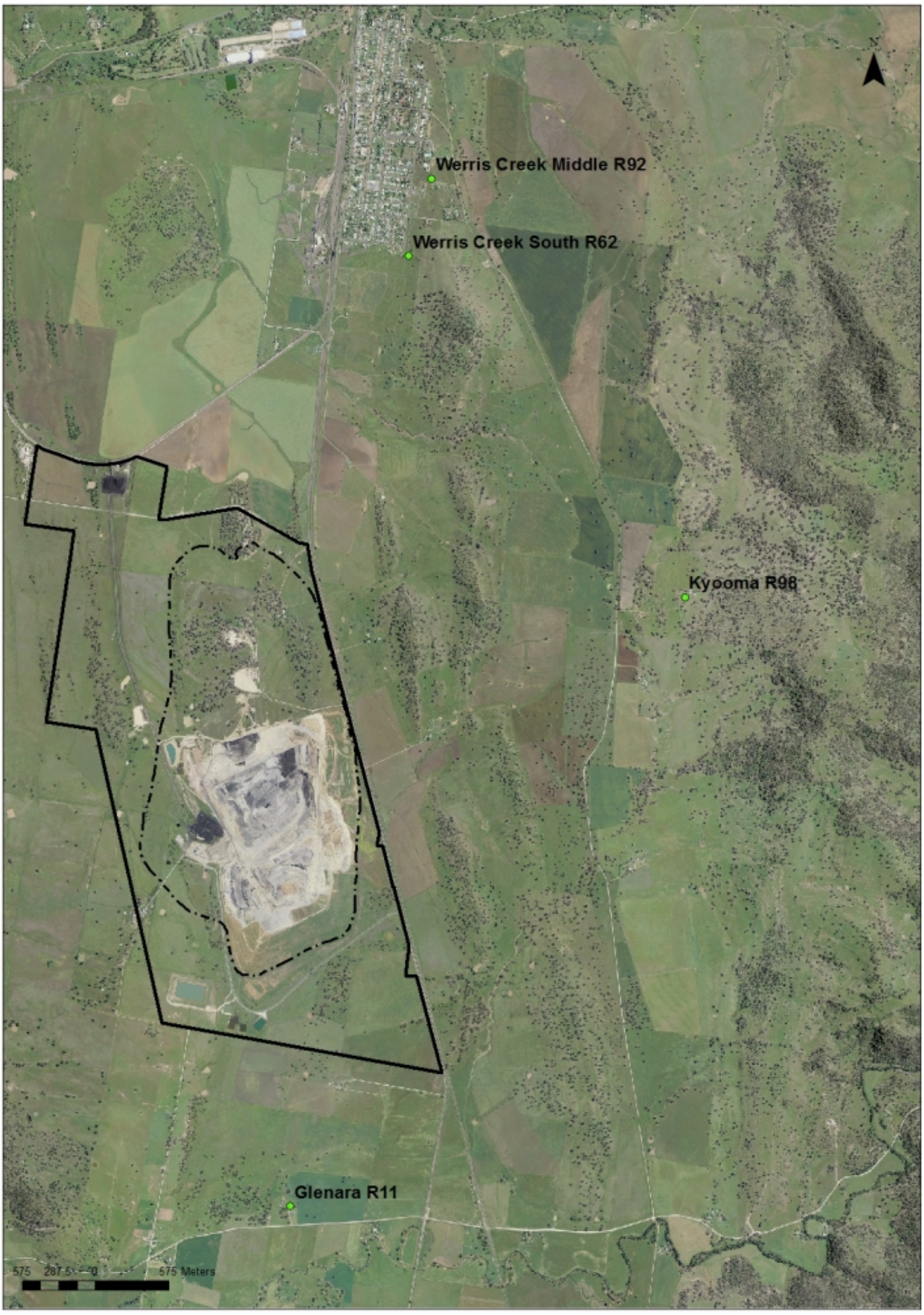


Figure 3 – WCC Blast Monitoring Locations

November 2014	"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	100.5	0.62	100.2	0.27	99.5	0.15	98.3
Monthly Maximum	0.26	113.2	1.05	107.6	0.45	108.7	0.28	113.4
Annual Average	0.15	99.9	0.79	100.0	0.36	97.3	0.23	96.4
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	1.1%	0%	1.2%	0%	0%
# >0.5mm/s	8 out of 14 blast events							

December 2014	"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	102.3	0.71	102.5	0.35	100.8	0.26	102.2
Monthly Maximum	0.24	106.7	1.23	106.6	0.53	110.1	0.42	113.6
Annual Average	0.15	100.1	0.78	100.3	0.36	97.7	0.24	97.1
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	1.0%	0%	1.2%	0%	0%
# >0.5mm/s	5 out of 8 blast events							

January 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	0.12	97.8	0.49	100.0	0.24	96.0	0.17	97.6
Monthly Maximum	0.26	104.4	0.99	111.7	0.46	102.7	0.36	111.5
Annual Average	0.15	99.9	0.49	100.0	0.34	97.5	0.17	97.6
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	0.9%	0%	0%	0%	0%
# >0.5mm/s	7 out of 16 blast events							

Yellow – overpressure >115dB(L) or Werris Creek vibration >1mm/s.

4.1.2 Discussion - Compliance / Non Compliance

All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s) with no blast overpressure levels above 115dB(L) or vibration levels over 5mm/s for the three month period.

4.2 BLAST COMPLAINTS

There were only two blast complaints during the period with only one complaint (4th November) due to perceived vibration being too high; while the other blast complaint was for alleged blast damage not from a specific event. This complaint was investigated by a Structural Engineer who found the cosmetic damage was due to soil movement. 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 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 30 groundwater 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 monitoring was completed between the 24th and 26th November 2014 and between 9th and 13th January 2015. Groundwater and Surface Water 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 2014*	Jan 2015*	% Change	Comments
Werrie Basalt Near WCC	MW1	59.34	59.87	-1%	No rainfall recharge, Level down
	MW2	30.25	30.82	-2%	No rainfall recharge, Level down
	MW3	17.63	17.83	-1%	No rainfall recharge, Level down
	MW4B	13.99	14.32	-2%	No rainfall recharge, Level down
	MW5	11.02	11.19	-2%	No rainfall recharge, Level down
	MW6	13.81	13.95	-1%	No rainfall recharge, Level down
	MW27	52.10	51.32	1%	No rainfall recharge
	MW36A	24.45	24.43	0%	No rainfall recharge
	MW36B	24.20	24.19	0%	No rainfall recharge
Werrie Basalt	MW8	18.38	18.34	0%	No rainfall recharge
	MW10	17.11	17.19	0%	No rainfall recharge
	MW12	11.63	11.85	-2%	No rainfall recharge, Level down
	MW14	18.97	19.39	-2%	No rainfall recharge, Level down
	MW17B	12.15	12.22	-1%	No rainfall recharge, Level down
	MW19A	9.15	9.10	1%	No rainfall recharge
	MW20	20.67	20.86	-1%	No rainfall recharge, Level down
Quipolly Alluvium	MW13	6.34	6.42	-1%	No rainfall recharge, Level down
	MW13B	4.78	4.91	-3%	No rainfall recharge, Level down
	MW13D	5.07	5.02	1%	No rainfall recharge, Level down
	MW15	5.84	5.92	-1%	No rainfall recharge, Level down
	MW16	6.86	6.99	-2%	No rainfall recharge, Level down
	MW17A	6.05	6.09	-1%	No rainfall recharge, Level down
	MW18A	5.76	5.95	-3%	No rainfall recharge, Level down
	MW21A	9.65	10.35	-7%	No rainfall recharge, Level down
	MW22A	6.95	7.18	-3%	No rainfall recharge, Level down
	MW22B	7.26	7.44	-2%	No rainfall recharge, Level down
	MW23A	4.05	3.94	3%	No rainfall recharge
	MW23B	4.19	4.19	0%	No rainfall recharge
	MW28A	13.80	13.95	-1%	No rainfall recharge, Level down
	MW32	4.13	4.26	-3%	No rainfall recharge

* mbgl – meters below ground level is the distance in meters from top of bore to groundwater surface; Red – Greater than 15% change/potential compliance issue; Orange – Change decrease; Green – change increase or no change.

5.1.2 Discussion - Compliance / Non Compliance

The average rainfall in December 2014 and January 2015 was not enough to reverse the prevailing dry conditions resulting in no rainfall recharge to aquifers with the majority of monitoring bores groundwater levels declining over the period although at a reduced rate. All groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced due to the dry conditions and unrelated to mining operations.

5.2 SURFACE WATER

Surface water monitoring is undertaken from 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 10th November 2014.

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.
SB9	-	-	-	-	Dry.
SB10	-	-	-	-	Dry.
OFFSITE					
QCU	7.89	1420	76	<5	Low flow due to dry conditions.
QCD	8.00	1080	17	<5	Low flow due to dry conditions.
WCU	-	-	-	-	Dry.
WCD	8.34	1400	38	<5	Low flow due to dry conditions.

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.

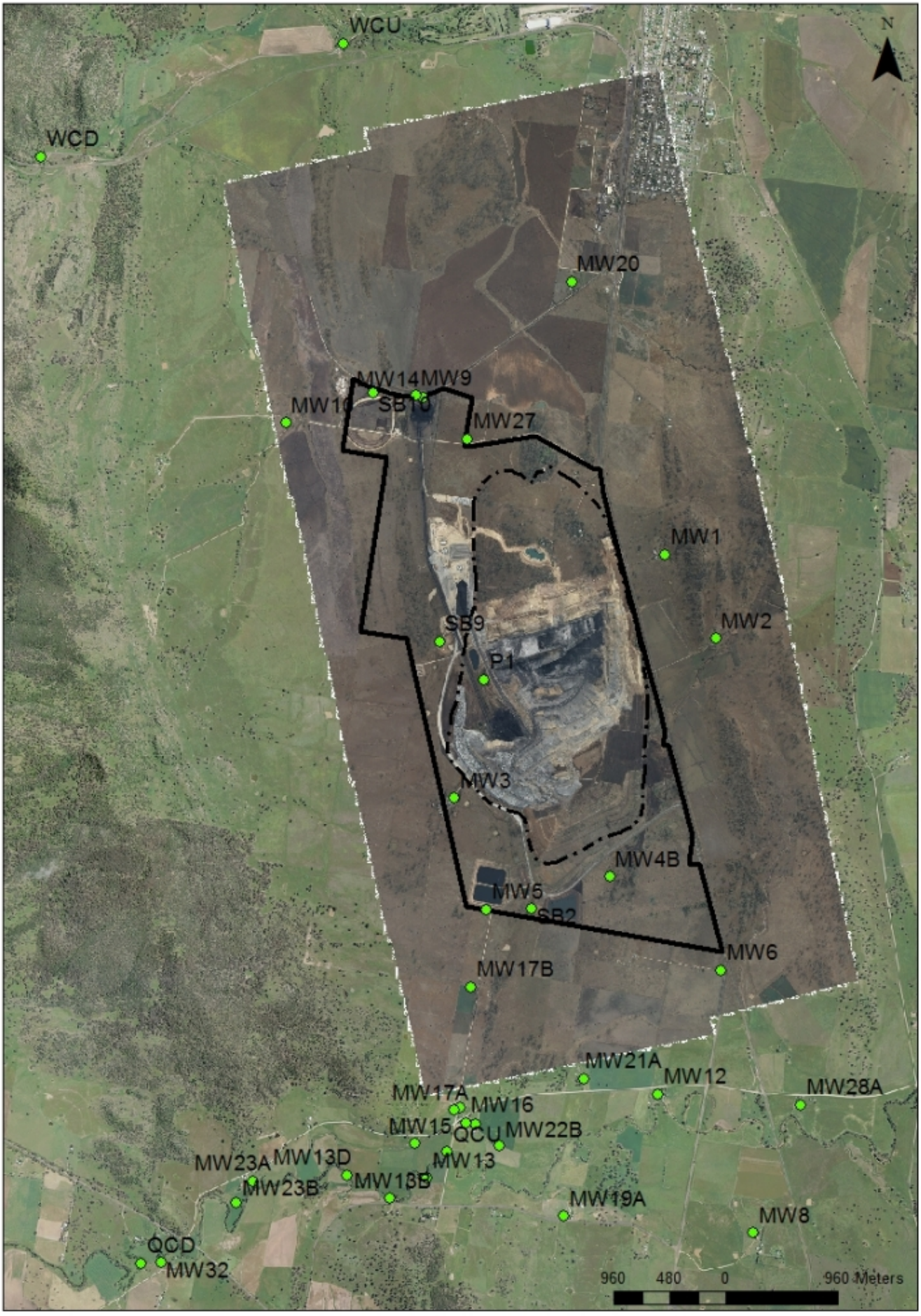


Figure 4 – WCC Groundwater and Surface Water Monitoring Locations

5.2.2 Discussion - Compliance / Non Compliance

Quarterly surface water monitoring was undertaken on 10th November 2014 found onsite discharge dams to be dry and offsite water quality affected by the prevailing dry conditions.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no discharge events during the period. A summary of discharge monitoring results is provided below with the laboratory reports provided in **Appendix 8**.

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 a result of the dirty water discharge events.

5.3 WATER COMPLAINTS

There was one groundwater complaint during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer due to the prevailing dry conditions resulting in limited rainfall runoff. Specific action taken in relation to this complaint is outlined in **Section 6.**

6.0 COMPLAINTS SUMMARY

There were eleven complaints received during the period, down from 25 complaints in the previous period; with the details summarised below. There were five complaints related to dust; two complaints relating to noise; two complaints related to blasting (only one complaint for blast vibration); one complaint related to road closures and one complaint relating to groundwater. There were seven different complainants during the period with six complaints from Werris Creek residents; one complaint from a Quipolly resident and four from anonymous complainants.

#	Date	Complainant	Complaint	Investigation	Action Taken
443	4/11/2014 1:05pm	AL Werris Creek	Blast shook house disturbing the resident.	WCC shot #105&106-2014 (S14_B14_B16_RL305 and S15_B6_Wedge_UG) fired at 1:04pm on Tuesday 4th November 2014 was in compliance. Actual blast vibration was below the predicted vibration but close to the anecdotal threshold for vibration complaints of 0.5mm/s. Weather conditions were a strong north westerly wind (301o) @ 5.6m/s with no inversion present.	Written response provided to complainant.
444	3/11/2014 2:32pm	EPA/A Werris Creek	Noise from railway and mine at 2:51am 31st October 2014 was so loud woke husband.	A review of the audio file between 2:45am and 3am indicates a train arriving into Werris Creek station. As there were no mining or train loading operations occurring at the time of the complaint, the train was unrelated to WCC and likely to be travelling on the main northern rail line. The weather conditions at 2:45am were a very light north westerly wind (325o) @ 0.9m/s with a +12.3oC/100m inversion present.	Written response provided to EPA.

445 & 446	6/11/2014 10:30am	Planning /Anonymous Unknown	Excessive dust emissions allegedly from Werris Creek operations on Wednesday 29th October 2014 at 6:39pm and Thursday 30th October 2014 at 10:30am.	On 29th October 2014 the dust cloud colour was yellow and that it appeared to be behind the product coal stockpile indicates that it was not from activities at the Train Load Out. On 30th October 2014 the dust was from digging into an area of spontaneous combustion adjacent to former underground mine. The excavator was immediately relocated, water cart used to cool the area and dust dissipated within 15 minutes. Weather conditions on both days were not conducive to excessive dust being generated. The instantaneous Werris Creek PM10 TEOM dust levels on both days were below the 50µg/m3 criteria.	Written response provided to Planning.
447 & 448	1/12/2014 1pm	Y Werris Creek	Excessive dust emissions allegedly from Werris Creek operations on Wednesday 29th October 2014 at 6:39pm and Thursday 30th October 2014 at 10:30am.	On 29th October 2014 the dust cloud colour was yellow and that it appeared to be behind the product coal stockpile indicates that it was not from activities at the Train Load Out. On 30th October 2014 the dust was from digging into an area of spontaneous combustion adjacent to former underground mine. The excavator was immediately relocated, water cart used to cool the area and dust dissipated within 15 minutes. Weather conditions on both days were not conducive to excessive dust being generated. The instantaneous Werris Creek PM10 TEOM dust levels on both days were below the 50µg/m3 criteria.	Written response provided to Complainant.
449	1/12/2014 3pm	AG Quipolly	Concerned about groundwater level decline resulting in losing access to water and how that will affect their livelihood.	The last measurement was on 25th September 2014 at 8.68m when a logger was installed. Data indicates mining is not the cause of the groundwater decline.	Groundwater consultant engaged to review monitoring data. Written response provided to Complainant.
450 & 451	2/12/2014 4:21pm	Planning/ Anonymous Unknown	Allegedly a dust or spontaneous combustion event within the vicinity of the Werris Creek mine on 26 November 2014 and duration of the Werris Creek Road closure for a blast on 25 November 2014 was too long.	No exceedance of criteria on Wednesday 26th November with the peak PM10 24 hour result was 22.6µg/m3. A fire was started by a lighting strike on Monday 24th November occurred immediately to north of the Train Load Out through a paddock of stubble that had been recently harvested. The duration of the road closure was normal approximately 7 to 8 minutes.	Written response provided to Planning.
452	9/12/2014 11:02pm	BJ Werris Creek	Damage/cracking to internal gyprock believed to be from mine blasting (no specific event).	No further investigation was undertaken as no specific event identified by the complainant.	Structural Engineer engaged to undertaken Property Investigation in accordance with Project Approval
453	29/01/2015 9:45pm	U Werris Creek	The complainant indicated that moving more dirt shouldn't lead to excessive noise that they were experiencing.	A review of the audio found the elevated noise levels to be due to rail yard maintenance activities and with WCC mining operations compliant with noise criteria. The average weather conditions were a light southerly wind (170o @ 1.7m/s) with +5oC/100m inversion present.	Written response provided to Complainant.

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
04-Apr-14							-	8.4	#DIV/0!	6	2.5	6.2	8	3.9	8.3	14	7.0	13.7	13	5.5	12.6	50	30	90
10-Apr-14		4.5			7.3		19	**14.4**	18.8	10.7	**7.2**	8.5	12.4	**8.8**	10.4	18	**18.2**	15.8	16.2	**12.3**	14.4	50	30	90
16-Apr-14		**9.7**	9.7		**15.1**	15.1	10	14.2	14.2	5	6.2	7.3	6	8.3	8.8	31	17.8	20.7	7	12.6	11.9	50	30	90
22-Apr-14		9.6			16.1		21	20.7	16.4	12	11.5	8.4	14	14.0	10.1	22	30.5	21.0	21	20.5	14.0	50	30	90
28-Apr-14		17.4			23.5		8		14.4	3		7.2	4		8.8	7		18.2	6		12.3	50	30	90
04-May-14		6.1			8.4		3	2.6	12.0	2	2.1	6.4	2	2.3	7.8	1	1.3	15.4	4.5	4.5	11.0	50	30	90
10-May-14		**12.2**	11.0		**16.9**	16.0	12	**13.0**	11.9	12	**8.8**	7.1	9	**6.5**	7.9	16	**15.1**	15.4	15	**14.1**	11.6	50	30	90
16-May-14		12.3			16.5		15	13.2	12.3	4	8.0	6.8	4	6.6	7.5	18	16.9	15.7	7.7	11.6	11.2	50	30	90
22-May-14		19.4			34.7		23	22.9	13.7	17	16.9	7.9	11	10.7	7.8	25	25.1	16.8	29	28.7	13.1	50	30	90
28-May-14							8		13.1	14		8.5	8		7.8	11		16.2	25		14.3	50	30	90
03-Jun-14		4.0			5.3		7	3.5	12.4	7	2.5	8.3	4	2.2	7.5	4	2.3	15.1	9	3.8	13.7	50	30	90
09-Jun-14		**9.7**	10.5		**13.1**	15.0	8	**6.6**	12.0	9	**7.3**	8.4	4	**4.1**	7.2	4	**4.9**	14.2	6	**9.9**	13.0	50	30	90
15-Jun-14		9.8			13.5		4	6.6	11.3	3	6.6	8.0	2	3.9	6.8	2	4.0	13.3	4	6.9	12.3	50	30	90
21-Jun-14		14.1			19.1		6	8.3	10.9	4	14.2	7.7	3	7.8	6.5	3	11.0	12.5	7	24.6	11.9	50	30	90
27-Jun-14							16		11.3	10		7.8	7		6.5	22		13.2	12		12.0	50	30	90
03-Jul-14		1.5			3.8		21	7.2	12.0	10	5.2	8.0	9	5.3	6.7	15	12.0	13.3	12	7.1	12.0	50	30	90
09-Jul-14		**8.3**	10.0		**11.6**	14.1	13	**13.3**	12.0	8	**8.3**	8.0	9	**7.4**	6.8	43	**26.3**	15.1	20	**13.0**	12.4	50	30	90
15-Jul-14		8.4			11.9		10	12.7	11.9	8	8.3	8.0	6	7.0	6.8	39	22.1	16.4	14	12.4	12.5	50	30	90
21-Jul-14		14.7			21.0		7	20.8	11.6	5	10.2	7.8	5	9.4	6.7	12	43.3	16.1	7	19.5	12.2	50	30	90
27-Jul-14							4		11.2	1		7.5	1		6.4	2		15.4	2		11.7	50	30	90
02-Aug-14		0.7			1.9		11	4.3	11.2	6	0.6	7.4	4	1.0	6.3	10	2.2	15.2	22	1.9	12.2	50	30	90
08-Aug-14		**6.7**	9.3		**10.2**	13.3	24	**11.0**	11.8	11	**6.0**	7.6	10	**6.0**	6.5	33	**13.2**	16.0	16	**11.4**	12.3	50	30	90
14-Aug-14		4.0			7.7		10	9.5	11.7	5	6.4	7.5	4	3.9	6.4	11	10.2	15.8	8	9.4	12.2	50	30	90
20-Aug-14		18.1			28.3		7	23.6	11.5	7	11.3	7.5	11	11.2	6.6	10	32.7	15.5	9	21.6	12.0	50	30	90
26-Aug-14							8		11.3	4		7.3	5		6.5	5		15.1	4		11.7	50	30	90
01-Sep-14							12		11.3	6		7.3	3		6.4	17		15.2	8		11.6	50	30	90
07-Sep-14		0.0			0.0		7	7.2	11.2	4	3.9	7.2	6	3.4	6.4	13	5.4	15.1	9	4.1	11.5	50	30	90
13-Sep-14		**4.5**	8.5		**9.2**	12.7	16	**13.2**	11.3	10	**5.6**	7.2	6	**5.6**	6.4	16	**17.0**	15.1	17	**11.1**	11.7	50	30	90
19-Sep-14		4.8			10.5		18	13.9	11.6	6	5.0	7.2	8	5.7	6.4	40	14.7	16.0	20	8.8	12.0	50	30	90
25-Sep-14		9.0			17.3		18	18.3	11.8	4	9.6	7.1	5	8.1	6.4	11	39.7	15.8	8	19.7	11.8	50	30	90
01-Oct-14		4.6			6.8		28	16.4	12.3	13	8.5	7.3	17	7.4	6.7	30	14.6	16.3	25	13.4	12.3	50	30	90
07-Oct-14		**7.8**			**16.6**		30	**25.4**	12.9	22	**14.4**	7.8	21	**15.3**	7.2	27	**23.2**	16.6	39	**26.4**	13.1	50	30	90
13-Oct-14		7.7	8.4		16.1	13.2	19	27.6	13.1	10	13.4	7.8	11	16.5	7.3	19	26.0	16.7	23	24.5	13.4	50	30	90
19-Oct-14		13.1			33.0		16	33.8	13.2	9	22.4	7.9	7	21.3	7.3	15	29.6	16.6	13	38.9	13.4	50	30	90
25-Oct-14							34		13.8	18		8.1	20		7.7	26		16.9	32		13.9	50	30	90
31-Oct-14							42		14.6	23		8.6	30		8.3	62		18.1	46		14.8	50	30	90
06-Nov-14		3.0			3.3		15	15.1	14.6	10	9.8	8.6	11	11.0	8.3	13	12.6	18.0	18	17.6	14.9	50	30	90
12-Nov-14		**10.2**	8.6		**20.0**	14.1	18	**29.9**	14.7	11	**16.9**	8.7	13	**19.0**	8.5	21	**32.7**	18.1	19	**31.6**	15.0	50	30	90
18-Nov-14		10.0			18.8		31	32.2	15.2	16	16.8	8.8	15	17.7	8.6	36	30.9	18.5	31	31.7	15.4	50	30	90
24-Nov-14		18.9			55.5		40	42.1	15.8	23	23.3	9.2	25	29.7	9.1	38	62.4	19.0	44	45.9	16.1	50	30	90
30-Nov-14							9		15.6	9		9.2	10		9.1	13		18.9	15		16.1	50	30	90
06-Dec-14		0.1			1.0		3	2.9	15.3	4	3.6	9.1	4	4.1	9.0	6	6.1	18.6	6	5.5	15.8	50	30	90
12-Dec-14		**6.5**	8.4		**11.8**	13.8	9	**10.8**	15.1	8	**10.7**	9.0	10	**11.4**	9.0	14	**15.1**	18.5	10	**19.2**	15.7	50	30	90
18-Dec-14		6.7			11.2		22	9.2	15.3	22	9.2	9.3	24	9.5	9.3	30	13.2	18.7	43	15.1	16.3	50	30	90
24-Dec-14		11.4			31.8		11	22.2	15.2	11	22.0	9.4	9	23.8	9.3	12	30.4	18.6	23	42.5	16.5	50	30	90
30-Dec-14							17		15.3	13		9.5	12		9.4	18		18.6	27		16.7	50	30	90
05-Jan-15		0.0			0.3		13	6.7	15.2	10	1.0	9.5	13	5.2	9.4	13	7.2	18.5	15	7.2	16.7	50	30	90
11-Jan-15		**4.9**	8.1		**6.8**	13.1	10	**13.0**	15.1	7	**8.0**	9.4	9	**9.9**	9.4	7	**22.6**	18.2	14	**16.1**	16.6	50	30	90
17-Jan-15		5.0			6.3		18	13.3	15.2	9	8.7	9.4	11	10.5	9.4	66	13.1	19.2	18	15.1	16.6	50	30	90
23-Jan-15		9.5			17.6		7	17.9	15.0	1	13.1	9.2	5	12.9	9.4	9	65.6	19.0	7	26.8	16.4	50	30	90
29-Jan-15									15.0			9.2			9.4			19.0			16.4	50	30	90
04-Feb-15								0.0	15.0		0.0	9.2		0.0	9.4		0.0	19.0		0.0	16.4	50	30	90
10-Feb-15			7.5			12.3		**#DIV/0!**	15.0		**#DIV/0!**	9.2		**#DIV/0!**	9.4		**#DIV/0!**	19.0		**#DIV/0!**	16.4	50	30	90
16-Feb-15								#NUM!	15.0		#NUM!	9.2		#NUM!	9.4		#NUM!	19.0		#NUM!	16.4	50	30	90
22-Feb-15								0.0	15.0		0.0	9.2		0.0	9.4		0.0	19.0		0.0	16.4	50	30	90
28-Feb-15									15.0			9.2			9.4			19.0			16.4	50	30	90
06-Mar-15									15.0			9.2			9.4			19.0			16.4	50	30	90
12-Mar-15								0.0	15.0		0.0	9.2		0.0	9.4		0.0	19.0		0.0	16.4	50	30	90
18-Mar-15			7.5			12.3		**#DIV/0!**	15.0		**#DIV/0!**	9.2		**#DIV/0!**	9.4		**#DIV/0!**	19.0		**#DIV/0!**	16.4	50	30	90
24-Mar-15								#NUM!	15.0		#NUM!	9.2		#NUM!	9.4		#NUM!	19.0		#NUM!	16.4	50	30	90
30-Mar-15								0.0	15.0		0.0	9.2		0.0	9.4		0.0	19.0		0.0	16.4	50	30	90
Min					**0.0**		**2.6**			**0.6**			**1.0**			**1.3**			**1.9**					
Median					**12.5**		**12.7**			**8.6**			**8.5**			**15.0**			**14.6**					
Max					**55.5**		**42.1**			**23.3**			**29.7**			**65.6**			**45.9**					
Capture							**80%**			**82%**			**82%**			**82%**			**82%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2014-2015

MONTH (g/m2/month)				April 2014	May 2014	June 2014	July 2014	August 2014	September 2014	October 2014	November 2014	December 2014	January 2015	February 2015	March 2015	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG1	Escott	Total Matter	0.3	0.5	0.5	0.2	0.1	<0.1	0.4	0.9	0.8	1.1			0.5	0.6	0.1	1.1	4.0
			Ash Content	0.1	0.4	0.3	<0.1	<0.1	<0.1	0.2	0.5	0.5	0.5							
-	DG2	Cintra	Total Matter	2.6	2.0	3.8	1.9	3.8	2.0	3.1	2.8	3.0	2.1			2.7	2.8	1.9	3.8	4.0
			Ash Content	0.6	1.0	2.5	1.1	2.5	1.1	1.8	1.5	1.3	0.7							
-	DG3	Eurunderee	Total Matter	2.4	0.7	0.5	1.5	0.5	2.6	0.8	0.3	6.6	2.1			1.8	1.5	0.3	6.6	4.0
			Ash Content	1.9	0.4	0.2	0.8	0.2	<0.1	0.4	0.1	1.6	1.3							
-	DG5	Railway View	Total Matter	0.1	0.6	0.8	0.5	3.3	5.7	1.0	2.5	3.6	0.5			1.9	1.5	0.1	5.7	4.0
			Ash Content	<0.1	0.3	0.4	0.3	1.3	2.9	0.6	1.4	1.8	0.2							
-	DG9	Marengo	Total Matter	0.5	0.1	<0.1	0.2	0.2	0.8	0.5	0.9	1.2	7.9			1.4	0.5	0.1	7.9	4.0
			Ash Content	0.1	<0.1	<0.1	0.1	<0.1	0.3	0.2	0.6	0.4	0.9							
EPL#29	DG11	Glenara	Total Matter	0.3	0.4	1.1	0.8	0.5	0.6	1.3	2.2	1.5	0.8			1.0	0.9	0.3	2.2	4.0
			Ash Content	0.2	0.2	0.7	0.5	0.5	0.6	0.6	1.2	1.0	0.5							
-	DG14	Greenslopes	Total Matter	0.4	0.8	0.5	0.3	0.4	1.9	1.7	2.7	3.4	1.1			1.3	1.8	0.3	3.4	4.0
			Ash Content	0.1	0.5	0.2	0.1	0.1	1.2	0.6	1.2	1.8	0.6							
-	DG15	Plain View	Total Matter	0.3	0.4	0.4	0.6	<0.1	0.6	0.6	1.2	0.8	21.3			2.9	0.8	0.3	21.3	4.0
			Ash Content	0.1	0.2	<0.1	0.3	<0.1	0.2	0.2	0.7	0.4	0.4							
-	DG17	Woodlands	Total Matter	0.9	0.4	<1	0.5	0.7	0.7	1.3	7.6	1.8	1.5			1.7	1.0	0.4	7.6	4.0
			Ash Content	0.4	0.2	<0.1	0.3	0.4	0.4	0.7	2.0	1.1	0.8							
EPL #1	DG20	Tonsley Park	Total Matter	3.1	3.3	3.5	1.1	1.3	4.3	5.9	6.7	7.0	10.1			4.6	2.5	1.1	10.1	4.0
			Ash Content	2.4	1.8	2.7	0.8	0.9	2.6	3.8	2.7	3.6	4.2							
-	DG22	Mountain View	Total Matter	1.9	0.8	1.5	0.6	3.5	0.2	2.0	3.9	0.7	8.7			2.4	1.7	0.2	8.7	4.0
			Ash Content	1.0	0.5	0.9	0.3	2.4	0.1	1.3	2.6	0.4	2.5							
-	DG24	Hazeldene	Total Matter	0.6	0.9	0.3	0.8	0.2	0.5	1.2	2.8	1.7	0.6			1.0	1.0	0.2	2.8	4.0
			Ash Content	0.4	0.7	0.2	0.5	0.1	0.3	0.7	1.9	1.4	0.3							
-	DG34	8 Kurrara Street	Total Matter	0.3	<0.1	22.1	3.8	0.8	0.3	0.7	0.1	1.3	1.1			3.4	1.5	0.1	22.1	4.0
			Ash Content	0.1	<0.1	14.6	2.7	0.5	<0.1	0.1	<0.1	0.7	0.6							
-	DG62	Werris Creek South	Total Matter	0.2	0.2	0.2	0.1	0.2	1.1	7.5	1.0	1.3	0.8			1.3	0.8	0.1	7.5	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	4.0	0.5	0.8	0.5							
EPL#30	DG92	Werris Creek Centre	Total Matter	0.2	0.3	0.4	0.1	0.6	0.1	0.8	0.7	1.7	0.5			0.5	0.7	0.1	1.7	4.0
			Ash Content	<0.1	0.1	0.2	<0.1	0.1	<0.1	<0.1	0.3	1.0	0.3							
-	DG96	Talavera	Total Matter	0.4	0.2	0.5	0.2	1.0	1.3	0.5	2.5	1.5	1.1			0.9	1.0	0.2	2.5	4.0
			Ash Content	<0.1	<0.1	0.2	<0.1	0.5	0.5	0.2	1.2	0.7	0.5							
EPL#28	DG98	Kyooma	Total Matter	0.2	0.1	0.2	0.1	<0.1	0.1	27.3	0.9	0.9	3.4			3.7	0.4	0.1	27.3	4.0
			Ash Content	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	0.6	0.1							
-	DG101	Westfall	Total Matter	0.7	1.0	0.8	0.7	0.5	0.6	0.7	1.1	2.0	1.4			1.0	1.0	0.5	2.0	4.0
			Ash Content	0.4	0.5	0.5	0.4	0.4	0.5	0.3	0.4	1.2	0.7							
-	DG103	West Street	Total Matter	0.6	0.3	0.5	2.5	1.6	0.6	2.1	0.8	2.2	0.8			1.2	1.0	0.3	2.5	4.0
			Ash Content	0.3	0.2	0.3	1.1	1.2	0.2	1.0	0.6	1.7	0.5							
-	DG106	Villamagna	Total Matter	0.5	-	-	-	-	-	-	-	-	-	-	-	0.5	0.5	0.5	0.5	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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2014-2015

	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 2014	0.6	10%	20%	70%	0.8	10%	30%	60%	0.7	30%	30%	40%	0.2	10%	40%	50%	0.6	20%	20%	60%	1.1	10%	60%	30%	4.0
May 2014	1.0	10%	20%	65%	0.8	15%	25%	60%	0.7	20%	10%	70%	0.4	15%	25%	60%	0.6	10%	<1%	90%	2.0	<1%	20%	10%	4.0
June 2014	2.2	15%	35%	40%	1.5	15%	35%	40%	1.0	10%	40%	40%	1.9	10%	30%	60%	1.5	10%	30%	60%	2.7	10%	40%	30%	4.0
July 2014	1.6	15%	10%	75%	-	-	-	-	0.8	10%	5%	85%	0.9	5%	20%	75%	0.6	5%	25%	65%	0.8	5%	25%	70%	4.0
August 2014	0.4	10%	30%	60%	1.2	10%	35%	55%	1.2	40%	15%	45%	1.3	10%	25%	65%	3.2	10%	<1%	90%	0.7	10%	40%	50%	4.0
September 2014	1.9	30%	25%	40%	2.2	40%	15%	45%	3.0	50%	15%	35%	2.4	15%	35%	40%	1.0	20%	30%	50%	2.5	15%	30%	45%	4.0
October 2014	1.6	15%	20%	50%	1.7	20%	20%	45%	1.3	20%	25%	40%	1.6	25%	20%	40%	1.6	20%	25%	40%	1.2	20%	20%	45%	4.0
November 2014	2.3	25%	30%	25%	3.1	40%	10%	35%	1.6	80%	5%	10%	3.9	20%	10%	30%	2.1	40%	10%	40%	2.9	50%	10%	30%	4.0
December 2014	1.2	5%	15%	75%	3.1	10%	15%	20%	1.8	30%	20%	45%	2.8	30%	15%	55%	2.1	35%	15%	50%	1.8	15%	20%	65%	4.0
January 2015	0.7	5%	20%	75%	1.2	<1	25%	70%	1.0	<1	10%	85%	1.0	5%	15%	75%	3.8	5%	25%	40%	1.1	<1	25%	70%	4.0
February 2015																									4.0
March 2015																									4.0
ANNUAL AVERAGE	**1.4**				**1.7**				**1.3**				**1.6**				**1.7**				**1.7**				**4.0**
Average Coal %	**14.0%**				**20.0%**				**32.2%**				**14.5%**				**17.5%**				**16.9%**				**-**
Average Coal g/m2	**0.19**				**0.35**				**0.42**				**0.24**				**0.30**				**0.28**				**-**
MINIMUM	**0.4**				**0.8**				**0.7**				**0.2**				**0.6**				**0.7**				**-**
MAXIMUM	**2.3**				**3.1**				**3.0**				**3.9**				**3.8**				**2.9**				**4.0**

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

Appendix 4 – Noise Monitoring Results

28 November 2014

Ref: 04035/5495

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

RE: NOVEMBER 2014 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 26th November, 2014 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 and 2260 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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 operations on Thursday 26th November 2014 had the 5600 excavator and two 1900 excavators in Strip 14 west at RL310m and the 3600 in Strip 15 west at RL370m although the 3600 did have a 0.3 hour noise delay at 9:25pm. The overburden truck fleets were running to the in pit dump at RL360m while the coal truck fleets were running to the ROM Stockpile at RL390m via Ramp 6 but was changed to Ramp 17 at 9:45pm to minimise noise from hauling along the main western haul road. All dozers were instructed to use 1st gear reverse at 8:55pm. The crushing plant and train load out operated to 11:30pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 26 November 2014 (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	1:15 pm	39	35	n/a	3.8,302	Birds (37), wind (33), tractor (25), traffic (24), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:35 pm	46	40*	n/a	4.3,285	Birds (44), wind (42), WCC (25)
C R10 Meadholme/ R11 Glenara	1:54 pm	36	40*	n/a	4.0,281	Birds (32), wind (32), WCC (27), traffic (24)
D R24 Hazeldene	2:13 pm	47	37	n/a	5.2,289	Birds (45), wind (43), WCC (28), traffic (28)
E R12 Railway Cottage	3:47 pm	45	38	n/a	4.8,289	Traffic (43), wind (39), birds (35), WCC inaudible
F R96 Talavera	4:00 pm	50	38	n/a	4.8,282	Birds (49), wind (42), traffic (25), WCC inaudible
G R97	3:23 pm	44	35	n/a	5.9,299	Wind (44), WCC (23)
H R98 Kyooma	3:38 pm	46	40*	n/a	5.2,295	Wind (46), birds (26), WCC (24)
I R57 Kurrara St	2:07 pm	51	35	n/a	3.9,294	Traffic (50), birds (40), train (37), wind (29), WCC inaudible
J R57 Coronation Ave	3:12 pm	53	35	n/a	5.8,296	Traffic (53), lawn mower (41), birds (35), train yard (28), wind (28), WCC inaudible
K R21 Alco Park	1:45 pm	50	40*	n/a	4.3,266	Traffic (50), wind (35), train (32), WCC (25), birds (24)
L R103	1:24 pm	35	35	n/a	4.0,303	Wind (31), train yard (29), birds (28), traffic (26), WCC inaudible

* Private Agreement in place – see Appendix II.

Table 3
WCC Noise Monitoring Results – 26 November 2014 (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	7:21 pm	n/a	36	35	Lapse,4.4,305	Birds (34), traffic (30), tractor (26), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:46 pm	36	46	40*	Lapse,3.9,316	Birds & insects (46), WCC (32), plane (26), traffic (25)
C R10 Meadholme/ R11 Glenara	8:05 pm	39	45	40*	Lapse,3.5,319	Birds & insects (45), WCC (33), traffic (28)
D R24 Hazeldene	8:23 pm	27	39	37	Lapse,3.0,323	Traffic (39), insects (25), WCC (25)
E R12 Railway Cottage	9:57 pm	27	44	38	Lapse,2.7,332	Traffic (44), frogs & insects (28), WCC (25)
F R96 Talavera	10:04 pm	36	34	37	Lapse,1.8,241	WCC (32), frogs & insects (27), traffic (27)
G R97	9:32 pm	40	38	35	+2.3,3.8,317	WCC (35), frogs & insects (33), traffic (28)
H R98 Kyooma	9:39 pm	36	35	40*	+1.9,4.0,307	WCC (33), frogs & insects (29), traffic (26)
I R57 Kurrara St	8:05 pm	n/a	44	35	Lapse,3.5,319	Traffic (43), dog (33), train yard (28), frogs & insects (27), WCC inaudible
J R57 Coronation Ave	9:10 pm	30	54	35	+2.8,3.2,326	Traffic (54), insects (29), train yard (26), dog (26), WCC (25)
K R21 Alco Park	7:45 pm	29	52	40*	Lapse,3.9,316	Traffic (52), birds (31), train (28), WCC (23)
L R103	7:26 pm	n/a	38	35	Lapse,4.4,305	Birds (38), traffic (25), train yard (23), WCC inaudible

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 location during any monitoring period.

The audible noise sources from WCC included truck revs, dozer tracks and loads being dumped. At other times and locations when mine noise was audible it was coming from the engine/s of the evaporator jets blowing out the excess water from the dams.

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 the operational noise monitoring location.

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.

Plant Sound Power Levels

In keeping with the NMP, the sound power levels of the major noise producing plant and equipment operating on the WCC site is to be determined from sound pressure level measurements. The measurement programme is to be undertaken progressively to capture noise levels from all plant over the period of a year.

The results of the sound power level calculations to date are shown in **Appendix III**. The table in Appendix III lists SWL's for plant items as taken from those used in the noise modelling for the latest EA for WCM. The SWL's from the EA, therefore, represent a calculated Leq (15 minute) noise level. For mobile plant this calculation is based on the length of time each noise source representing a plant item(s) is at a particular location on the mine site.

For example the noise model includes a number of noise sources located at intervals along the various haul roads to approximate the haul fleet working throughout a 15 minute operational period. The SWL for the point source is calculated based on the length of time any truck is expected to be passing that location during the assessment period.

For mobile plant, the measured Leq noise levels in the table in Appendix III represent a single passby for each plant item whereas the values adopted in the EA (particularly for haul trucks) are for the 15-minute calculated sound power level of 350m long sections of haul road. These values are typically 7-10 dB lower than the single pass-by level.

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

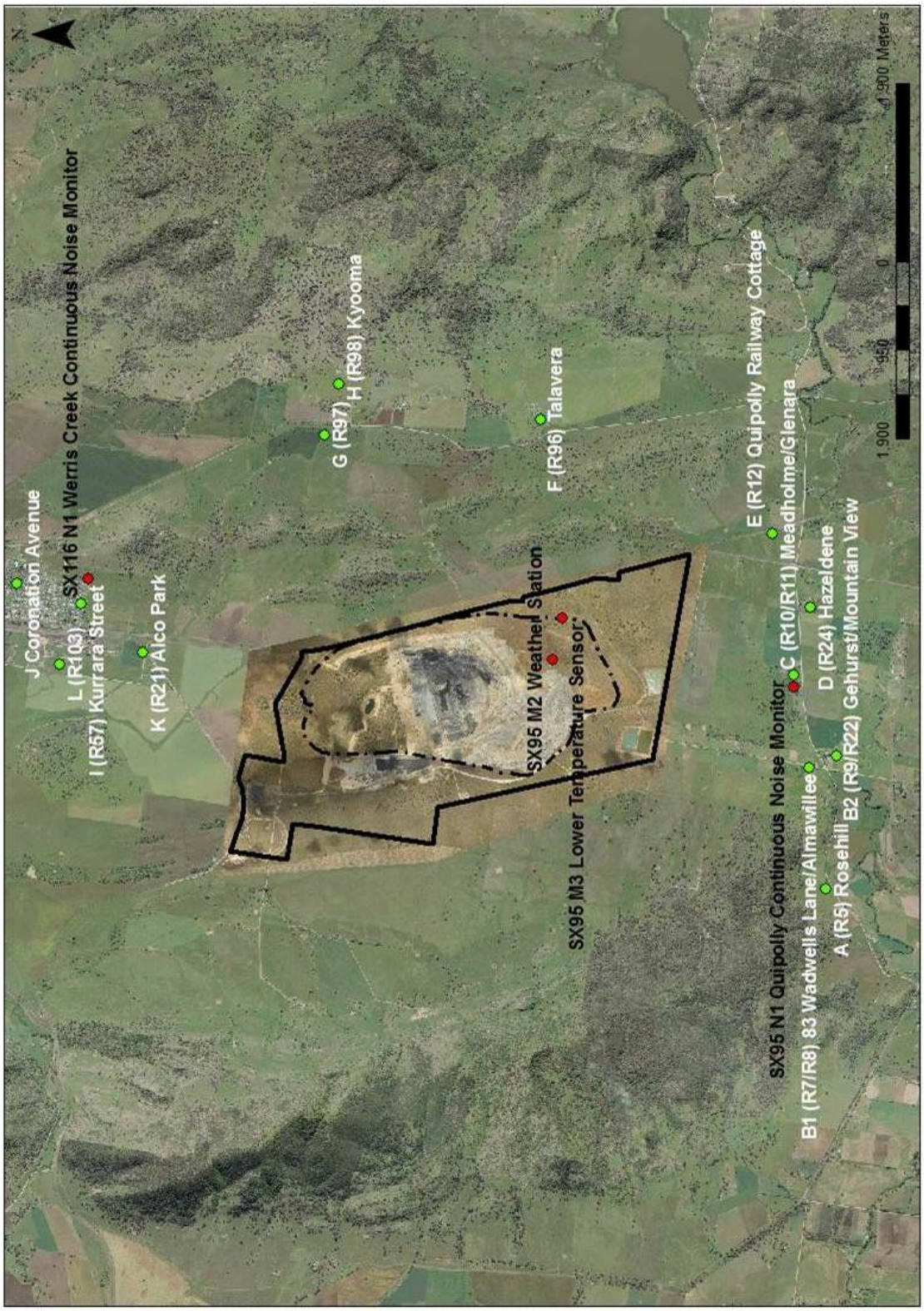
Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
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 III

Plant Sound Power Levels

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Haul truck CAT 785C (unattenuated)	608	117.7	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	117.7	116.7	118	24/4/14
Haul truck CAT 785C (unattenuated)	614	117.7	119	121	28/1/14
Haul truck CAT 785C (attenuated)	614	117.7	117.5	119	24/4/14
Haul truck CAT 785C (unattenuated)	609	117.7	120		11/9/12
Haul truck CAT 785C (attenuated)	609	117.7	117.4	119	11/9/12
Haul truck CAT 785C (unattenuated)	610	117.7	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	117.7	120		11/9/12
Haul truck CAT 785C (unattenuated)	612	117.7	120	122	28/1/14
Haul truck CAT 785C (attenuated)	612	117.7	117.8	120	24/4/14
Haul truck CAT 785C (unattenuated)	600	117.7	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	117.7	122		8/8/13
Haul truck CAT 785C (attenuated)	613	117.7	117.9		24/4/14
Haul truck CAT 785C (unattenuated)	624	117.7	121		8/8/13
Haul truck CAT 785C (attenuated)	624	117.7	118.1		24/4/14
Haul truck CAT 789 (unattenuated)	875	117.7	119	121	28/1/14
Water Cart	WA897	113	113		11/9/12
Scraper	SC882	118	113		11/9/12
Excavator (PC 3600)	EX551	116	115		11/9/12
Dozer	829	118	115		24/4/14
Dozer (D10T)	832	118	113	118	28/1/14
Crushing Plant	n/a	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	117.7		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	117.7		124	11/9/12
Excavator (PC4000)	EX837	116	115		18/12/12
Dozer D10T (1^{st} gear)	505	118	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	118	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	118	119 113	122 118	6/2/13

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Excavator (EX 5600)	570	121	116	119	28/1/14
Haul truck CAT 793XQ	660	115	116	119	28/1/14
Haul truck CAT 793XQ	661	115	115	118	28/1/14
Haul truck CAT 793XQ	662	115	116	119	28/1/14
Haul truck CAT 793XQ	663	115	116	119	8/8/13
Haul truck CAT 793XQ	664	115	114	117	8/8/13
Haul truck CAT 793XQ	665	115	115	118	28/1/14
Haul truck CAT 793XQ	666	115	116	118	28/1/14
Haul truck CAT 793XQ	667	115	115	118	28/1/14
Hitachi Excavator 1900	543	116	115	118	28/1/14
Grader	849	n/a	110	113	28/1/14
Warrior 2400 crusher	n/a	116	117	117	8/8/13
Kleeman screen	MCR401	116	111	112	8/8/13
Water Cart (Volvo)	863	113	114	118	28/1/14
Water Cart (Cat 773D)	869	113	119	123	28/1/14
Water Cart (Cat 773D)	869	113	117.5	119	24/4/14
Drill (Bucyrus)	524	116	107	-	28/1/14
Drill (Cat 6420)	526	116	108	-	28/1/14
Water pump (Dam 4)	--	--	106	--	24/4/14
Evaporation fan (Dam 4)	--	--	105	--	24/4/14

*Leq noise level from vehicle pass by only (modelled levels in the EA for LOM are based on an Leq (15 min) for an attenuated haul truck.

18 December 2014

Ref: 04035/5546

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

RE: DECEMBER 2014 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 Thursday 4th and Monday 8th December, 2014 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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.

The monitoring commenced during the day time on Thursday, 4th December but inclement weather forced the survey to be abandoned in the late afternoon. The mine did not work for any significant time during the evening and night. The day time monitoring was completed in the morning of Friday, 5th December ((Coronation Avenue).

The evening/night time monitoring was undertaken on Monday, 8th December.

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 8th December 2014 had the 5600 excavator in Strip 17 west at RL380m; the 3600 in Strip 15 east at RL310m and one 1900 excavator in Strip 14 west at RL310m and the other 1900 excavator in Strip 16 east at RL370m. The overburden truck fleets were running to the in pit dump at RL360m. To manage operational noise levels, the OCE suspended a 1900 excavator (Strip 14 west) for 5.7 hours and all six CAT785 trucks for a combined 34.2 hours of lost production. In addition, both drills were suspended for a combined 2.5 hours from 1:10am to further manage noise levels. The crushing plant and train load out operated to 11:30pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 4/5 December 2014 (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	2:57 pm	38	35	n/a	3.8,27	Birds (36), wind (30), traffic (28), WCC (23)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	3:17 pm	44	40*	n/a	3.7,3	Birds (44), wind (28), domestic (26), WCC faintly audible
C R10 Meadholme/ R11 Glenara	3:36 pm	40	40*	n/a	3.2,358	Traffic (37), birds (37), WCC (25)
D R24 Hazeldene	1:49 pm	42	37	n/a	3.6,349	Traffic (40), birds (38), WCC (24)
E R12 Railway Cottage	12:44 pm	45	38	n/a	4.6,24	Traffic (42), wind (39), birds (38), WCC (23)
F R96 Talavera	2:55 pm	50	38	n/a	3.6,19	Birds (50), wind (28), WCC faintly audible
G R97	2:32 pm	34	35	n/a	3.6,22	Wind (33), birds (27), WCC inaudible
H R98 Kyooma	2:07 pm	33	40*	n/a	3.6,349	Birds (30), wind (27), traffic (26), WCC inaudible
I R57 Kurrara St	12:57 pm	44	35	n/a	3.8,21	Birds (42), train yard (39), traffic (35), WCC inaudible
J R57 Coronation Ave**	7:27 am	52	35	n/a	2.2,321	Birds (51), traffic (46), dog (33), WCC inaudible
K R21 Alco Park	12:20 pm	39	40*	n/a	6.5,30	Traffic (34), train (34), birds (34), WCC inaudible
L R103	12:08 pm	48	35	n/a	5.9,31	Dog (48), train yard (30), birds (26), traffic (25), WCC inaudible

* Private Agreement in place – see Appendix II.

**Measurement conducted on the on December 5

Table 3
WCC Noise Monitoring Results – 8 December 2014 (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	47	35	+7.3,1.3,310	Insects (47), traffic (34), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	9:44 pm	18	38	40*	+7.0,1.0,321	Insects (38), traffic (27), WCC faintly audible
C R10 Meadholme/ R11 Glenara	10:03 pm	n/a	36	40*	+6.9,1.1,275	Traffic (34), insects (31), WCC inaudible
D R24 Hazeldene	8:20 pm	n/a	44	37	+4.3,0.9,328	Birds & insects (42), traffic (40), WCC inaudible
E R12 Railway Cottage	7:15 pm	n/a	44	38	+2.0,1.5,250	Traffic (43), birds & insects (37), WCC inaudible
F R96 Talavera	7:39 pm	33	45	37	+3.6,1.1,288	Birds & insects (45), WCC (29), traffic (28)
G R97	7:19 pm	29	29	35	Lapse,1.8,236	WCC (25), insects (25), traffic (23)
H R98 Kyooma	8:46 pm	35	44	40*	+4.2,0.7,340	Frogs & insects (44), WCC (32), traffic (29)
I R57 Kurrara St	9:35 pm	30	42	35	+7.2,1.0,300	Frogs & insects (40), train yard (35), traffic (33), WCC (25)
J R57 Coronation Ave	9:15 pm	29	35	35	+6.6,1.6,313	Dog (31), frogs & insects (30), traffic (27), WCC (24)
K R21 Alco Park	10:42 pm	n/a	46	40*	+6.5,0.3,8	Frogs & insects (43), traffic (43), dogs (28), WCC inaudible
L R103	10:31 pm	n/a	45	35	+7.8,0.4,314	Train yard (42), insects (40), traffic (38), WCC inaudible

1. L1 (1 min) from mine noise only
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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 location during any monitoring period.

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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.

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In keeping with the NMP, the sound power levels of the major noise producing plant and equipment operating on the WCC site is to be determined from sound pressure level measurements. The measurement programme is to be undertaken progressively to capture noise levels from all plant over the period of a year.

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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:

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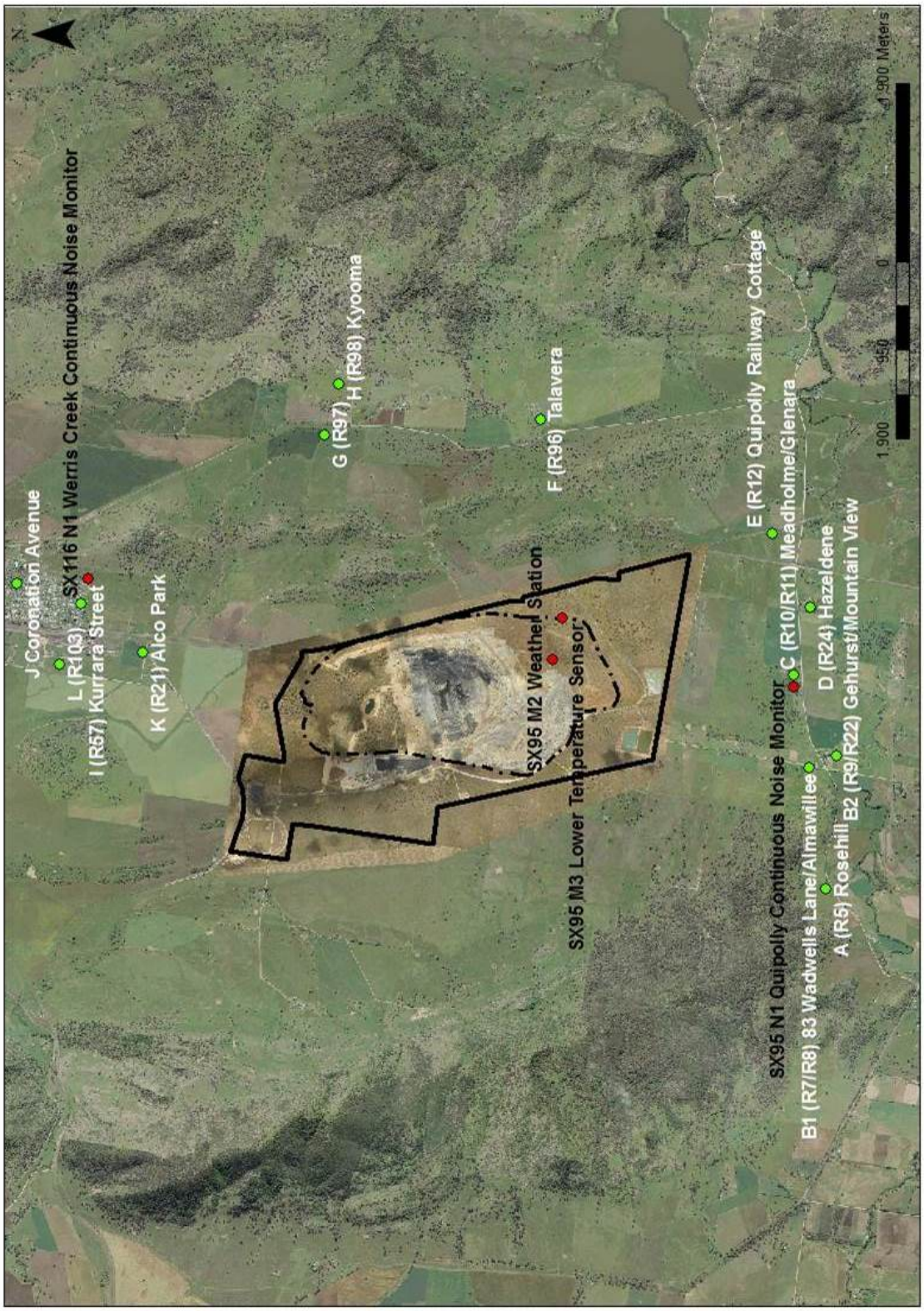
Appendix I



Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

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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"

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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 III

Plant Sound Power Levels

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
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Haul truck CAT 785C (attenuated)	608	117.7	116.7	118	24/4/14
Haul truck CAT 785C (unattenuated)	614	117.7	119	121	28/1/14
Haul truck CAT 785C (attenuated)	614	117.7	117.5	119	24/4/14
Haul truck CAT 785C (unattenuated)	609	117.7	120		11/9/12
Haul truck CAT 785C (attenuated)	609	117.7	117.4	119	11/9/12
Haul truck CAT 785C (unattenuated)	610	117.7	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	117.7	120		11/9/12
Haul truck CAT 785C (unattenuated)	612	117.7	120	122	28/1/14
Haul truck CAT 785C (attenuated)	612	117.7	117.8	120	24/4/14
Haul truck CAT 785C (unattenuated)	600	117.7	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	117.7	122		8/8/13
Haul truck CAT 785C (attenuated)	613	117.7	117.9		24/4/14
Haul truck CAT 785C (unattenuated)	624	117.7	121		8/8/13
Haul truck CAT 785C (attenuated)	624	117.7	118.1		24/4/14
Haul truck CAT 789 (unattenuated)	875	117.7	119	121	28/1/14
Water Cart	WA897	113	113		11/9/12
Scraper	SC882	118	113		11/9/12
Excavator (PC 3600)	EX551	116	115		11/9/12
Dozer	829	118	115		24/4/14
Dozer (D10T)	832	118	113	118	28/1/14
Crushing Plant	n/a	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	117.7		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	117.7		124	11/9/12
Excavator (PC4000)	EX837	116	115		18/12/12
Dozer D10T (1^{st} gear)	505	118	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	118	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	118	119 113	122 118	6/2/13

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Excavator (EX 5600)	570	121	116	119	28/1/14
Haul truck CAT 793XQ	660	115	116	119	28/1/14
Haul truck CAT 793XQ	661	115	115	118	28/1/14
Haul truck CAT 793XQ	662	115	116	119	28/1/14
Haul truck CAT 793XQ	663	115	116	119	8/8/13
Haul truck CAT 793XQ	664	115	114	117	8/8/13
Haul truck CAT 793XQ	665	115	115	118	28/1/14
Haul truck CAT 793XQ	666	115	116	118	28/1/14
Haul truck CAT 793XQ	667	115	115	118	28/1/14
Hitachi Excavator 1900	543	116	115	118	28/1/14
Grader	849	n/a	110	113	28/1/14
Warrior 2400 crusher	n/a	116	117	117	8/8/13
Kleeman screen	MCR401	116	111	112	8/8/13
Water Cart (Volvo)	863	113	114	118	28/1/14
Water Cart (Cat 773D)	869	113	119	123	28/1/14
Water Cart (Cat 773D)	869	113	117.5	119	24/4/14
Drill (Bucyrus)	524	116	107	-	28/1/14
Drill (Cat 6420)	526	116	108	-	28/1/14
Water pump (Dam 4)	--	--	106	--	24/4/14
Evaporation fan (Dam 4)	--	--	105	--	24/4/14

*Leq noise level from vehicle pass by only (modelled levels in the EA for LOM are based on an Leq (15 min) for an attenuated haul truck.

19 January 2015

Ref: 04035/5585

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

RE: JANUARY 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 Thursday 15th of January, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 Thursday 15th January 2015 had the 5600 excavator in Strip 15 west at RL370m; the 3600 in Strip 14 centre at RL310m and one 1900 excavator in Strip 14 west at RL310m and the other 1900 excavator in Strip 15 west at RL370m. The Strip 15 overburden truck fleets were running to the eastern RL420m dump while the Strip 14 overburden truck fleets were running to the in pit dump at RL340m. To manage operational noise levels, the OCE suspended a 1900 excavator (Strip 15 west) for 3.5 hours at 22:10; the 5600 excavator for 2.2 hours at 22:20; a 1900 excavator (Strip 14 west) for 1.2 hours at 00:50 and the 3600 excavator for 1.6 hours at 01:05. All six CAT785 trucks were suspended from 22:35. In addition, the Coal Processing Plant and road trucks plus the Train Load Out dozers were suspended for 2 hours from 1:10am to further manage noise levels. The Mining Production, Coal Processing and Train Load Out operated to 2:10am with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 15 January 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	1:27 pm	38	35	n/a	1.5,225	Birds & insects (38), traffic (25), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:47 pm	42	40*	n/a	2.1,282	Birds & insects (42), WCC (23)
C R10 Meadholme/ R11 Glenara	2:06 pm	46	40*	n/a	1.1,72	Birds & insects (46), traffic (24), WCC faintly audible
D R24 Hazeldene	2:26 pm	53	37	n/a	1.8,259	Birds & insects (53), wind (29), traffic (26), WCC faintly audible
E R12 Railway Cottage	4:02 pm	46	38	n/a	3.4,257	Birds & insects (45), traffic (40), WCC inaudible
F R96 Talavera	4:09 pm	34	38	n/a	3.3,254	Birds (33), wind (26), WCC inaudible
G R97	3:36 pm	37	35	n/a	1.3,252	Birds & insects (37), WCC (26)
H R98 Kyooma	3:43 pm	36	40*	n/a	1.7,290	Birds (36), wind (24), WCC faintly audible
I R57 Kurrara St	2:12 pm	41	35	n/a	2.2,281	Birds (40), traffic (32), wind (29), WCC inaudible
J R57 Coronation Ave	3:17 pm	48	35	n/a	0.9,210	Birds & insects (47), traffic (39), wind (32), WCC inaudible
K R21 Alco Park	1:51 pm	39	40*	n/a	1.9,263	Birds & insects (35), traffic (34), dogs (31), lawn mower (29), WCC faintly audible
L R103	1:31 pm	41	35	n/a	1.5,225	Train yard (40), birds & insects (31), traffic (26), WCC inaudible

* Private Agreement in place – see Appendix II.

Table 3
WCC Noise Monitoring Results – 15 January 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	7:59 pm	n/a	35	35	+1.8,3.1,217	Birds & insects (34), traffic (29), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	8:20 pm	n/a	51	40*	+3.1,3.0,223	Birds & insects (51), traffic (26), WCC inaudible
C R10 Meadholme/ R11 Glenara	8:40 pm	n/a	42	40*	+4.4,3.5215	Birds & insects (42), traffic (29), WCC inaudible
D R24 Hazeldene	8:59 pm	n/a	47	37	+5.3,2.5,188	Insects (47), traffic (33), domestic (23), WCC inaudible
E R12 Railway Cottage	10:06 pm	n/a	43	38	+5.6,1.7,169	Traffic (41), frogs & insects (38), WCC inaudible
F R96 Talavera	10:14 pm	34	33	37	+5.8,1.6,171	Frogs & insects (31), WCC (28)
G R97	7:30 pm	31	46	35	+0.7,3.0,245	Insects (46), WCC (27)
H R98 Kyooma	9:48 pm	40	39	40*	+5.5,3.1,222	WCC (37), frogs & insects (34)
I R57 Kurrara St	8:19 pm	n/a	41	35	+4.1,3.3,216	Frogs & insects (37), train yard (37), traffic (32), WCC inaudible
J R57 Coronation Ave	9:23 pm	n/a	36	35	+5.3,2.3,189	Traffic (32), train yard (30), dogs (30), insects (26), WCC inaudible
K R21 Alco Park	7:58 pm	n/a	50	40*	+1.8,3.1,217	Trains (48), traffic (42), birds & insects (41), WCC inaudible
L R103	7:38 pm	n/a	43	35	+1.0,3.0,238	Birds (43), train yard (32), WCC inaudible

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 location during any monitoring period.

The audible noise sources from WCC included truck revs, occasional dozer tracks and 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.

Plant Sound Power Levels

In keeping with the NMP, the sound power levels of the major noise producing plant and equipment operating on the WCC site is to be determined from sound pressure level measurements. The measurement programme is to be undertaken progressively to capture noise levels from all plant over the period of a year.

The results of the sound power level calculations to date are shown in **Appendix III**. The table in Appendix III lists SWL's for plant items as taken from those used in the noise modelling for the latest EA for WCM. The SWL's from the EA, therefore, represent a calculated Leq (15 minute) noise level. For mobile plant this calculation is based on the length of time each noise source representing a plant item(s) is at a particular location on the mine site.

For example the noise model includes a number of noise sources located at intervals along the various haul roads to approximate the haul fleet working throughout a 15 minute operational period. The SWL for the point source is calculated based on the length of time any truck is expected to be passing that location during the assessment period.

For mobile plant, the measured Leq noise levels in the table in Appendix III represent a single passby for each plant item whereas the values adopted in the EA (particularly for haul trucks) are for the 15-minute calculated sound power level of 350m long sections of haul road. These values are typically 7-10 dB lower than the single pass-by level.

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:

Ross Hodge
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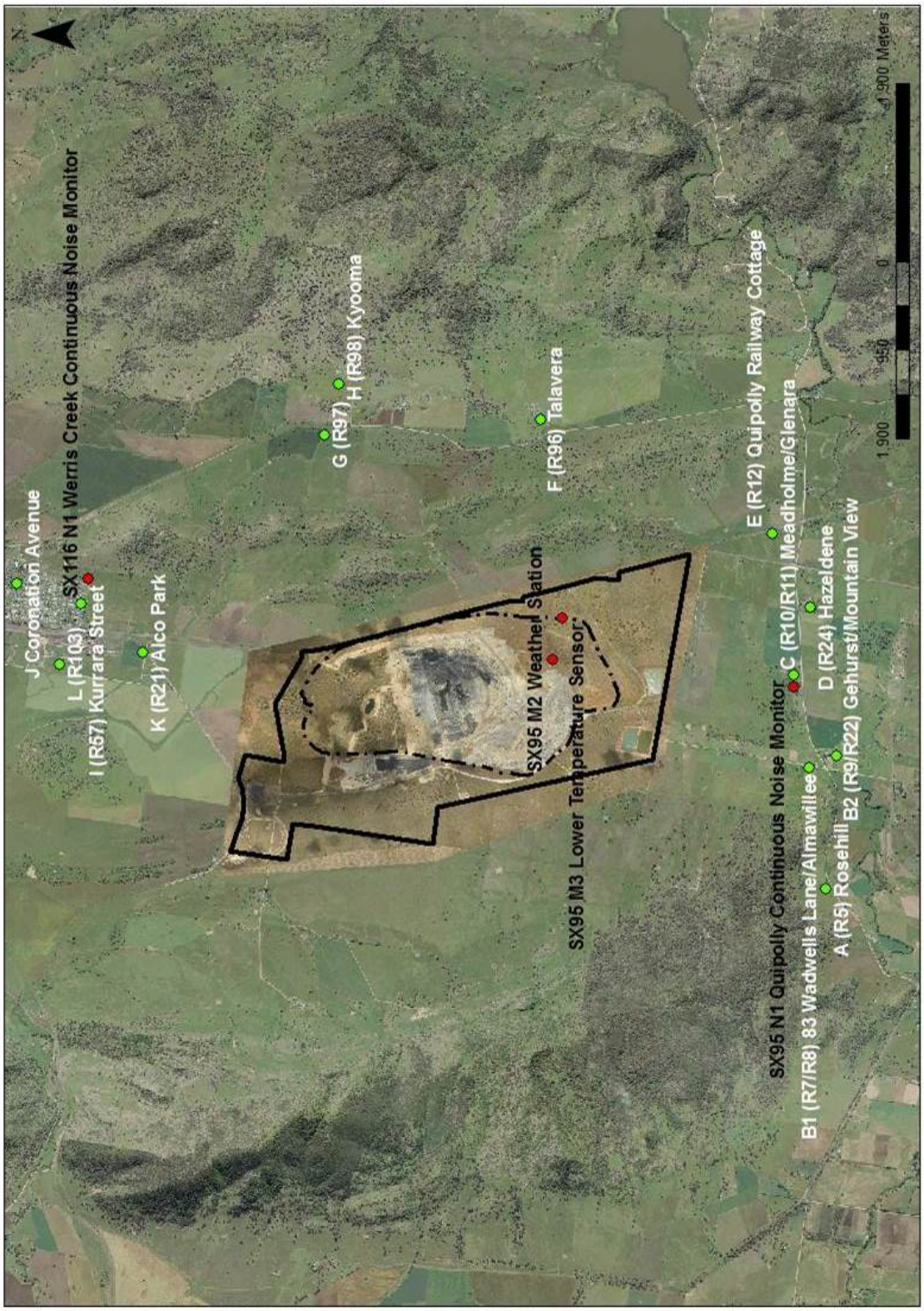
Review:

Neil Pennington
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 III

Plant Sound Power Levels

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Haul truck CAT 785C (unattenuated)	608	117.7	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	117.7	116.7	118	24/4/14
Haul truck CAT 785C (unattenuated)	614	117.7	119	121	28/1/14
Haul truck CAT 785C (attenuated)	614	117.7	117.5	119	24/4/14
Haul truck CAT 785C (unattenuated)	609	117.7	120		11/9/12
Haul truck CAT 785C (attenuated)	609	117.7	117.4	119	11/9/12
Haul truck CAT 785C (unattenuated)	610	117.7	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	117.7	120		11/9/12
Haul truck CAT 785C (unattenuated)	612	117.7	120	122	28/1/14
Haul truck CAT 785C (attenuated)	612	117.7	117.8	120	24/4/14
Haul truck CAT 785C (unattenuated)	600	117.7	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	117.7	122		8/8/13
Haul truck CAT 785C (attenuated)	613	117.7	117.9		24/4/14
Haul truck CAT 785C (unattenuated)	624	117.7	121		8/8/13
Haul truck CAT 785C (attenuated)	624	117.7	118.1		24/4/14
Haul truck CAT 789 (unattenuated)	875	117.7	119	121	28/1/14
Water Cart	WA897	113	113		11/9/12
Scraper	SC882	118	113		11/9/12
Excavator (PC 3600)	EX551	116	115		11/9/12
Dozer	829	118	115		24/4/14
Dozer (D10T)	832	118	113	118	28/1/14
Crushing Plant	n/a	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	117.7		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	117.7		124	11/9/12
Excavator (PC4000)	EX837	116	115		18/12/12
Dozer D10T (1^{st} gear)	505	118	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	118	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	118	119 113	122 118	6/2/13

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Excavator (EX 5600)	570	121	116	119	28/1/14
Haul truck CAT 793XQ	660	115	116	119	28/1/14
Haul truck CAT 793XQ	661	115	115	118	28/1/14
Haul truck CAT 793XQ	662	115	116	119	28/1/14
Haul truck CAT 793XQ	663	115	116	119	8/8/13
Haul truck CAT 793XQ	664	115	114	117	8/8/13
Haul truck CAT 793XQ	665	115	115	118	28/1/14
Haul truck CAT 793XQ	666	115	116	118	28/1/14
Haul truck CAT 793XQ	667	115	115	118	28/1/14
Hitachi Excavator 1900	543	116	115	118	28/1/14
Grader	849	n/a	110	113	28/1/14
Warrior 2400 crusher	n/a	116	117	117	8/8/13
Kleeman screen	MCR401	116	111	112	8/8/13
Water Cart (Volvo)	863	113	114	118	28/1/14
Water Cart (Cat 773D)	869	113	119	123	28/1/14
Water Cart (Cat 773D)	869	113	117.5	119	24/4/14
Drill (Bucyrus)	524	116	107	-	28/1/14
Drill (Cat 6420)	526	116	108	-	28/1/14
Water pump (Dam 4)	--	--	106	--	24/4/14
Evaporation fan (Dam 4)	--	--	105	--	24/4/14

*Leq noise level from vehicle pass by only (modelled levels in the EA for LOM are based on an Leq (15 min) for an attenuated haul truck.

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 2014																							
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FFT SINGLE 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
79	2014-105	4/11/2014	13:04	S14_B14_B21_RL305	1.0	IB	0.25	99.8	0.95	101.7	0.45	94.7	0.23	93.2	10.00	120.0	Not Monitored		50.00	-4.4	301	5.6	16.4	12.5	8.5	0	Road	1	0	0
	2014-106	4/11/2014	13:04	S15_B6_Wedge_UG	0.3	IB	0.25	99.8	0.95	101.7	0.45	94.7	0.23	93.2	10.00	120.0	Not Monitored		50.00	-4.4	301	5.6	2.9	2.9	2.9	0	Road	0	0	0
80	2014-107	5/11/2014	15:58	S14_B14_B21_PS_RL290	0.3	PS	0.13	100.1	0.58	107.6	0.20	106.4	0.17	105.7	10.00	120.0	Not Monitored		50.00	-1.4	316	5.0	3	-	-	0	OK	0	0	0
81	2014-108	6/11/2014	16:08	S17_B9_B12_RL370	0.2	IB	0.03	89.5	0.28	90.9	0.09	89.0	0.04	91.1	10.00	120.0	Not Monitored		50.00	-2.7	261	0.7	-	-	-	0	OK	0	0	0
82	2014-109	7/11/2014	13:13	S14_B9_Cseam	0.4	IB	0.10	101.1	0.45	102.0	0.31	101.7	0.16	99.6	10.00	120.0	Not Monitored		50.00	-3.4	149	4.4	18	2	16	0	OK	0	0	0
83	2014-110	11/10/2014	13:24	S17_B4_B6_UG	-	UG	0.06	105.9	0.60	104.8	0.11	107.2	0.12	113.4	10.00	120.0	1.21	118.1	50.00	-4.6	177	6.1	4	3	3	0	Onsite	0	0	0
84	2014-111	12/11/2014	13:24	S14_B17__B21_RL305_TSB	0.5	IB	0.15	98.7	0.63	99.9	0.31	96.3	0.15	93.7	10.00	120.0	Not Monitored		50.00	-3.4	237	5.2	20	20	16	0	Onsite	0	0	0
85	2014-112	14/11/2014	13:08	S17_B4_B6_UG#2	-	UG	0.05	103.9	0.33	104.1	0.11	102.7	0.10	101.4	10.00	120.0	0.67	119.8	50.00	-4.4	300	5.8	4	4	3	2A	Road	0	0	0
86	2014-113	15/11/2014	12:05	S14_B17__B21_RL305_TSB#2	0.4	IB	0.12	108.9	0.51	97.1	0.19	108.7	0.16	94.8	10.00	120.0	Not Monitored		50.00	-4.2	347	6.0	13	-	8	0	OK	0	0	0
87	2014-114	17/11/2014	13:19	S17_B20_B23_RL370	0.8	OB	0.26	100.6	1.05	98.3	0.40	98.1	0.28	97.9	10.00	120.0	Not Monitored		50.00	-3.6	98	1.0	3	3	16	0	Offsite	0	0	0
88	2014-115	19/11/2014	16:28	S15_B22_B23_RL365_TSB	0.4	IB	0.17	104.3	0.45	106.4	0.31	102.6	0.14	101.6	10.00	120.0	Not Monitored		50.00	-1.7	154	1.0	13	13	11	0	OK	0	0	0
89	2014-116	20/11/2014	13:09	S15_B7_Wedge_#2	-	IB	0.05	94.0	0.33	100.9	0.12	100.7	0.10	103.7	10.00	120.0	Not Monitored		50.00	-4.6	340	1.8	-	-	-	0	OK	0	0	0
90	2014-117	21/11/2014	13:12	S14B10_B12_Cseam	-	IB	0.05	113.2	0.3	100.3	0.15	104.1	0.06	102.1	10.00	120.0	Not Monitored		50.00	-4.5	329	6.4	-	-	-	0	OK	0	0	0
91	2014-118	25/11/2014	13:10	S17_B5_RL370_TSB	-	TSB	0.19	96.0	0.84	101.3	0.45	98.3	0.19	97.6	10.00	120.0	Not Monitored		50.00	-2.6	83	1.0	17	13	16	0	OK	0	0	0
	2014-119	25/11/2014	13:10	S16_B10_B11_RL335	-	IB	0.19	96.0	0.84	101.3	0.45	98.3	0.19	97.6	10.00	120.0	Not Monitored		50.00	-2.6	83	1.0	17	13	16	0	OK	0	0	0
92	2014-120	28/11/2014	13:08	S15_B4_B7_RL320_TSB	-	TSB	0.10	98.4	0.73	92.2	0.27	93.6	0.14	92.3	10.00	120.0	Not Monitored		50.00	-3.8	175	4.7	16	0	0	0	OK	0	0	0
	2014-121	28/11/2014	13:08	S14_B9_Cseam#2	-	IB	0.10	98.4	0.73	92.2	0.27	93.6	0.14	92.3	10.00	120.0	Not Monitored		50.00	-3.8	175	4.7	16	0	0	0	OK	0	0	0
	TOTALS	**NOVEMBER 2014**	**# BLAST**	**14**	**TARGET**	**AVERAGE**	**0.13**	**100.5**	**0.62**	**100.2**	**0.27**	**99.5**	**0.15**	**98.3**	**5.00**	**115.0**														
	TOTALS	**NOVEMBER 2014**	**#>0.5mm**	**8**	**<0.8mm/s**	**HIGHEST**	**0.26**	**113.2**	**1.05**	**107.6**	**0.45**	**108.7**	**0.28**	**113.4**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**92**	**<115dBL**	**AVERAGE**	**0.15**	**99.9**	**0.79**	**100.0**	**0.36**	**97.3**	**0.23**	**96.4**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**1.1%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

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		FFT SINGLE 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
93	2014-122	2/12/2014	16:13	S16_B7-B9_RL335	-	IB	0.12	99.8	0.80	100.0	0.43	90.1	0.23	97.1	10.00	120.0	Not Monitored		50.00	-3.9	290	1.4	14	3	14	0	Road	0	0	0
	2014-123	2/12/2014	16:13	S15_B7_B8_RL320_TSB	-	TSB	0.12	99.8	0.80	100.0	0.43	90.1	0.23	97.1	10.00	120.0	Not Monitored		50.00	-3.9	290	1.4	14	3	14	0	OK	0	0	0
94	2014-124	4/12/2014	13:24	S17_B14_B16_RL370	-	IB	0.13	105.1	0.46	106.1	0.18	99.0	0.18	103.4	10.00	120.0	Not Monitored		50.00	-2.4	39	5.5	3	3	3	0	OK	0	0	0
	2014-125	4/12/2014	13:24	S17_B17_RL370	-	IB	0.13	105.1	0.46	106.1	0.18	99.0	0.18	103.4	10.00	120.0	Not Monitored		50.00	-2.4	39	5.5	3	3	3	0	OK	0	0	0
	2014-126	4/12/2014	13:24	S15_B8_UG_Trim_Panel3	-	UG	0.13	105.1	0.46	106.1	0.18	99.0	0.18	103.4	10.00	120.0	Not Monitored		50.00	-2.4	39	5.5	3	3	3	2A	OK	0	0	0
	2014-127	4/12/2014	13:24	S15_B8_Trim_RL320	-	IB	0.13	105.1	0.46	106.1	0.18	99.0	0.18	103.4	10.00	120.0	Not Monitored		50.00	-2.4	39	5.5	3	3	3	0	OK	0	0	0
95	2014-128	9/12/2014	13:27	S14_B19_B21_RL290_TSB	-	TSB	0.16	97.1	0.47	100.4	0.29	99.7	0.19	97.3	10.00	120.0	Not Monitored		50.00	-3.8	356	1.8	14	14	14	0	Road	0	0	1
	2014-129	9/12/2014	13:27	S14_B8_Panel3_UG	-	UG	0.16	97.1	0.47	100.4	0.29	99.7	0.19	97.3	10.00	120.0	Not Monitored		50.00	-3.8	356	1.8	14	14	14	3A	Road	0	0	0
96	2014-130	11/12/2014	9:38	S16_B12_B13_RL335	-	IB	0.11	103.0	0.55	103.4	0.37	101.7	0.23	102.5	10.00	120.0	Not Monitored		50.00	-2.0	159	2.6	16	3	11	0	OK	0	0	0
	2014-131	11/12/2014	9:38	S17_B17_RL370	-	IB	0.11	103.0	0.55	103.4	0.37	101.7	0.23	102.5	10.00	120.0	Not Monitored		50.00	-2.0	159	2.6	16	3	11	0	OK	0	0	0
97	2014-132	17/12/2014	13:55	S15_B9_B12_Cseam	0.7	IB	0.23	106.7	1.08	106.6	0.53	110.1	0.42	113.6	10.00	120.0	Not Monitored		50.00	-4.0	291	6.4	13	9	11	0	Offsite	0	0	0
	2014-133	17/12/2014	13:55	S15_B17_B23_RL350	0.7	IB	0.23	106.7	1.08	106.6	0.53	110.1	0.42	113.6	10.00	120.0	Not Monitored		50.00	-4.0	291	6.4	13	9	11	0	Offsite	0	0	0
	2014-134	17/12/2014	13:55	S14_B19_B21_RL290_TSB#2	0.7	TSB	0.23	106.7	1.08	106.6	0.53	110.1	0.42	113.6	10.00	120.0	Not Monitored		50.00	-4.0	291	6.4	13	9	11	0	Offsite	0	0	0
98	2014-135	19/12/2014	16:03	S15_B9_B12_Cseam#2	-	IB	0.24	100.3	1.23	104.9	0.43	107.0	0.33	101.4	10.00	120.0	Not Monitored		50.00	-4.8	233	6.4	2	2	10	2A	Road	0	0	0
	2014-136	19/12/2014	16:03	S14_B15_Cseam_Trim#2	-	IB	0.24	100.3	1.23	104.9	0.43	107.0	0.33	101.4	10.00	120.0	Not Monitored		50.00	-4.8	233	6.4	2	2	10	0	Road	0	0	0
99	2014-137	22/12/2014	16:12	S14_B18_B19_RL290_TSB	-	TSB	0.12	98.4	0.37	92.8	0.26	97.3	0.21	96.3	10.00	120.0	Not Monitored		50.00	-3.8	4	4.0	-	-	-	0	OK	0	0	0
	2014-138	22/12/2014	16:12	S14_B15_Cseam_Trim#3	-	IB	0.12	98.4	0.37	92.8	0.26	97.3	0.21	96.3	10.00	120.0	Not Monitored		50.00	-3.8	4	4.0	-	-	-	0	OK	0	0	0
100	2014-139	31/12/2014	13:10	S15_B4_B7_RL305_TSB	-	TSB	0.17	103.0	0.81	97.5	0.34	95.8	0.27	96.1	10.00	120.0	Not Monitored		50.00	-1.7	327	1.1	11	3	14	0	OK	0	0	0
	TOTALS	**DECEMBER 2014**	**# BLAST**	**8**	**TARGET**	**AVERAGE**	**0.16**	**102.3**	**0.71**	**102.5**	**0.35**	**100.8**	**0.26**	**102.2**	**5.00**	**115.0**														
	TOTALS	**DECEMBER 2014**	**#>0.5mm**	**5**	**<0.8mm/s**	**HIGHEST**	**0.24**	**106.7**	**1.23**	**106.6**	**0.53**	**110.1**	**0.42**	**113.6**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**100**	**<115dBL**	**AVERAGE**	**0.15**	**100.1**	**0.78**	**100.3**	**0.36**	**97.7**	**0.24**	**97.1**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**1.0%**	**0%**	**0%**	**0%**	**1.0%**	**5%**	**5%**														

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		FFT SINGLE 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	2015-1	5/01/2015	14:38	S14_B15_B18_RL290	0.4	IB	0.12	95.9	0.53	92.7	0.27	90.7	0.22	91.1	10.00	120.0	Not Monitored		50.00	-2.4	156	3.7	18	3	16	0	OK	0	0	0
2	2015-2	6/01/2015	13:13	S15_B7_B8_RL305_TSB	0.6	TSB	0.21	101.2	0.99	106.4	0.44	102.7	0.35	102.2	10.00	120.0	Not Monitored		50.00	-2.6	172	0.6	2	3	3	0	OK	0	0	0
3	2015-3	7/01/2015	13:37	S14_B17_B18_RL290	0.3	IB	0.09	95.5	0.30	102.1	0.14	98.1	0.13	102.7	10.00	120.0	Not Monitored		50.00	-1.7	135	1.7	-	3	-	0	OK	0	0	0
4	2015-4	9/01/2015	9:38	S15_B9_DE_UG	0.3	UG	0.04	98.1	0.25	100.9	0.08	98.8	0.05	97.3	10.00	120.0	Not Monitored		50.00	-3.9	339	3.6	-	-	-	1A	OK	0	0	0
5	2015-5	13/01/2015	13:08	S15_B11_B12_UG_Panel4	0.6	UG	0.08	97.5	0.79	99.6	0.21	98.3	0.17	98.1	10.00	120.0	Not Monitored		50.00	-2.8	334	2.4	2	2	3	0	OK	0	0	0
6	2015-6	14/01/2015	11:08	S16_B20_B23_RL320_PS	0.3	PS	0.22	93.1	0.53	89.7	0.22	89.1	0.18	89.2	10.00	120.0	Not Monitored		50.00	-2.5	328	4.8	3	3	3	2A	OK	0	0	0
7	2015-7	15/01/2015	16:09	S14_B17-B18_RL290	0.4	IB	0.07	96.5	0.15	103.5	0.35	100.8	0.06	99.1	10.00	120.0	Not Monitored		50.00	-3.5	282	2.1	-	3	13	0	OK	0	0	0
8	2015-8	16/01/2015	13:03	S16_B8-B11_RL320_PS	0.3	PS	0.11	100.0	0.88	91.5	0.46	95.8	0.32	98.6	10.00	120.0	Not Monitored		50.00	-4.0	328	4.6	3	3	3	1B	OK	0	0	0
9	2015-9&10	19/01/2015	13:09	S15_B10-B11_UG	0.3	UG	0.07	102.6	0.41	111.7	0.14	102.2	0.11	111.5	10.00	120.0	Not Monitored		50.00	-3.1	111	5.3	-	2	-	2A	Onsite	0	0	0
10	2015-11	20/01/2015	13:04	S16_B7-B13_RL335	0.3	Trim	0.07	102.4	0.36	92.3	0.17	92.9	0.11	106.8	10.00	120.0	Not Monitored		50.00	-3.1	41	5.0	16	13	10	0	Onsite	0	0	0
11	2015-12	21/01/2015	13:07	S15_B11-B12_UG	0.3	UG	0.00	90.6	0.02	100.5	0.01	83.3	0.00	85.6	10.00	120.0	Not Monitored		50.00	-2.7	357	2.7	-	-	-	0	OK	0	0	0
12	2015-13	22/01/2015	12:58	S14_B17-B18_RL290	0.3	IB	0.05	90.0	0.21	95.8	0.09	91.8	0.05	93.6	10.00	120.0	Not Monitored		50.00	-1.8	137	2.3	-	-	-	0	OK	0	0	0
13	2015-14	23/01/2015	13:12	S16_B17-B19_RL335	0.3	IB	0.22	99.0	0.78	103.6	0.39	98.6	0.36	98.2	10.00	120.0	Not Monitored		50.00	-2.2	109	3.9	13	13	27	0	OK	0	0	0
	2015-15	23/01/2015	13:12	S14_B17-B22_RL260	0.3	PS	0.22	99.0	0.78	103.6	0.39	98.6	0.36	98.2	10.00	120.0	Not Monitored		50.00	-2.2	109	3.9	13	13	27	0	OK	0	0	0
14	2015-16	29/01/2015	11:27	S15_B11-B12_UG	0.3	UG	0.07	100.0	0.37	102.5	0.17	101.1	0.11	99.8	10.00	120.0	Not Monitored		50.00	-3.4	173	2.8	3	3	3	0	OK	0	0	0
15	2015-17	29/01/2015	16:07	S14_B14-B17_RL260_PS	0.3	PS	0.26	104.4	0.50	101.7	0.28	92.2	0.18	90.5	10.00	120.0	Not Monitored		50.00	-2.9	165	5.2	3	3	3	2C	OK	0	0	0
16	2015-18	30/01/2015	13:13	S16_B17-B20_RL335_TSB	0.6	TSB	0.16	97.3	0.44	102.1	0.31	97.8	0.17	97.3	10.00	120.0	Not Monitored		50.00	-4.3	287	6.1	14	12	14	0	OK	0	0	0
	TOTALS	**JANUARY 2015**	**# BLAST**	**16**	**TARGET**	**AVERAGE**	**0.12**	**97.8**	**0.49**	**100.0**	**0.24**	**96.0**	**0.17**	**97.6**	**5.00**	**115.0**														
	TOTALS	**JANUARY 2015**	**#>0.5mm**	**7**	**<0.8mm/s**	**HIGHEST**	**0.26**	**104.4**	**0.99**	**111.7**	**0.46**	**102.7**	**0.36**	**111.5**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**116**	**<115dBL**	**AVERAGE**	**0.15**	**99.9**	**0.49**	**100.0**	**0.34**	**97.5**	**0.17**	**97.6**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0.9%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

Appendix 6 – Groundwater Monitoring Results

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No: WO# 9075
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME: B Phillips / C Elbourn.	6 Monthly Natural, Nutrients, Orange TPH
SITE: WERRIS CREEK MINE AND SURROUNDS	Note: When taking water always use pump & purge on MW3

ALS ACIRL

Reportables / Analytes	Sample ID Information: Sample ID / Bore ID	Date	Time (24hr)	Bore Data: Standing Water Level (□mbgl □mbtoc □m)	Bore depth (□mbgl □mbtoc □m)	Stick up (m)	Sampling Data: Purge Type (Pump / Bailer)	Purge Volume (L)	Pump Set Depth (□mbgl □mbtoc □m)	Field Tests: EC - field (uS/cm)	pH - field (pH units)	Temp - field (°C)	Field Observations: Appearance	Odor	Colour	Comments
	MW1	24/11	13:55	59.34		0.25										6 Monthly
	MW2	24/11	13:35.	30.25		0.15										6 Monthly - Railway view
	MW3	24/11	9:20	17.63		0.95	Pump.	260L.		3180	6.9	21.9.	Clear	Nil	Clear	6 Monthly (Always Purge)
	MW4	24/11	11:30	0.15	Broken Stickup. - SWL 0.15 Below ground.											Mine site Grand
	MW4B	24/11	11:40	13.99		0.7										6 Monthly " "
	MW5	24/11	10:00	11.02		1.15										6 Monthly
	MW5B	24/11	9:50	10.54		0.7										
	MW6	24/11	11:15	13.81		1.05										6 Monthly Werris Creek
	MW9	24/11	12:50	—		0.87	Broken Stickup - Blockage @ ~0.50									Mine - Rail loop
	MW10	24/11	13:00	17.11		0.2										Escott ln. - Shed.
	MW11	24/11	—				"Pump over bore."									" " - Irrigation near top
	MW14	24/11	12:30	18.97		0.95										Mine - Rail loop.
	MW14B	24/11	12:40	18.92		0.75										Mine - Rail loop.
	MW17B	26/11	9:00	12.15		0.65										Wadwell ln. - Windmill.
	MW20	25/11	9:25	20.67		0.55										Tonsley Park.
	MW24A	25/11	10:55.	14.84		0.15										Marengo Pump
	MW25A	—														(Mine site) Pump over bore
	MW25B	—														
	P1	—														
	P2	—														
	PUG	—														
	MW27	24/11	11:55	52.10		0.45										Escott ln. - Cintra
	MW29	25/11	10:00	14.82									(Mill running)			Kyona - Windmill
	MW31	—						"No longer monitored.								Talavera Windmill

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: Sample ID / Bore ID	Date	Time	Bore Data: Standing Water Level	Bore depth	Stick up	Sampling Data: Purge Type	Purge Volume	Pump Set Depth	Field Tests: EC - field	pH - field	Temp - field	Field Observations: Appearance	Odor	Colour	Comments
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	25/11	11:35.	8.38		0.2										*Rosewath.
	MW12	25/11	13:50	11.63		0.5										*Hazedean.
	MW13	25/11	12:05	6.34		0.4										Wadwell In. well.
	MW13B	25/11	12:20	4.78		0.3										Taylors In - Opp. Haysted.
	MW13D	25/11	12:35	5.07		0.2							(Water	leaking	out mill)	Taylors In. - Wind mill.
	MW15	25/11	12:55.	5.84												Payres In. - Wind mill.
	MW16	25/11	13:10	6.46		0.3										Maintainview. - shed.
	MW17A	26/11	9:20	6.05		0.5	++	Pump	on -	Hose	watering	lawn				83 Wadwell In.
	MW18A	26/11	9:15	5.76		—										82 Wadwell In.
	MW19A	25/11	11:50	9.15		0.15								(Pump	running)	Lintang pump.
	MW21A	25/11	13:35	9.65		0.3										Glenara.
	MW22A	26/11	10:45	6.95		0.55				(Pump	on.)					308 Payres In - House
	MW22B	26/11	10:35	7.26		0.45										308 Payres In. - Irrigation
	MW23A	26/11	10:05	4.65		0.2				(Pumps	off!)					Peggy Easy - House
	MW23B	26/11	10:20	4.19		0.1				(Pumps	off!)					" " - Irrigation
	MW28A	25/11	11:15	13.80		0.25										Woodlawn - LHS Windmill
	MW28B	—		pump over bore												Woodlawn - RHS pump.

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 Abrecos - well
	MW7B	—														" - windmill
	MW32	26/11/14	9:45	4.13												"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	26/11/14	12:10	24.45		0.95										Opposite - TLO
	MW36B	26/11/14	12:20	24.20		0.95										Opposite - TLO
	MW35	—														Paddock - Black gully Rd
	MW34	26/11/14	11:10	11.78		0.15										W/C - off Gap Rd
	MW50	26/11/14	16:15	13.14		0.68										
	MW5C	26/11/14	10:30	10.81		0.93										
	MW5E	26/11/14	10:40	12.32		0.76										
	MW5F	26/11/14	10:50	14.98		1.2										
	MW5G	26/11/14	11:00	13.29		0.65										

SPECIAL COMMENTS: M

Sheet: of

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No: WO # 9353
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				
	MW8	13/1/15	9:30	18.34		0.2										Roseneath
	MW12	13/1/15	10:40	11.85		0.5										Hazeldean
	MW13	13/1/15	9:15	6.42		0.4										Wadwell lane Well
	MW13B	13/1/15	9:05	4.91		0.3										Taylors lane - Opposite Haysmead
	MW13D	13/1/15	8:50	5.02		0.2										Taylors lane Windmill
	MW15	9/1/15	11:25	5.92		0.2										Paynes ln. - Windmill.
	MW16	13/1/15	10:15	6.99		0.3										Mountain View
	MW17A	13/1/15	9:40	6.09		0.5										83 Wadwell lane
	MW18A	13/1/15	9:50	5.95		—										82 Wadwell lane
	MW19A	9/1/15	12:40	9.10		0.15										Linton Pump.
	MW21A	9/1/15	10:40	10.35		0.3										GLENARA
	MW22A	9/1/15	11:00	7.18		0.55										308 PAYNES LN HOUSE
	MW22B	9/1/15	10:50	7.44		0.45										308 PAYNES LN IRRIGATION
	MW23A	9/1/15	11:45	3.94		0.2										Peggy Keisy - House.
	MW23B	9/1/15	12:00	4.19		0.1										" - Irrigation.
	MW28A	13/1/15	10:55	13.95		0.25										Woodlands Rd. LHS Well
	MW28B	—		pump over bore												" " RHS pump.

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

ALS ACIRL

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	Comments
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW1	9/1/15	10:05	59.87		0.25										6 Monthly Hill View
	MW2	9/1/15	10:20	30.82		0.15										6 Monthly RAILWAY VIEW
	MW3	9/1/15	10:35	17.83		0.95										6 Monthly (Always Purge) eurundree
	MW4	12/1/15	12:00	0.26		Broken stickup - SWL 0.26 Below Ground										Mine Site - Front
	MW4B	12/1/15	12:10	14.32		0.7										6 Monthly
	MW5	9/1/15	11:00	11.19		1.15										6 Monthly Mine site,
	MW5B	9/1/15	10:50	10.72		0.7										Mine site
	MW6	12/1/15	12:25	13.95		1.05										6 Monthly
	MW9	9/1/15	10:20	—		0.87		Blockage @ 0.50								Mine site - rail loop
	MW10	9/1/15	9:35	17.19		0.2										ESCOTT LANE NEAR SHED
	MW11							PUMP OVER BORE								Escott lane Irrigation
	MW14	9/1/15	10:00	19.39		0.95										Mine site - rail loop
	MW14B	9/1/15	10:10	19.18		0.75										Mine Site - rail loop
	MW17B	13/1/15	10:00	12.22		0.65										Wadwell lane Windmill
	MW20	9/1/15	9:00	20.86		0.55										TONSLEY PARK
	MW24A	13/1/15	11:20	14.86		0.5										Marenga
	MW25A															
	MW25B															
	P1															
	P2															
	PUG															
	MW27	9/1/15	9:50	51.32		0.45										Escott lane - near Centra
	MW29	9/1/15	[illegible]	13.73												Kyooma Windmill
	MW31					"no longer monitored"										Tyllavara Windmill

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: C.E

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				
	MW7															Andersons - Well
	MW7B															Andersons - Windmill
	MW32	9/1/15	12:25	4.26		0.45										"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	12/1/15	9:45	24.43		0.95										Mine Site opposite TLO
	MW36B	12/1/15	9:30	24.19		0.95										Mine Site opposite TLO - logger
	MW35															Paddock - Black Gully Rd.
	MW34	12/1/15	12:45	11.31		0.15										Werris Creek / off Gap Rd.
	MW5D	12/1/15	13:00	13.36		0.68										Mine Site
	MW5C	12/1/15	11:10	11.06		0.93										Mine Site
	MW5E	12/1/15	11:25	12.59		0.76										Mine Site
	MW5F	12/1/15	11:35	15.33		1.2										Mine Site
	MW5G	12/1/15	11:45	13.59		0.85										Mine Site

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

CERTIFICATE OF ANALYSIS

Work Order	: **ES1424751**	Page	: 1 of 9
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
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	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER WERRIS CREEK NON-ROUTINE SURFACE WATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 8996/9003		
C-O-C number	: ----	Date Samples Received	: 11-NOV-2014
Sampler	: BP	Issue Date	: 19-NOV-2014
Site	: ----		
		No. of samples received	: 9
Quote number	: SY-457-11	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **Ionic Balance out of acceptable limits for sample9 due to analytes not quantified in this report.**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	SD4	VWD1	VWD2	QCU	QCD
				Client sampling date / time	10-NOV-2014 11:40	10-NOV-2014 12:10	10-NOV-2014 11:20	10-NOV-2014 10:30	10-NOV-2014 10:45
					ES1424751-001	ES1424751-002	ES1424751-003	ES1424751-004	ES1424751-005
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		390	1080	1050	1390	1050
pH	----	0.01	pH Unit		9.60	9.00	9.00	8.40	8.00
Temperature	----	0.1	°C		26.0	24.3	24.8	23.0	22.3
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.85	8.35	8.41	7.89	8.00
EA006: Sodium Adsorption Ratio (SAR)									
Sodium Adsorption Ratio	----	0.01	-		----	4.59	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		373	1100	1070	1420	1080
EA015: Total Dissolved Solids									
Total Dissolved Solids @180°C	----	10	mg/L		----	602	----	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		71	6	38	76	17
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		----	215	----	----	----
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		----	7	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		----	144	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		----	150	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	154	----	----	----
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		----	150	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		----	50	----	----	----
Magnesium	7439-95-4	1	mg/L		----	22	----	----	----
Sodium	7440-23-5	1	mg/L		----	155	----	----	----
Potassium	7440-09-7	1	mg/L		----	10	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		----	0.02	----	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	SD4	VWD1	VWD2	QCU	QCD
				Client sampling date / time	10-NOV-2014 11:40	10-NOV-2014 12:10	10-NOV-2014 11:20	10-NOV-2014 10:30	10-NOV-2014 10:45
					ES1424751-001	ES1424751-002	ES1424751-003	ES1424751-004	ES1424751-005
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	----	----	----
Copper	7440-50-8	0.001	mg/L		----	**0.001**	----	----	----
Lead	7439-92-1	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	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	**0.051**	----	----	----
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		----	**0.2**	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	<0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	**0.03**	**0.05**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.07**	**2.29**	**4.86**	**0.02**	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.07**	**2.29**	**4.91**	**0.02**	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.3**	**0.5**	**0.7**	**3.0**	**0.3**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**1.4**	**2.8**	**5.6**	**3.0**	**0.3**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.11**	<0.01	<0.01	**0.26**	**0.16**
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	**0.10**
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		----	**10.4**	----	----	----
Total Cations	----	0.01	meq/L		----	**11.3**	----	----	----
Ionic Balance	----	0.01	%		----	**3.98**	----	----	----
EP020: Oil and Grease (O&G)									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SD4	VWD1	VWD2	QCU	QCD
			Client sampling date / time	10-NOV-2014 11:40	10-NOV-2014 12:10	10-NOV-2014 11:20	10-NOV-2014 10:30	10-NOV-2014 10:45
Compound	CAS Number	LOR	Unit	ES1424751-001	ES1424751-002	ES1424751-003	ES1424751-004	ES1424751-005
EP020: Oil and Grease (O&G) - Continued								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	----	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WCD	VWD3	VWD4	VOID WATER-AFTER RAIN	----
				Client sampling date / time	10-NOV-2014 09:15	10-NOV-2014 12:40	10-NOV-2014 12:55	11-NOV-2014 10:00	----
Compound	CAS Number	LOR	Unit		ES1424751-006	ES1424751-007	ES1424751-008	ES1424751-009	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		1380	963	1010	935	----
pH	----	0.01	pH Unit		8.30	9.40	9.40	8.50	----
Temperature	----	0.1	°C		23.7	26.6	26.5	25.2	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.34	8.74	8.97	8.02	----
EA006: Sodium Adsorption Ratio (SAR)									
Sodium Adsorption Ratio	----	0.01	-		----	4.82	4.74	3.03	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1400	994	1030	921	----
EA015: Total Dissolved Solids									
Total Dissolved Solids @180°C	----	10	mg/L		----	546	561	512	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		38	119	16	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		----	173	175	244	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		----	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		----	18	17	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		----	110	104	159	----
Total Alkalinity as CaCO3	----	1	mg/L		----	129	121	159	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	144	145	98	----
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		----	140	147	113	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		----	43	42	78	----
Magnesium	7439-95-4	1	mg/L		----	16	17	12	----
Sodium	7440-23-5	1	mg/L		----	146	144	109	----
Potassium	7440-09-7	1	mg/L		----	10	10	9	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		----	0.03	0.06	<0.01	----
Arsenic	7440-38-2	0.001	mg/L		----	0.002	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	WCD	VWD3	VWD4	VOID WATER-AFTER RAIN	----
				Client sampling date / time	10-NOV-2014 09:15	10-NOV-2014 12:40	10-NOV-2014 12:55	11-NOV-2014 10:00	----
					ES1424751-006	ES1424751-007	ES1424751-008	ES1424751-009	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L		----	----	**0.001**	**0.006**	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		----	**0.012**	----	----	----
Copper	7440-50-8	0.001	mg/L		----	**0.002**	----	----	----
Chromium	7440-47-3	0.001	mg/L		----	----	**0.001**	<0.001	----
Copper	7440-50-8	0.001	mg/L		----	----	**0.003**	**0.001**	----
Nickel	7440-02-0	0.001	mg/L		----	**0.008**	----	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	**0.006**	----	----	----
Lead	7439-92-1	0.001	mg/L		----	----	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		----	----	<0.001	**0.006**	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		----	----	**0.146**	**0.024**	----
Iron	7439-89-6	0.05	mg/L		----	**0.07**	<0.05	<0.05	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	**0.2**	**0.1**	**0.1**	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	**0.01**	<0.01	**0.15**	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	**0.05**	**0.07**	**0.07**	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	**2.48**	**4.78**	**6.23**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	**2.48**	**4.78**	**6.30**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.6**	**1.1**	**1.0**	**1.0**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**0.6**	**3.6**	**5.8**	**7.3**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.24**	**0.06**	<0.01	**0.01**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WCD	VWD3	VWD4	VOID WATER-AFTER RAIN	----
				Client sampling date / time	10-NOV-2014 09:15	10-NOV-2014 12:40	10-NOV-2014 12:55	11-NOV-2014 10:00	----
Compound	CAS Number	LOR	Unit		ES1424751-006	ES1424751-007	ES1424751-008	ES1424751-009	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.19**	<0.01	<0.01	<0.01	----
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		----	**9.81**	**10.0**	**8.94**	----
Total Cations	----	0.01	meq/L		----	**10.1**	**10.0**	**9.85**	----
Ionic Balance	----	0.01	%		----	**1.29**	<0.01	**4.85**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**8**	<5	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		----	<2	<2	<2	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SD4 - 10-NOV-2014 11:40	Slight turbid
AC04: Appearance	VWD1 - 10-NOV-2014 12:10	Clear
AC04: Appearance	VWD2 - 10-NOV-2014 11:20	Clear
AC04: Appearance	QCU - 10-NOV-2014 10:30	Clear
AC04: Appearance	QCD - 10-NOV-2014 10:45	Clear
AC04: Appearance	WCD - 10-NOV-2014 09:15	Clear
AC04: Appearance	VWD3 - 10-NOV-2014 12:40	Slight turbid
AC04: Appearance	VWD4 - 10-NOV-2014 12:55	Clear
AC04: Odour	SD4 - 10-NOV-2014 11:40	Nil
AC04: Odour	VWD1 - 10-NOV-2014 12:10	Nil
AC04: Odour	VWD2 - 10-NOV-2014 11:20	Nil
AC04: Odour	QCU - 10-NOV-2014 10:30	Nil
AC04: Odour	QCD - 10-NOV-2014 10:45	Nil
AC04: Odour	WCD - 10-NOV-2014 09:15	Nil
AC04: Odour	VWD3 - 10-NOV-2014 12:40	Nil
AC04: Odour	VWD4 - 10-NOV-2014 12:55	Nil
AC04: Colour	SD4 - 10-NOV-2014 11:40	Sandy
AC04: Colour	VWD1 - 10-NOV-2014 12:10	Clear
AC04: Colour	VWD2 - 10-NOV-2014 11:20	Clear
AC04: Colour	QCU - 10-NOV-2014 10:30	Greenish
AC04: Colour	QCD - 10-NOV-2014 10:45	Clear
AC04: Colour	WCD - 10-NOV-2014 09:15	Clear
AC04: Colour	VWD3 - 10-NOV-2014 12:40	Sandy
AC04: Colour	VWD4 - 10-NOV-2014 12:55	Clear

Werris Creek Coal Community Consultative Committee

Thirty Fifth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 28th May 2015

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site inspecting operations from the eastern and southern lookouts before the meeting.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Col Stewart (LPSC – Councilor); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Geoff Dunn (Community Representative); Mike Lomax (Community Representative); Dave Goldman (Community Representative); Donna Ausling (Liverpool Plains Shire Council (LPSC) – Acting Director Environmental Services); Rod Hicks (WCC – Operations Manager) and Andrew Wright (WCC – Environmental Officer and Minute Taker).

Apologies: None.

2. Declaration of Pecuniary or Other Interests

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

3. New Matters for Discussion under General Business

Three new items of business were:

a) WCC Project Approval Modification Update;
b) Questions regarding Water Factsheet; and
c) Werris Creek Coal Business Restructure.

4. Minutes of Previous Meeting

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

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

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

5. Matters Arising

a) Actions from Previous Meeting

a) The WCC Water Fact Sheet was completed and sent out to CCC members for comment;
b) LPSC endorsed the Community Enhancement Fund Project Schedule in correspondence dated 25th May 2015 agreed by the committee on 26th February 2015;
c) Department of Planning & Environment approved Dave Goldman and Mike Lomax as Community Representatives in correspondence dated 11th May 2015.

b) Other Matters Arising

None.

6. Environmental Monitoring Report: February, March and April 2015

Meteorology – February and March 2015 were warm to hot temperatures and well below average rainfall; while April 2015 was mild to warm temperatures and above average rain (highest April rainfall since 2005). For the last three months the prevailing wind direction was a south-south easterly wind transitioning to north-north westerly wind.

Air Quality – All TSP, PM10 and PM2.5 dust results were within criteria during the period. There were a number of dust deposition gauges which recorded elevated dust levels above 4.0g/m^2/month due to either localised dust sources unrelated to mining activities (when compared to low levels at other nearby dust gauges) or excessive organic matter which is unrelated to mining activity. All locations had an annual average below 4.0g/m^2/month except for DG20 ("Tonsley Park" – WCC owned) due to adjacent disturbed land (<100m) from harvesting during September and October and then by a lighting strike on 24th November 2014 resulting in a fire burning the stubble in the same paddock.

Overall the dust fallout levels adjacent to the train line are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC. For five of the six dust gauges (excluding DDE30) the annual average for 2013-2014 was slightly higher than the previous year reflecting the regional increase in dust levels due to the below average rainfall.

There were five dust complaints during the period from three events on the 9th and 24th February and 5th March 2015. Three dust complaints were related to dust haze sitting over the mine on the morning of the 9th February 2015 that was trapped by a strong temperature inversion and the other two dust complaints occurred on days with high wind speeds.

Noise – There were no noise exceedances during February, March and April 2015. The last recorded noise exceedance was in October 2014. There were no noise complaints during the period.

Blasting – During the period a total of thirty three blasts were fired by WCC. All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s) with one blast recording an overpressure level between 115dB(L) and 120dB(L) (representing 1.4% of total blasts and less than the 5% criteria) on 4th March 2015 at the "Kyooma" monitor that was likely affected by the high winds on the day. There were seven blast complaints during the period from five separate blast events on 10th February, 13th and 27th March, 2nd and 10th April 2015. All blasts were in compliance however six blasting complaints were related to vibration impacts with five of the complaints specifically for G Coal Interburden blasts that have caused community complaints in the past even though each shot was designed and achieved a vibration level less than 1mm/s. One blasting complaint on 27th March 2015 was in relation a black dust cloud generated by a thru-seam blast which is darker than other blasts due to the coal within the blasted ground.

Groundwater – The dry weather in February and March 2015 reflected the continuing dry conditions resulting in no rainfall recharge to aquifers with the majority of monitoring bores groundwater levels declining over the period. All groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced due to the dry conditions. There was one groundwater complaint during the period due to declining groundwater levels.

Surface Water – Quarterly surface water monitoring found onsite and offsite water quality to be within longer term averages and the Site Water Management Plan trigger values.

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 were seventeen complaints received during the period with the details summarised below. There were seven complaints related to blasting; five complaints related to dust; two complaints relating to odour; one complaint related to heritage; one complaint related to lighting and one complaint relating to groundwater. There were ten different complainants during the period with fourteen complaints from Werris Creek residents and one

complaint from a Quipolly resident and one complaint each from the Office of Environment and Heritage and Environment Protection Authority.

Motion moved to accept the Environmental Monitoring Report for February, March and April 2015.

Moved: Col Stewart. Seconded: Geoff Dunn. Motion Carried.

Lindsay Bridge raised a question regarding the blast vibration complaints as to whether WCC also monitors the blast wave frequencies in addition to the vibration. Andrew Wright responded that the blast wave frequencies were measured and recorded for each blast. While the frequencies were around 10Hz, the physical vibration level of WCC blasts was still well below structural/cosmetic damage thresholds.

6. General Business

a. Community Enhancement Fund (CEF) Update

Liverpool Shire Plains Council wrote (letter dated 25th May 2015) to the CCC indicating it is in agreement with the revised CEF Project Schedule (dated 13th March 2015).

Donna Ausling provided an update on the Hoamme Park Playground Project indicating that a site had been selected and a Master Plan prepared but was still waiting on ARTC to provide the owner's consent as part of the Development Application for the expansion of the playground facilities.

Liverpool Shire Plains Council had progressed planning for additional public seating in Single Street, Werris Creek outside of the main CBD. The funding from the CEF will be able to purchase an additional four seats plus a bench seat.

The opening of the new elevator funded by the CEF at the Werris Creek Railway Museum will be held on 8th July 2015 (**note: this was announced at the meeting as 9th July however the date has subsequently changed**) at 2:30pm. All CCC community representatives were invited to attend the opening.

Donna Ausling raised a request from the Spring Ridge community for funding to install soft fall in the playground. The Committee agreed that this project was aligned with existing funding proposed from the CEF; with Donna Ausling to confirm the details of the request at the next CCC meeting.

The Committee was advised of the upcoming WCC Community Meeting open to Werris Creek residents on the 17th June 2015, 6pm at the Werris Creek Tennis and Bowling Club.

b. Business Re-structure

The continuing decline in the international coal price has meant that Whitehaven Coal has had to restructure the WCC business with new rosters commencing on 25th June 2015. Unfortunately this has meant a small reduction in the number of employees with the revised roster for the production operators now only Monday to Friday (6am to 2:40am) with no production on Saturdays and Sundays (unless required for overtime). Maintenance and Train Loading will continue to be 24 hours a day - 7 days per week. Werris Creek Coal will commence a three week production shutdown on the 9th June 2015 due to large coal stockpiles and a depressed coal market with operations recommencing on the 1st July 2015.

c. WCC Project Approval Modification Update

WCC has prepared an *Environmental Assessment* to accompany an application to the Department of Planning & Environment for a modification to the Project Approval under which

WCC currently operates (PA 10_0059). Public exhibition of the Environmental Assessment report into the proposed minor modifications is available for the public to review at the Werris Creek Library, Council Chambers or online.

d. Water Fact Sheet

The new Water Fact Sheet on WCC water usage generated a lot of passionate debate by the Committee. In particular, Noel Taylor and Mike Lomax raised the following items:

- How will farmers access the water as the cost of trucking water is prohibitive? Andrew Wright added that the details of the transfer of void water to neighbouring farms for agricultural use has not been finalised as the modification application has not yet been approved. How the water will be transferred will be subject to a contract between WCC and each individual farmer but the most feasible option would be to run a pipeline to a common boundary for the farmer to connect into the pipeline;
- Can the Water Fact Sheet be more broadly circulated in the community perhaps with the distribution of the next newsletter? Andrew Wright responded that the Water Fact Sheet will be posted to Quipolly residents with the Autumn 2015 edition of the WCC Community Newsletter;
- Is void water within dams available firefighting purposes? Andrew Wright responded that WCC had a good relationship with the NSW Rural Fire Service Liverpool Range Zone command; who were aware that the water within the dams was available for firefighting;
- Did not believe the details in the Water Fact Sheet such as WCC only extracts 100ML of groundwater per year (thought it was much higher) and questioned how could WCC receive 600ML of runoff from rain when the region is in drought? It was alleged that WCC was now the cause of the Quipolly Alluvium aquifer groundwater level decline evidenced by the use of evaporators wasting water by blowing it into the air. Andrew Wright responded that the groundwater monitoring and modelling was undertaken by suitably experienced consultants who determined that only 100ML of groundwater is intercepted in pit per year based on water meters that measure how much void water is pumped out of the pit; void water pumped back in pit for spontaneous combustion management and rainfall runoff modelling. If the transfer of void water to farmers for agricultural use is approved by the EPA and DP&E, WCC may reduce evaporator use. To demonstrate how approximately the rainfall runoff modelling estimates the volume of water added to the pit area by rainfall each year; Andrew Wright undertook the following calculations for the Committee:

Surface Area of WCC Pit Area = ~250ha = 2,500,000m^2 (see below figure)

Annual Rainfall for 2014-2015 = 513mm = 0.513m

Approximate Runoff Coefficient for WCC = 50% (0.5 is a lower end estimate for hardstand surfaces runoff coefficients)

Estimated Volume of Rainfall Runoff into WCC Pit Area per year = 2,500,000 x 0.513 x 0.5
= 641,250m^3 x (1000L/m^3)
= 641,250,000L / (1,000,000L/ML)
= 641ML

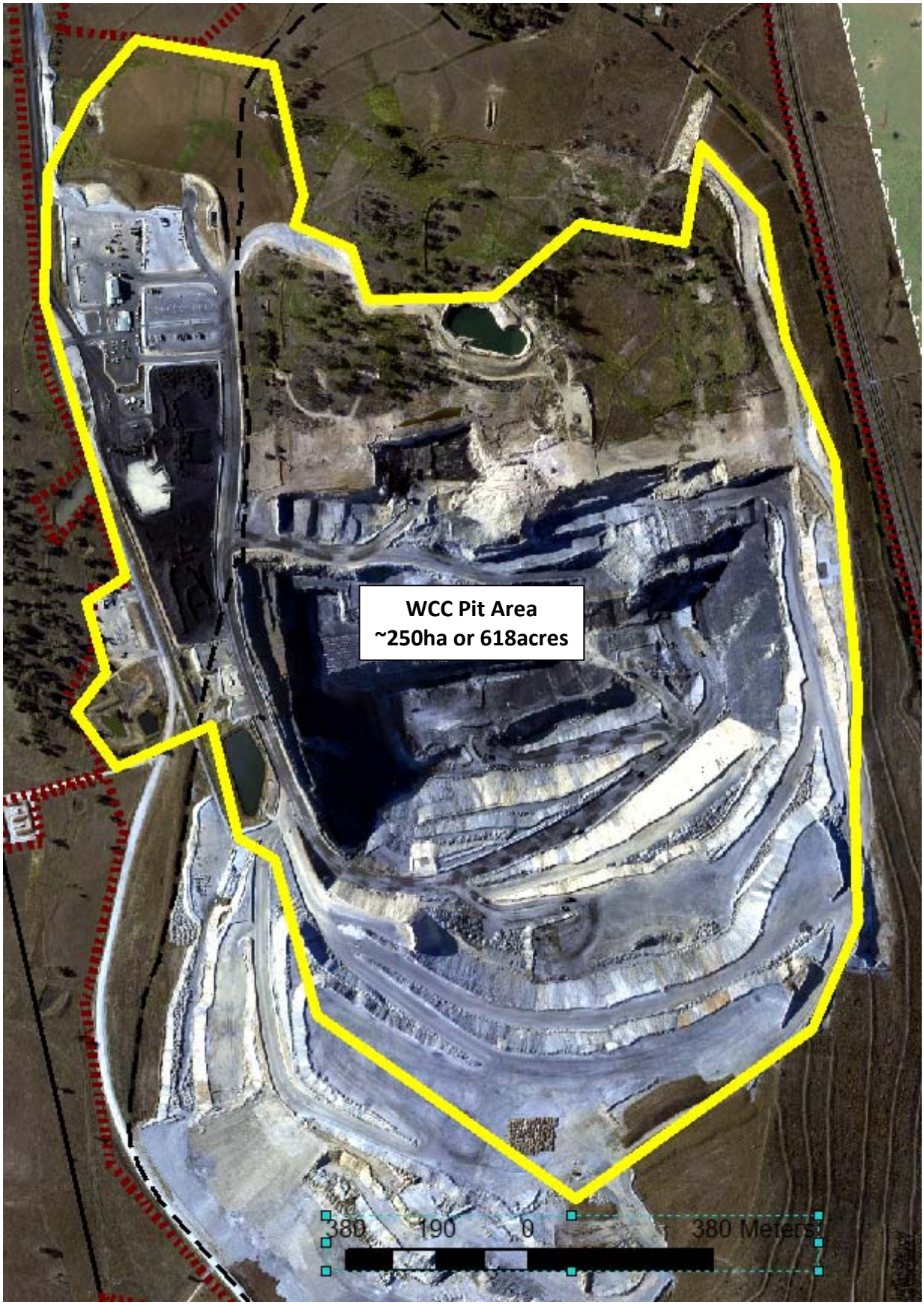
Meeting Closed 12:00pm.

Next Meeting scheduled for Thursday 27th August 2015.

Copy to:

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Geoff Dunn	Community Representative
Mike Lomax	Community Representative
Dave Goldman	Community Representative

Ron Van Katwyk	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Andrew Wright	Werris Creek Coal
Wayne Jones	DPE		
John Trotter	DRE		
Kharl Turnbull	EPA		



WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

February, March and April 2015

This Environmental Monitoring Report covers the period 1st February 2015 to 30th April 2015 for the Werris Creek No.2 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

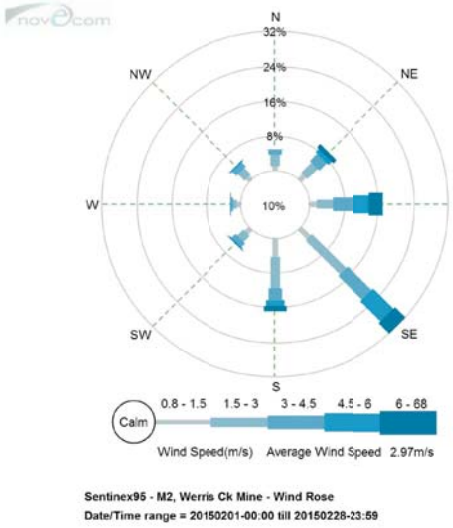
1.0 METEOROLOGY

1.1 WEATHER STATION

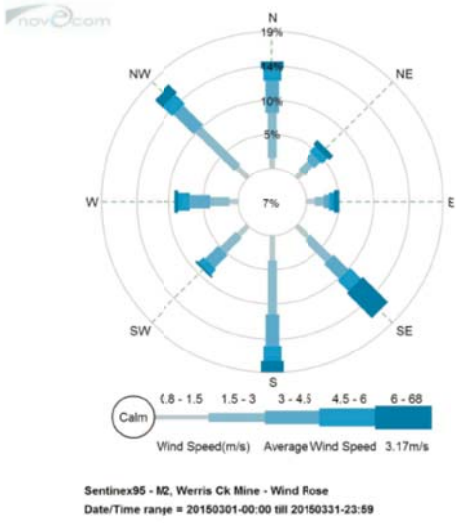
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. February and March 2015 were warm to hot temperatures and well below average rainfall; while April 2015 was mild to warm temperatures and above average rain (highest April rainfall since 2005). For the last three months the prevailing wind direction was from the south-south easterly transitioning to north-north westerly winds.

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 2015	8.6	23.4	34.9	12.1	23.8	34.4	12.6	23.3	33.3	-0.8	+3.6	17.2	20.4	33.4	479.2
March 2015	5.1	21.7	37.6	9.2	22.7	37.1	10.6	22.6	36.1	+0.5	+7.1	34.2	26.6	30.0	513.4
April 2015	1.6	16.5	29.3	4.9	17.0	29.0	7.2	16.9	27.8	0.0	+5.0	75.2	61.2	67.6	75.2

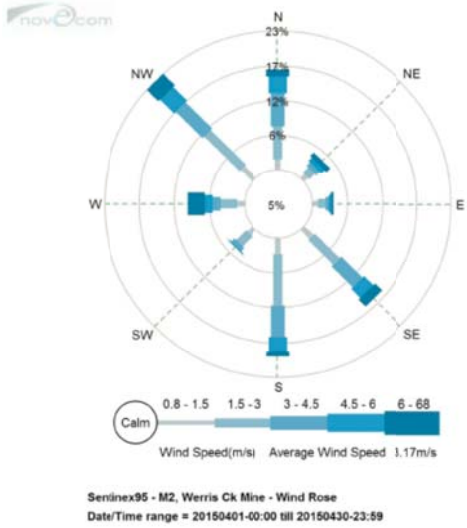
* Annual cumulative total since July 2012 to June 2013 from a composite data set based on the onsite Weather Station at WCC.



February 2015



March 2015



April 2015

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”

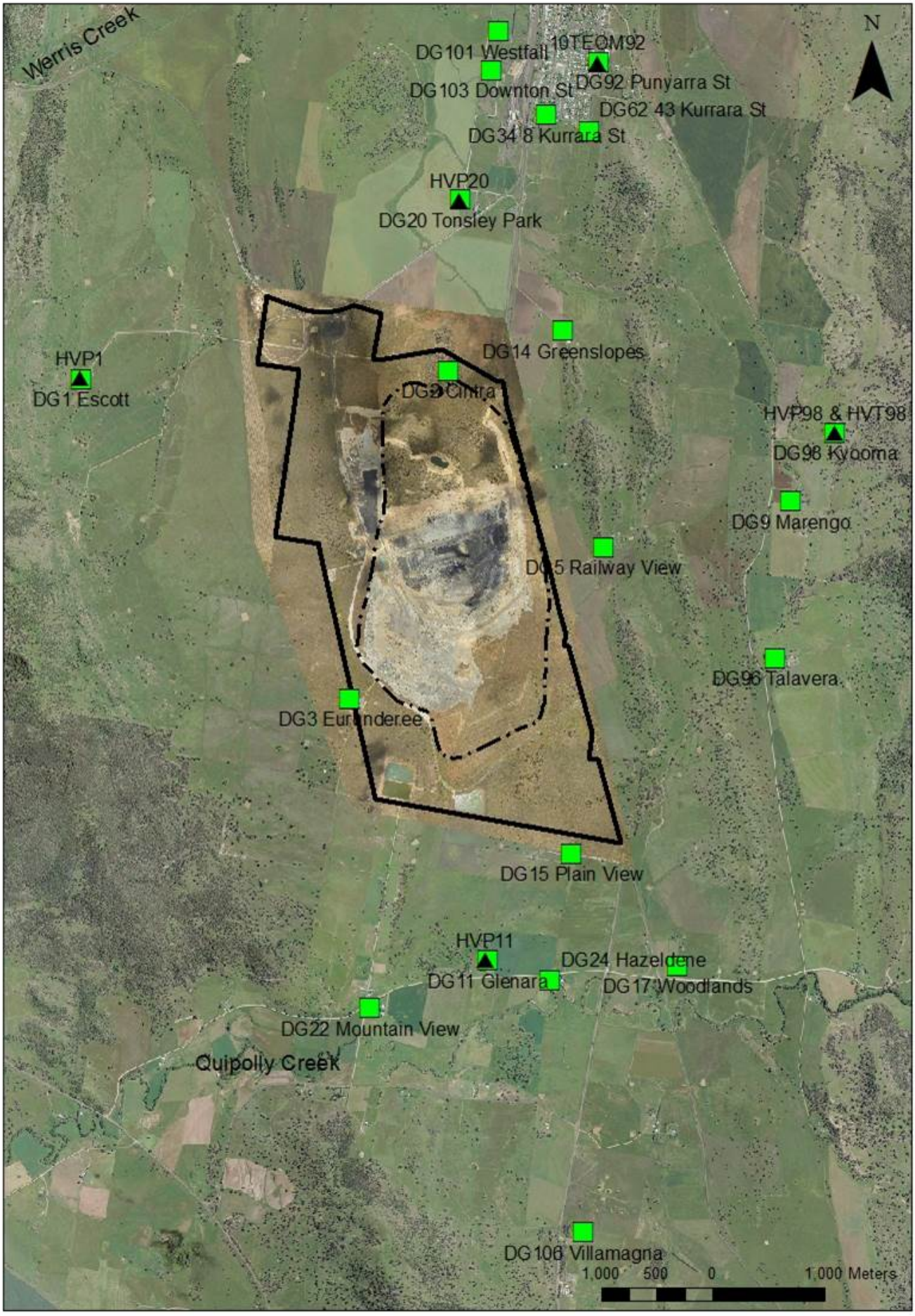


Figure 1 – WCC Dust Monitoring Locations

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 2015 (µg/m^3)	March 2015 (µg/m^3)	2014-2015 Average (µg/m^3)	April 2015 (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	7.8	4.0	3.5	7.3	3.1	8	25
PM10 – TEOM92 "Werris Creek"	12.7	8.5	7.9	12.3	5.5	30	50
PM10 – HVP20 "Tonsley Park"	33.8	11.3	17.5	14.9	12.8	30	50
PM10 - HVP1 "Escott"	23.5	8.1	14.7	9.8	7.6	30	50
PM10 – HVP20 "Glenara"	34.5	10.7	19.8	18.4	15.6	30	50
PM10 – HVP98 "Kyooma"	25.4	5.4	13.1	9.3	7.3	30	50
TSP – HVT98 "Kyooma"	53.9	9.9	26.0	16.8	13.7	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 micron 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 metre squared 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 2015 (g/m^2/month)	March 2015 (g/m^2/month)	2014-2015 Average (g/m^2/month)	April 2015 (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	1.2*	1.4	0.7	0.3*	4.0
DG2 "Cintra"	1.4*	1.1*	2.5	1.2*	4.0
DG3 "Eurunderee"	1.3	0.8*	1.7	1.2	4.0
DG5 "Railway View"	1.5	1.0*	1.8	1.9	4.0
DG9 "Marengo"	**c7.1**	**c14.7**	3.1	1.6	4.0
DG11 "Glenara"	0.4*	1.8	1.0	0.8	4.0
DG14 "Greenslopes"	0.5*	0.4*	1.2	1.3	4.0
DG15 "Plain View"	0.6*	0.5*	2.5	1.0	4.0
DG17 "Woodlands"	0.6*	2.0*	1.6	2.6*	4.0
DG20 "Tonsley Park"	0.2*	**c4.2**	**4.2**	**4.4***	4.0
DG22 "Mountain View"	0.5*	0.8	2.1	**4.3***	4.0
DG24 "Hazeldene"	0.6	**c4.8**	1.3	**5.1**	4.0
DG34 8 Kurrara St	0.3*	0.4*	2.8	0.7*	4.0
DG62 Werris Creek South	**c4.3**	0.2*	1.4	**7.7***	4.0
DG92 Werris Creek Centre	0.2*	0.2*	0.5	1.0	4.0
DG96 "Talavera"	0.6*	0.6*	0.9	0.2*	4.0
DG98 "Kyooma"	0.2	0.6*	3.1	0.8	4.0
DG101 "Westfall"	1.1*	1.2	1.0	2.5*	4.0
DG103 West Street	0.6	0.3*	1.1	0.9	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

There were a number of dust deposition gauges which recorded elevated dust levels above 4.0g/m^2/month due to either localised dust sources unrelated to mining activities (when compared to low levels at other nearby dust gauges) or excessive organic matter which is unrelated to mining activity. All locations had an annual average below 4.0g/m^2/month except for DG20 ("Tonsley Park" – WCC owned) due to adjacent disturbed land (<100m) from harvesting during September and October and then by a lighting strike on 24th November 2014 resulting in a fire burning the stubble in the same paddock.

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	February 2015		March 2015		April 2015		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%	1.3	20%	1.0	10%	1.3
DDW20	0.5	10%	1.3	30%	1.1	10%	1.6
DDW13	0.3	30%	1.3	25%	0.8	5%	1.2
Train Line							
DDE13	0.4	15%	1.1	60%	1.2	20%	1.5
DDE20	0.4	5%	1.0	10%	1.1	10%	1.5
DDE30	2.2	5%	1.9	5%	1.1	5%	1.7

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fallout levels adjacent to the train line are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC. For five of the six dust gauges (excluding DDE30) the annual average for 2013-2014 was slightly higher than the previous year reflecting the regional increase in dust levels due to the below average rainfall.

2.4 AIR QUALITY COMPLAINTS

There were five dust complaints during the period from three events on the 9th and 24th February and 5th March 2015. Three dust complaints were related to dust haze sitting over the mine on the morning of the 9th February 2015 that was trapped by a strong temperature inversion and the other two dust complaints occurred on days with high wind speeds. 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.

- 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**.

Tuesday 17th February 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	25#	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Faintly Audible	37/36[1]	25#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Inaudible#	39	Inaudible#	39
D	**"Hazeldene"** R24	Inaudible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Faintly Audible#	38	Inaudible#	38
F	**"Talavera"** R96	Inaudible#	38	Inaudible#	37
G	R97	25#	35	Inaudible#	35
H	**"Kyooma"** R98*	Faintly Audible#	36	Inaudible#	36
I	**Kurrara St, WC**	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible#	35
K	**South St, WC** (R20*, R21*)	Inaudible#	39	Inaudible#	37
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 5th March 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#	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Inaudible#	39	Inaudible#	39
D	**"Hazeldene"** R24	Faintly Audible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible#	38
F	**"Talavera"** R96	Faintly Audible#	38	24#	37
G	R97	26#	35	27#	35
H	**"Kyooma"** R98*	Inaudible#	36	29#	36
I	**Kurrara St, WC**	Inaudible#	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible#	35	Faintly Audible#	35
K	**South St, WC** (R20*, R21*)	Inaudible#	39	30#	37
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 28th April 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	37/36[1]	Faintly Audible	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Faintly Audible	39	Inaudible#	39
D	**"Hazeldene"** R24	Inaudible	37	Faintly Audible	37
E	**"Railway Cottage"** R12	Inaudible	38	Inaudible#	38
F	**"Talavera"** R96	Inaudible	38	Inaudible#	37
G	R97	Inaudible#	35	Inaudible#	35
H	**"Kyooma"** R98*	Inaudible	36	Inaudible#	36
I	**Kurrara St, WC**	Inaudible	35	Inaudible#	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**South St, WC** (R20*, R21*)	23#	39	23#	37
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) $L_{eq\ 15min}$

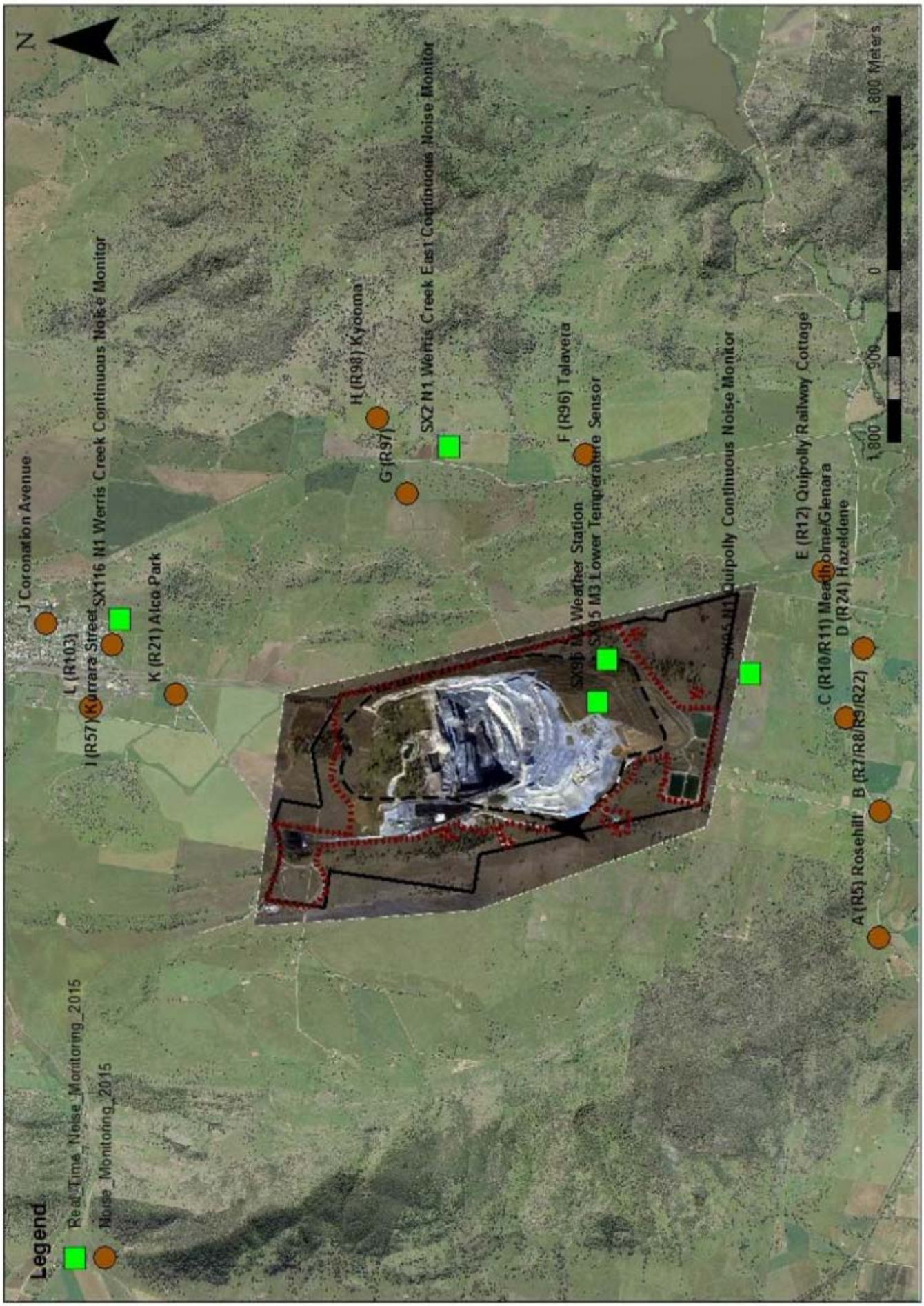


Figure 2 – WCC Noise Monitoring Locations

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during February, March and April 2015. The last recorded noise exceedance was in October 2014.

3.2 NOISE COMPLAINTS

There were no noise complaints during the period. Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

During the period a total of thirty three 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 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	102.7	0.58	102.3	0.28	100.3	0.17	100.4
Monthly Maximum	0.32	112.9	1.00	112.3	0.46	110.4	0.29	107.6
Annual Average	0.15	100.2	0.73	100.5	0.34	97.8	0.22	97.4
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	0.8%	0%	1.2%	0%	0%
# Blasts >0.5mm/s	8 out of 14 blasts							

March 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	100.9	0.94	101.0	0.38	101.0	0.25	98.6
Monthly Maximum	0.30	111.3	1.90	115.3	0.83	108.3	0.47	106.1
Annual Average	0.15	100.0	0.71	100.5	0.35	97.8	0.21	98.1
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	1.4%	0%	1.2%	0%	0%
# Blasts >0.5mm/s	9 out of 12 blasts							

April 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	0.22	95.7	1.06	96.7	0.49	94.4	0.23	94.2
Monthly Maximum	0.29	98.4	2.42	105.0	0.86	103.0	0.34	102.4
Annual Average	0.22	95.7	1.06	96.7	0.49	94.4	0.23	94.2
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Blasts >0.5mm/s	6 out of 7 blasts							

Yellow – overpressure >115dB(L) or Werris Creek vibration >1mm/s.

4.1.2 Discussion - Compliance / Non Compliance

All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s) with one blast recording an overpressure level between 115dB(L) and 120dB(L) (representing 1.4% of total blasts and less than the 5% criteria) on 4th March 2015 at the "Kyooma" monitor that was likely affected by the high winds on the day.

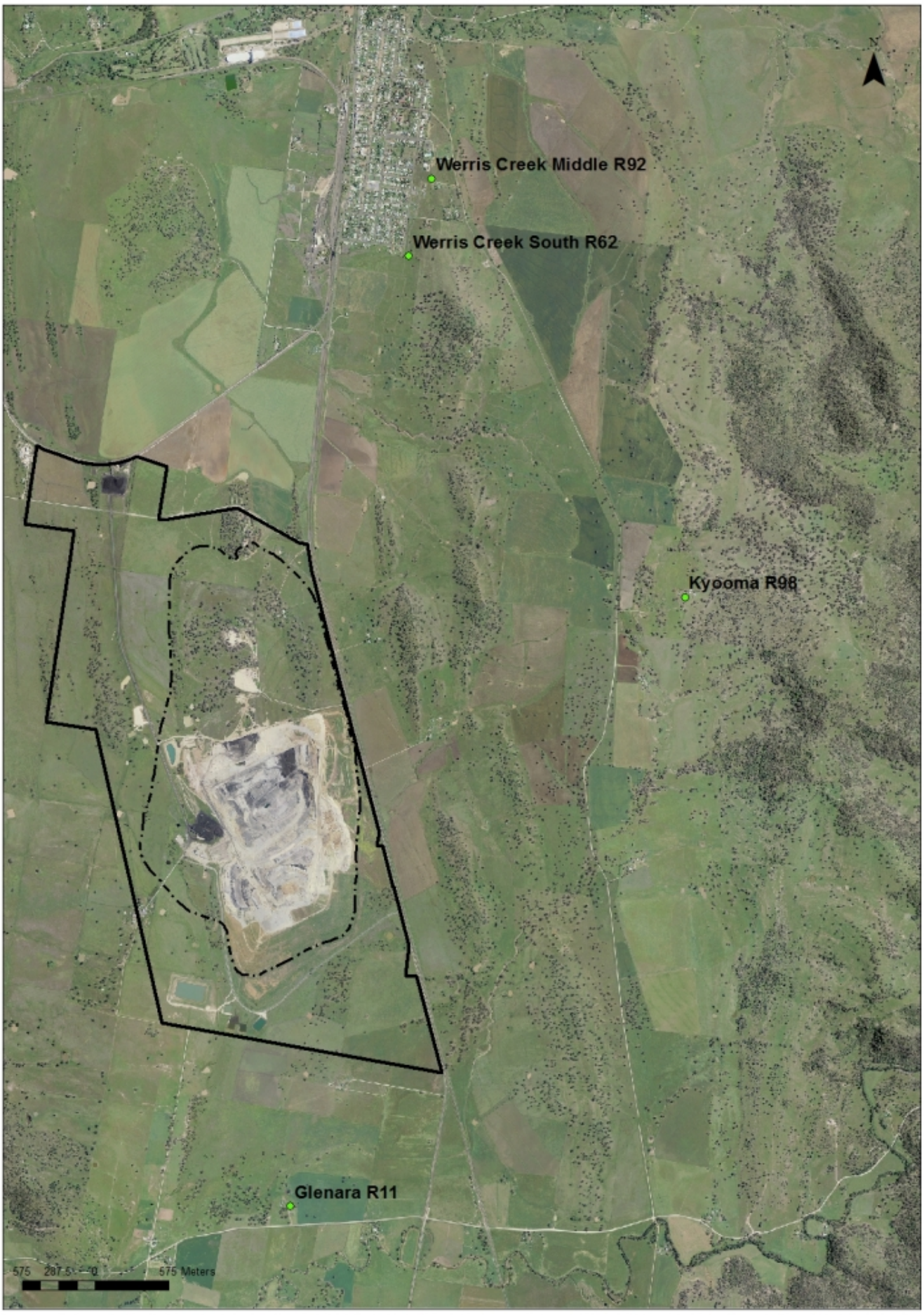


Figure 3 – WCC Blast Monitoring Locations

4.2 BLAST COMPLAINTS

There were seven blast complaints during the period from five separate blast events on 10th February, 13th March, 2nd and 10th April 2015. All blasts were in compliance however six blasting complaints were related to vibration impacts with five of the complaints specifically for G Coal Interburden blasts that have caused community complaints in the past even though each shot was designed and achieved a vibration level less than 1mm/s. One blasting complaint on 27th March 2015 was in relation a black dust cloud generated by a thru-seam blast which is darker than other blasts due to the coal within the blasted ground. 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 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 31 groundwater 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 and six monthly/annual groundwater quality monitoring was completed between the 16th and 25st March 2015. Groundwater and Surface Water 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	Mar 2015 mgbl		Comments
Werrie Basalt Near WCC	**MW1**	**60.82**	-2%	No rainfall recharge, Level down
	MW2	**31.84**	-3%	No rainfall recharge, Level down
	MW3	**18.15**	-2%	No rainfall recharge, Level down
	MW4B	**14.68**	-2%	No rainfall recharge, Level down
	MW5	**11.46**	-2%	No rainfall recharge, Level down
	MW6	**14.18**	-2%	No rainfall recharge, Level down
	MW27*	50.04	3%	Limited rainfall recharge
	MW36A	24.34	0%	Limited rainfall recharge
	MW36B	24.04	1%	Limited rainfall recharge
Werrie Basalt	**MW8***	18.61	-1%	No rainfall recharge, Level down
	MW10	17.24	0%	Limited rainfall recharge
	MW14	19.21	1%	Limited rainfall recharge
	MW17B*	17.60	-31%	Windmill in operation at time of monitoring
	MW19A*	9.26	-2%	Water level measured while bore operating
	MW20*	21.02	-1%	No rainfall recharge, Level down
Quipolly Alluvium	**MW7***	4.85	2%	Limited rainfall recharge
	MW12*	**12.24**	-3%	No rainfall recharge, Level down
	MW13*	**6.63**	-3%	No rainfall recharge, Level down
	MW13B*	**5.15**	-5%	No rainfall recharge, Level down
	MW13D*	5.16	-3%	No rainfall recharge, Level down
	MW15*	**6.15**	-4%	No rainfall recharge, Level down
	MW16*	**7.27**	-4%	No rainfall recharge, Level down
	MW17A*	**6.32**	-4%	No rainfall recharge, Level down
	MW18A*	**6.28**	-5%	No rainfall recharge, Level down
	MW21A*	10.10	2%	Limited rainfall recharge
	MW22A*	**7.41**	-3%	No rainfall recharge, Level down
	MW22B*	**7.68**	-3%	No rainfall recharge, Level down
	MW23A*	4.03	-2%	No rainfall recharge, Level down
	MW23B*	4.23	-1%	No rainfall recharge, Level down
	MW28A*	**14.26**	-2%	No rainfall recharge, Level down
	MW32*	4.19	2%	Limited rainfall recharge

mbgl – meters below ground level is the distance in meters from top of bore to groundwater surface; Red – Greater than 15% change/potential compliance issue; 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).

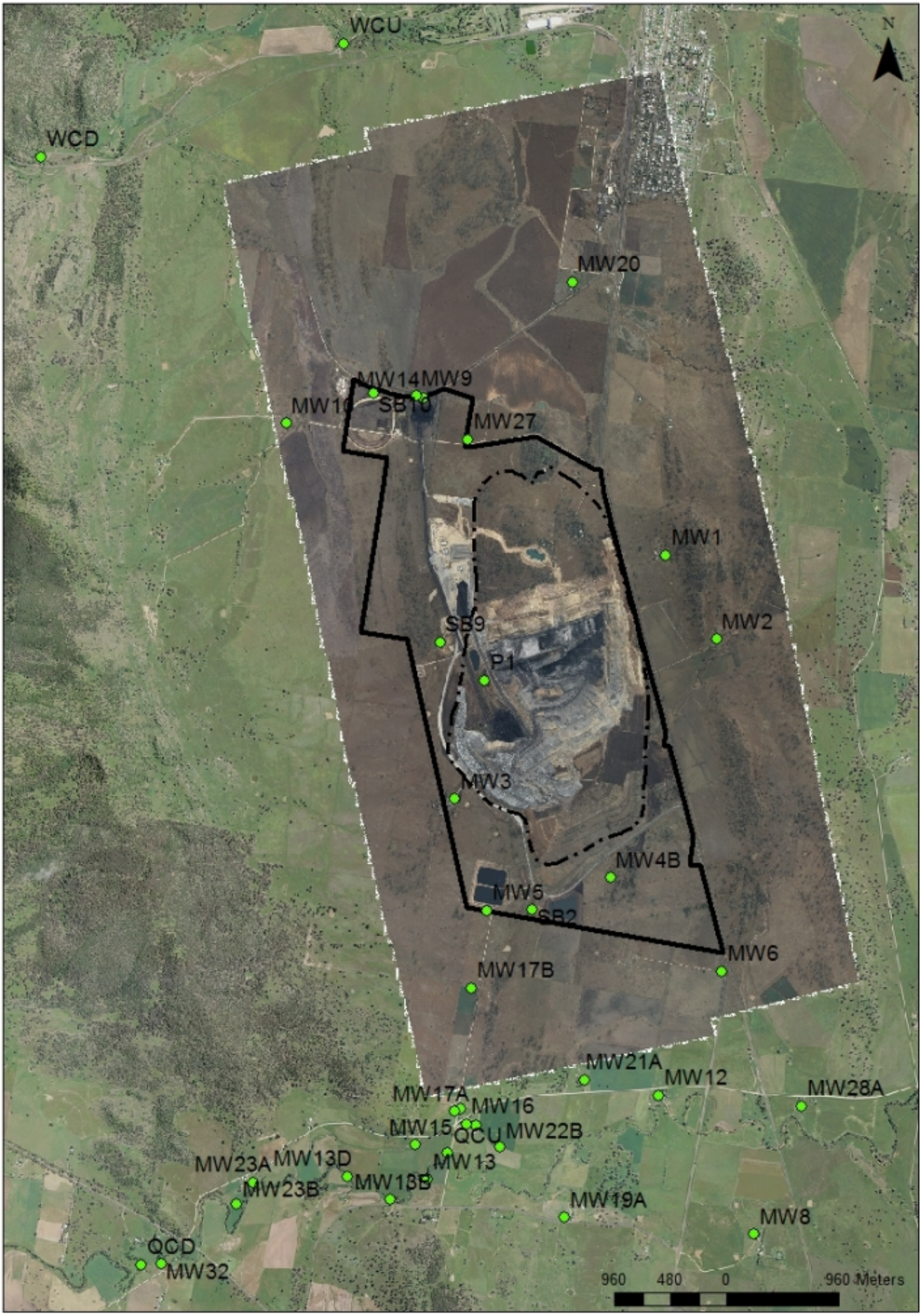


Figure 4 – WCC Groundwater and Surface Water Monitoring Locations

5.1.2 Discussion - Compliance / Non Compliance

The dry weather in February and March 2015 reflected the continuing dry conditions resulting in no rainfall recharge to aquifers with the majority of monitoring bores groundwater levels declining over the period. All groundwater bores routinely monitored are at or close to record low groundwater levels since monitoring commenced due to the dry conditions.

5.2 SURFACE WATER

Surface water monitoring is undertaken from 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 19th February 2015.

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	Dry	Dry	Dry	Dry	Dry.
SB10	Dry	Dry	Dry	Dry	Dry.
OFFSITE					
QCU	8.04	1540	33	<5	pH increased 0.15, EC increase 120, TSS decreased 43, O&G no change.
QCD	8.07	1170	8	<5	pH increased 0.07, EC increased 90, TSS decreased 9, O&G no change.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.32	1240	40	5	pH decreased 0.02, EC decreased 160, TSS increased 2, O&G increased 5.

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 19th February 2015 with all onsite and offsite water quality within longer term averages and the Site Water Management Plan trigger values despite most locations were either dry or concentrated in small pools/not flowing.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no discharge events during the period. A summary of discharge monitoring results is provided below with the laboratory reports provided in **Appendix 8**.

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 a result of the dirty water discharge events.

5.3 WATER COMPLAINTS

There was one groundwater complaint during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer which had a number of bores at the lowest levels ever measured by WCC. Specific action taken in relation to this complaint is outlined in **Section 6.**

6.0 COMPLAINTS SUMMARY

There were seventeen complaints received during the period with the details summarised below. There were seven complaints related to blasting; five complaints related to dust; two complaints relating to odour; one complaint related to heritage; one complaint related to lighting and one complaint relating to groundwater. There were ten different complainants during the period with fourteen complaints from Werris Creek residents and one complaint from a Quipolly resident and one complaint each from the Office of Environment and Heritage and Environment Protection Authority.

#	Date	Complainant	Complaint	Investigation	Action Taken
454 to 456	9/02/2015 7:32am	U, AH, EPA /Anonymous Werris Creek	A dust haze was present over the open cut on Monday morning 9th February 2015 from load face dust and spontaneous combustion gases trapped under a temperature inversion.	Weather conditions at 7am were a very light southerly wind (182o) @ 0.8m/s with a strong inversion present (+6.7oC/100m). WCC was mining through a hot area of former underground workings (Panel 3) with gas/thermals resulting in dust from 3600 load face as well as 5600 load face being dusty. Sprinklers had been used since previous week to manage hot area. Two 773 water carts operating from 5am before shift start. 3600 commenced loading from another area and water cart set up at 5600 digface to wet another area and water cart set up at 5600 digface to wet loads. The area will be excavated and extinguished in a week.	No dust issues the following morning as no inversion present. Written response provided to Complainants.
457	10/02/2015 1:10pm	U Werris Creek	Blast shook house disturbing the resident.	WCC shot #24-2015 (S18_B11-B12_RL390) fired at 1:08pm on Tuesday 10th February 2015 was in compliance. Actual blast vibration was below the predicted vibration but close to the anecdotal threshold for vibration complaints of 0.5mm/s. Weather conditions were a moderate easterly wind (105o) @ 3.3m/s with no inversion present.	Written response provided to complainant.
458	13/02/2015 10am	AG Quipolly	Concerned about groundwater level decline resulting in the loss of access to water and how that will affect their livelihood.	A measurement was taken on 16th February 2015 at 9.43m. Despite groundwater levels declining 0.75m since September 2014; the data indicates mining is not the cause of the groundwater decline.	Complainant did not request a response.
459	24/02/2015 12pm	OEH/Anonymous Unknown	Not watering of grinding groove rocks as per 2007 Heritage Management Plan risks breaking to occur during relocation.	LPSC & WCC consulted with Nungaroo LALC and determined that watering of rocks is not required.	Written response provided to DP&E and OEH.
460	24/02/2015 4:18pm	U Werris Creek	Excessive dust generated from top of overburden emplacement.	All mine operations were located in pit (~100m below surface) and dumping in pit (~30m below surface) with no visible dust leaving the mine site. Weather conditions at 4pm were a strong southerly wind (181o) @ 9.7m/s with no inversion present.	Written response provided to complainant.
461	5/03/2015 6:38pm	U Werris Creek	Excessive dust generated from mine.	Dozer was undertaking drill prep and pushing dirt off a 50m high wall in strong southerly winds creating a lot of dust lasting for approximately 15 minutes when the OCE identified the dust and stopped the activity. Weather conditions at 4pm were a strong south south westerly wind (200o) @ 7.4m/s with no inversion present.	Written response provided to complainant.
462 & 463	6/03/2015 9:41pm & 9/03/2015 8:21am	U Werris Creek	Sulfur like smell coming from mine.	Due to different wind directions present at the time of the complaints and long distances (>4km) between the complainant and WCC, it is not possible to confirm the source of the odour. Spontaneous combustion events did occur at various stages during the period, in particular adjacent to the former underground workings. Sprinkler set up to wet down eastern spontaneous combustion area and seal pushed in over western spontaneous combustion area.	Written response provided to complainant.
464 & 465	13/03/2015 1:59pm	BI & BM Werris Creek	Blast shook house disturbing the resident.	WCC shot #41-2015 (S14_B7-B10_RL290_TSB) fired at 1:59pm on Friday 13th March 2015 was in compliance. Actual blast vibration was above the predicted vibration of 0.7mm/s and above the anecdotal threshold for vibration complaints of 0.5mm/s. Weather conditions were a strong south easterly wind (140o) @ 6.9m/s with no inversion present. Vibration frequency measured at Werris Creek South was 15Hz which could have attenuated to ~10Hz at the complainants residences.	Written response provided to complainant. Offer to undertake blast monitoring at complainants for next similar shot.
466	27/03/2015 1:14pm	C Werris Creek	Large black horrible dust cloud hanging over the coal mine.	WCC shot #47-2015 (S15_B18-B22_RL320_TSB) fired at 1:08pm on Friday 27th March 2015 was in compliance. The blast was a thru-seam blast which produces a darker dust due to the coal seams in the blast but also the ground was dry and the pit swirled the dust cloud across the pit. Weather conditions were a light southerly wind (171o) @ 1.7m/s with no inversion present.	Written response provided to complainant.

467	2/04/2015 12:28pm	U Werris Creek	Blast shook house resulting in floor boards to move beneath feet.	WCC shot #49-2015 (S14_B15-B17_RL260_TSB) was fired at 12:22pm on Thursday 2nd April 2015 was in compliance. Actual blast vibration was below the predicted vibration but was at the anecdotal threshold for vibration complaints of 0.5mm/s. Weather conditions were a light westerly wind (286o) @ 1.4m/s with no inversion present.	Written response provided to complainant.
468 & 469	10/04/2015 1:02pm	U & W Werris Creek	Complainant's children felt blast vibration in the house.	Blast #50-2015 S14_B12-B15_RL275 was fired at 1:02pm on Friday 10th April 2015 was in compliance. Actual blast vibration was above the predicted vibration of 0.7mm/s and also above the vibration target of 0.8mm/s. Community complaints for blasting are likely above the anecdotal threshold of 0.5mm/s. Weather conditions were a moderate south easterly wind (127o) @ 4.1m/s with no inversion present.	Add a delay between firing a production shot and pre-split shot to minimise vibration reinforcement particularly in the lower strata of the pit with a high history of community complaints. Written response provided to complainant.
470	30/04/2015 3:51pm	DP&E/A Werris Creek	A light at the Train Load Out directed towards the complainant's residence on 29th and 30th April 2015.	The first train loaded in a fortnight due to rail outage and Hunter Valley flood occurred on Wednesday evening 29th April 2015.The lighting camera identifies the dominant light from the dozer on the Product Coal Stockpile is mobile and was more visible due to the loading of a train between 18:25 and 20:17. No fixed lighting impact was visible and light intensity of dozer equivalent to that of lights of vehicles traveling on Werris Creek Road. Same result identified on Thursday evening 30th April 2015 with no fixed lighting impact identified.	Written response provided to DP&E.

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
04-Apr-14							-	8.4	#DIV/0!	6	2.5	6.2	8	3.9	8.3	14	7.0	13.7	13	5.5	12.6	50	30	90
10-Apr-14		4.5			7.3		19	**14.4**	18.8	10.7	**7.2**	8.5	12.4	**8.8**	10.4	18	**18.2**	15.8	16.2	**12.3**	14.4	50	30	90
16-Apr-14		**9.7**	9.7		**15.1**	15.1	10	14.2	14.2	5	6.2	7.3	6	8.3	8.8	31	17.8	20.7	7	12.6	11.9	50	30	90
22-Apr-14		9.6			16.1		21	20.7	16.4	12	11.5	8.4	14	14.0	10.1	22	30.5	21.0	21	20.5	14.0	50	30	90
28-Apr-14		17.4			23.5		8		14.4	3		7.2	4		8.8	7		18.2	6		12.3	50	30	90
04-May-14		6.1			8.4		3	2.6	12.0	2	2.1	6.4	2	2.3	7.8	1	1.3	15.4	4.5	4.5	11.0	50	30	90
10-May-14		**12.2**	11.0		**16.9**	16.0	12	**13.0**	11.9	12	**8.8**	7.1	9	**6.5**	7.9	16	**15.1**	15.4	15	**14.1**	11.6	50	30	90
16-May-14		12.3			16.5		15	13.2	12.3	4	8.0	6.8	4	6.6	7.5	18	16.9	15.7	7.7	11.6	11.2	50	30	90
22-May-14		19.4			34.7		23	22.9	13.7	17	16.9	7.9	11	10.7	7.8	25	25.1	16.8	29	28.7	13.1	50	30	90
28-May-14							8		13.1	14		8.5	8		7.8	11		16.2	25		14.3	50	30	90
03-Jun-14		4.0			5.3		7	3.5	12.4	7	2.5	8.3	4	2.2	7.5	4	2.3	15.1	9	3.8	13.7	50	30	90
09-Jun-14		**9.7**	10.5		**13.1**	15.0	8	**6.6**	12.0	9	**7.3**	8.4	4	**4.1**	7.2	4	**4.9**	14.2	6	**9.9**	13.0	50	30	90
15-Jun-14		9.8			13.5		4	6.6	11.3	3	6.6	8.0	2	3.9	6.8	2	4.0	13.3	4	6.9	12.3	50	30	90
21-Jun-14		14.1			19.1		6	8.3	10.9	4	14.2	7.7	3	7.8	6.5	3	11.0	12.5	7	24.6	11.9	50	30	90
27-Jun-14							16		11.3	10		7.8	7		6.5	22		13.2	12		12.0	50	30	90
03-Jul-14		1.5			3.8		21	7.2	12.0	10	5.2	8.0	9	5.3	6.7	15	12.0	13.3	12	7.1	12.0	50	30	90
09-Jul-14		**8.3**	10.0		**11.6**	14.1	13	**13.3**	12.0	8	**8.3**	8.0	9	**7.4**	6.8	43	**26.3**	15.1	20	**13.0**	12.4	50	30	90
15-Jul-14		8.4			11.9		10	12.7	11.9	8	8.3	8.0	6	7.0	6.8	39	22.1	16.4	14	12.4	12.5	50	30	90
21-Jul-14		14.7			21.0		7	20.8	11.6	5	10.2	7.8	5	9.4	6.7	12	43.3	16.1	7	19.5	12.2	50	30	90
27-Jul-14							4		11.2	1		7.5	1		6.4	2		15.4	2		11.7	50	30	90
02-Aug-14		0.7			1.9		11	4.3	11.2	6	0.6	7.4	4	1.0	6.3	10	2.2	15.2	22	1.9	12.2	50	30	90
08-Aug-14		**6.7**	9.3		**10.2**	13.3	24	**11.0**	11.8	11	**6.0**	7.6	10	**6.0**	6.5	33	**13.2**	16.0	16	**11.4**	12.3	50	30	90
14-Aug-14		4.0			7.7		10	9.5	11.7	5	6.4	7.5	4	3.9	6.4	11	10.2	15.8	8	9.4	12.2	50	30	90
20-Aug-14		18.1			28.3		7	23.6	11.5	7	11.3	7.5	11	11.2	6.6	10	32.7	15.5	9	21.6	12.0	50	30	90
26-Aug-14							8		11.3	4		7.3	5		6.5	5		15.1	4		11.7	50	30	90
01-Sep-14							12		11.3	6		7.3	3		6.4	17		15.2	8		11.6	50	30	90
07-Sep-14		0.0			0.0		7	7.2	11.2	4	3.9	7.2	6	3.4	6.4	13	5.4	15.1	9	4.1	11.5	50	30	90
13-Sep-14		**4.5**	8.5		**9.2**	12.7	16	**13.2**	11.3	10	**5.6**	7.2	6	**5.6**	6.4	16	**17.0**	15.1	17	**11.1**	11.7	50	30	90
19-Sep-14		4.8			10.5		18	13.9	11.6	6	5.0	7.2	8	5.7	6.4	40	14.7	16.0	20	8.8	12.0	50	30	90
25-Sep-14		9.0			17.3		18	18.3	11.8	4	9.6	7.1	5	8.1	6.4	11	39.7	15.8	8	19.7	11.8	50	30	90
01-Oct-14		4.6			6.8		28	16.4	12.3	13	8.5	7.3	17	7.4	6.7	30	14.6	16.3	25	13.4	12.3	50	30	90
07-Oct-14		**7.8**			**16.6**		30	**25.4**	12.9	22	**14.4**	7.8	21	**15.3**	7.2	27	**23.2**	16.6	39	**26.4**	13.1	50	30	90
13-Oct-14		7.7	8.4		16.1	13.2	19	27.6	13.1	10	13.4	7.8	11	16.5	7.3	19	26.0	16.7	23	24.5	13.4	50	30	90
19-Oct-14		13.1			33.0		16	33.8	13.2	9	22.4	7.9	7	21.3	7.3	15	29.6	16.6	13	38.9	13.4	50	30	90
25-Oct-14							34		13.8	18		8.1	20		7.7	26		16.9	32		13.9	50	30	90
31-Oct-14							42		14.6	23		8.6	30		8.3	62		18.1	46		14.8	50	30	90
06-Nov-14		3.0			3.3		15	15.1	14.6	10	9.8	8.6	11	11.0	8.3	13	12.6	18.0	18	17.6	14.9	50	30	90
12-Nov-14		**10.2**	8.6		**20.0**	14.1	18	**29.9**	14.7	11	**16.9**	8.7	13	**19.0**	8.5	21	**32.7**	18.1	19	**31.6**	15.0	50	30	90
18-Nov-14		10.0			18.8		31	32.2	15.2	16	16.8	8.8	15	17.7	8.6	36	30.9	18.5	31	31.7	15.4	50	30	90
24-Nov-14		18.9			55.5		40	42.1	15.8	23	23.3	9.2	25	29.7	9.1	38	62.4	19.0	44	45.9	16.1	50	30	90
30-Nov-14							9		15.6	9		9.2	10		9.1	13		18.9	15		16.1	50	30	90
06-Dec-14		0.1			1.0		3	2.9	15.3	4	3.6	9.1	4	4.1	9.0	6	6.1	18.6	6	5.5	15.8	50	30	90
12-Dec-14		**6.5**	8.4		**11.8**	13.8	9	**10.8**	15.1	8	**10.7**	9.0	10	**11.4**	9.0	14	**15.1**	18.5	10	**19.2**	15.7	50	30	90
18-Dec-14		6.7			11.2		22	9.2	15.3	22	9.2	9.3	24	9.5	9.3	30	13.2	18.7	43	15.1	16.3	50	30	90
24-Dec-14		11.4			31.8		11	22.2	15.2	11	22.0	9.4	9	23.8	9.3	12	30.4	18.6	23	42.5	16.5	50	30	90
30-Dec-14							17		15.3	13		9.5	12		9.4	18		18.6	27		16.7	50	30	90
05-Jan-15		0.0			0.3		13	6.7	15.2	10	1.0	9.5	13	5.2	9.4	13	7.2	18.5	15	7.2	16.7	50	30	90
11-Jan-15		**4.9**	8.1		**6.8**	13.1	10	**13.0**	15.1	7	**8.0**	9.4	9	**9.9**	9.4	7	**22.6**	18.2	14	**16.1**	16.6	50	30	90
17-Jan-15		5.0			6.3		18	13.3	15.2	9	8.7	9.4	11	10.5	9.4	66	13.1	19.2	18	15.1	16.6	50	30	90
23-Jan-15		9.5			17.6		7	17.9	15.0	1	13.1	9.2	5	12.9	9.4	9	65.6	19.0	7	26.8	16.4	50	30	90
29-Jan-15							16		15.0	4		9.1	6		9.3	7		18.8	7		16.3	50	30	90
04-Feb-15		0.0			0.4		9	6.1	14.9	6	2.8	9.1	10	3.0	9.3	10	7.4	18.6	12	5.2	16.2	50	30	90
10-Feb-15		**4.0**	7.7		**8.5**	12.7	14	**11.3**	14.9	7	**5.4**	9.0	13	**8.1**	9.4	15	**10.7**	18.5	12	**9.9**	16.1	50	30	90
16-Feb-15		4.0			8.8		11	11.4	14.8	7	5.5	9.0	9	9.4	9.4	11	10.4	18.4	13	12.0	16.0	50	30	90
22-Feb-15		8.7			15.8		6	16.4	14.6	3	7.2	8.9	3	12.5	9.2	10	15.1	18.2	5	12.6	15.8	50	30	90
28-Feb-15							11		14.6	8		8.9	11		9.3	13		18.1	13		15.8	50	30	90
06-Mar-15							28		14.8	25		9.2	24		9.5	27		18.3	54		16.5	50	30	90
12-Mar-15		1.8			4.8		12	10.6	14.8	10	7.4	9.2	10	9.6	9.5	11	11.0	18.2	17	13.2	16.5	50	30	90
18-Mar-15		**3.5**	7.3		**7.9**	12.3	17	**17.5**	14.8	15	**13.1**	9.3	19	**14.7**	9.7	22	**19.8**	18.2	33	**26.0**	16.7	50	30	90
24-Mar-15		3.5			8.1		20	16.8	14.9	7	11.6	9.2	12	12.7	9.7	19	20.5	18.2	18	19.5	16.8	50	30	90
30-Mar-15		5.1			10.2		17	28.4	14.9	13	25.4	9.3	13	23.5	9.8	26	27.4	18.4	21	53.9	16.8	50	30	90
Min					**0.0**		**2.6**			**0.6**			**1.0**			**1.3**			**1.9**					
Median					**11.4**		**13.0**			**8.3**			**9.3**			**14.6**			**14.0**					
Max					**55.5**		**42.1**			**25.4**			**29.7**			**65.6**			**53.9**					
Capture							**98%**			**100%**			**100%**			**100%**			**100%**					

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							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							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			0.0			0.0	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							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
28-Apr-14									12.8			7.3			7.6			15.6			13.7	50	30	90
04-May-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
10-May-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
16-May-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
22-May-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
28-May-14									12.8			7.3			7.6			15.6			13.7	50	30	90
03-Jun-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
09-Jun-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
15-Jun-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
21-Jun-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
27-Jun-14									12.8			7.3			7.6			15.6			13.7	50	30	90
03-Jul-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
09-Jul-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
15-Jul-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
21-Jul-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
27-Jul-14									12.8			7.3			7.6			15.6			13.7	50	30	90
02-Aug-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
08-Aug-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
14-Aug-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
20-Aug-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
26-Aug-14									12.8			7.3			7.6			15.6			13.7	50	30	90
01-Sep-14									12.8			7.3			7.6			15.6			13.7	50	30	90
07-Sep-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
13-Sep-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
19-Sep-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
25-Sep-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
01-Oct-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
07-Oct-14								#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
13-Oct-14			#DIV/0!			#DIV/0!		#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
19-Oct-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
25-Oct-14									12.8			7.3			7.6			15.6			13.7	50	30	90
31-Oct-14									12.8			7.3			7.6			15.6			13.7	50	30	90
06-Nov-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
12-Nov-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
18-Nov-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
24-Nov-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
30-Nov-14									12.8			7.3			7.6			15.6			13.7	50	30	90
06-Dec-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
12-Dec-14			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
18-Dec-14								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
24-Dec-14								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
30-Dec-14									12.8			7.3			7.6			15.6			13.7	50	30	90
05-Jan-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
11-Jan-15			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
17-Jan-15								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
23-Jan-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
29-Jan-15									12.8			7.3			7.6			15.6			13.7	50	30	90
04-Feb-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
10-Feb-15			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
16-Feb-15								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
22-Feb-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
28-Feb-15									12.8			7.3			7.6			15.6			13.7	50	30	90
06-Mar-15									12.8			7.3			7.6			15.6			13.7	50	30	90
12-Mar-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
18-Mar-15			#DIV/0!			#DIV/0!		#DIV/0!	12.8		#DIV/0!	7.3		#DIV/0!	7.6		#DIV/0!	15.6		#DIV/0!	13.7	50	30	90
24-Mar-15								#NUM!	12.8		#NUM!	7.3		#NUM!	7.6		#NUM!	15.6		#NUM!	13.7	50	30	90
30-Mar-15								0.0	12.8		0.0	7.3		0.0	7.6		0.0	15.6		0.0	13.7	50	30	90
Min					**0.0**			**3.1**			**1.5**			**1.2**			**1.8**			**5.0**				
Median					**#NUM!**			**7.1**			**3.4**			**4.3**			**13.0**			**8.0**				
Max					**0.0**			**33.8**			**21.0**			**20.8**			**34.5**			**33.8**				
Capture								**7%**			**7%**			**7%**			**7%**			**7%**				

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2014-2015

MONTH (g/m2/month)				April 2014	May 2014	June 2014	July 2014	August 2014	September 2014	October 2014	November 2014	December 2014	January 2015	February 2015	March 2015	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG1	Escott	Total Matter	0.3	0.5	0.5	0.2	0.1	<0.1	0.4	0.9	0.8	1.1	1.2	1.4	0.7	0.8	0.1	1.4	4.0
			Ash Content	0.1	0.4	0.3	<0.1	<0.1	<0.1	0.2	0.5	0.5	0.5	0.4	1.1					
-	DG2	Cintra	Total Matter	2.6	2.0	3.8	1.9	3.8	2.0	3.1	2.8	3.0	2.1	1.4	1.1	2.5	2.8	1.1	3.8	4.0
			Ash Content	0.6	1.0	2.5	1.1	2.5	1.1	1.8	1.5	1.3	0.7	0.6	0.3					
-	DG3	Eurunderee	Total Matter	2.4	0.7	0.5	1.5	0.5	2.6	0.8	0.3	6.6	2.1	1.3	0.8	1.7	1.5	0.3	6.6	4.0
			Ash Content	1.9	0.4	0.2	0.8	0.2	<0.1	0.4	0.1	1.6	1.3	0.8	0.3					
-	DG5	Railway View	Total Matter	0.1	0.6	0.8	0.5	3.3	5.7	1.0	2.5	3.6	0.5	1.5	1.0	1.8	1.5	0.1	5.7	4.0
			Ash Content	<0.1	0.3	0.4	0.3	1.3	2.9	0.6	1.4	1.8	0.2	0.9	0.4					
-	DG9	Marengo	Total Matter	0.5	0.1	<0.1	0.2	0.2	0.8	0.5	0.9	1.2	7.9	7.1	14.7	3.1	0.5	0.1	14.7	4.0
			Ash Content	0.1	<0.1	<0.1	0.1	<0.1	0.3	0.2	0.6	0.4	0.9	5.4	11.3					
EPL#29	DG11	Glenara	Total Matter	0.3	0.4	1.1	0.8	0.5	0.6	1.3	2.2	1.5	0.8	0.4	1.8	1.0	1.0	0.3	2.2	4.0
			Ash Content	0.2	0.2	0.7	0.5	0.5	0.6	0.6	1.2	1.0	0.5	0.1	1.2					
-	DG14	Greenslopes	Total Matter	0.4	0.8	0.5	0.3	0.4	1.9	1.7	2.7	3.4	1.1	0.5	0.4	1.2	1.8	0.3	3.4	4.0
			Ash Content	0.1	0.5	0.2	0.1	0.1	1.2	0.6	1.2	1.8	0.6	0.2	0.1					
-	DG15	Plain View	Total Matter	0.3	0.4	0.4	0.6	<0.1	0.6	0.6	1.2	0.8	21.3	0.6	0.5	2.5	0.8	0.3	21.3	4.0
			Ash Content	0.1	0.2	<0.1	0.3	<0.1	0.2	0.2	0.7	0.4	0.4	0.2	0.1					
-	DG17	Woodlands	Total Matter	0.9	0.4	<1	0.5	0.7	0.7	1.3	7.6	1.8	1.5	0.6	2.0	1.6	1.0	0.4	7.6	4.0
			Ash Content	0.4	0.2	<0.1	0.3	0.4	0.4	0.7	2.0	1.1	0.8	0.2	0.7					
-	DG20	Tonsley Park	Total Matter	3.1	3.3	3.5	1.1	1.3	4.3	5.9	6.7	7.0	10.1	0.2	4.2	4.2	2.5	0.2	10.1	4.0
			Ash Content	2.4	1.8	2.7	0.8	0.9	2.6	3.8	2.7	3.6	4.2	<0.1	2.1					
-	DG22	Mountain View	Total Matter	1.9	0.8	1.5	0.6	3.5	0.2	2.0	3.9	0.7	8.7	0.5	0.8	2.1	1.6	0.2	8.7	4.0
			Ash Content	1.0	0.5	0.9	0.3	2.4	0.1	1.3	2.6	0.4	2.5	0.2	0.5					
-	DG24	Hazeldene	Total Matter	0.6	0.9	0.3	0.8	0.2	0.5	1.2	2.8	1.7	0.6	0.6	4.8	1.3	0.9	0.2	4.8	4.0
			Ash Content	0.4	0.7	0.2	0.5	0.1	0.3	0.7	1.9	1.4	0.3	0.3	4.0					
-	DG34	8 Kurrara Street	Total Matter	0.3	<0.1	22.1	3.8	0.8	0.3	0.7	0.1	1.3	1.1	0.3	0.4	2.8	1.5	0.1	22.1	4.0
			Ash Content	0.1	<0.1	14.6	2.7	0.5	<0.1	0.1	<0.1	0.7	0.6	0.1	0.1					
-	DG62	Werris Creek South	Total Matter	0.2	0.2	0.2	0.1	0.2	1.1	7.5	1.0	1.3	0.8	4.3	0.2	1.4	0.8	0.1	7.5	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	4.0	0.5	0.8	0.5	2.4	<0.1					
EPL#30	DG92	Werris Creek Centre	Total Matter	0.2	0.3	0.4	0.1	0.6	0.1	0.8	0.7	1.7	0.5	0.2	0.2	0.5	0.7	0.1	1.7	4.0
			Ash Content	<0.1	0.1	0.2	<0.1	0.1	<0.1	<0.1	0.3	1.0	0.3	<0.1	<0.1					
-	DG96	Talavera	Total Matter	0.4	0.2	0.5	0.2	1.0	1.3	0.5	2.5	1.5	1.1	0.6	0.6	0.9	1.0	0.2	2.5	4.0
			Ash Content	<0.1	<0.1	0.2	<0.1	0.5	0.5	0.2	1.2	0.7	0.5	0.1	0.1					
EPL#28	DG98	Kyooma	Total Matter	0.2	0.1	0.2	0.1	<0.1	0.1	27.3	0.9	0.9	3.4	0.2	0.6	3.1	0.4	0.1	27.3	4.0
			Ash Content	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	0.6	0.1	0.1	0.2					
-	DG101	Westfall	Total Matter	0.7	1.0	0.8	0.7	0.5	0.6	0.7	1.1	2.0	1.4	1.1	1.2	1.0	1.0	0.5	2.0	4.0
			Ash Content	0.4	0.5	0.5	0.4	0.4	0.5	0.3	0.4	1.2	0.7	0.5	0.6					
-	DG103	West Street	Total Matter	0.6	0.3	0.5	2.5	1.6	0.6	2.1	0.8	2.2	0.8	0.6	0.3	1.1	0.9	0.3	2.5	4.0
			Ash Content	0.3	0.2	0.3	1.1	1.2	0.2	1.0	0.6	1.7	0.5	0.4	0.1					
-	DG106	Villamagna	Total Matter	0.5	-	-	-	-	-	-	-	-	-	-	-	0.5	0.5	0.5	0.5	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

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												0.3	#DIV/0!	0.3	0.3	4.0
			Ash Content	<0.1																
-	DG2	Cintra	Total Matter	1.2												1.2	#DIV/0!	1.2	1.2	4.0
			Ash Content	0.3																
-	DG3	Eurunderee	Total Matter	1.2												1.2	1.2	1.2	1.2	4.0
			Ash Content	0.8																
-	DG5	Railway View	Total Matter	1.9												1.9	#DIV/0!	1.9	1.9	4.0
			Ash Content	1.1																
-	DG9	Marengo	Total Matter	1.6												1.6	1.6	1.6	1.6	4.0
			Ash Content	1.1																
EPL#29	DG11	Glenara	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.4																
-	DG14	Greenslopes	Total Matter	1.3												1.3	#DIV/0!	1.3	1.3	4.0
			Ash Content	0.8																
-	DG15	Plain View	Total Matter	1.0												1.0	#DIV/0!	1.0	1.0	4.0
			Ash Content	0.5																
-	DG17	Woodlands	Total Matter	2.6												2.6	#DIV/0!	2.6	2.6	4.0
			Ash Content	1.2																
-	DG20	Tonsley Park	Total Matter	4.4												4.4	4.4	4.4	4.4	4.0
			Ash Content	1.8																
-	DG22	Mountain View	Total Matter	4.3												4.3	4.3	4.3	4.3	4.0
			Ash Content	1.2																
-	DG24	Hazeldene	Total Matter	5.1												5.1	5.1	5.1	5.1	4.0
			Ash Content	3.8																
-	DG34	8 Kurrara Street	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.3																
-	DG62	Werris Creek South	Total Matter	7.7												7.7	#DIV/0!	7.7	7.7	4.0
			Ash Content	0.8																
EPL#30	DG92	Werris Creek Centre	Total Matter	1.0												1.0	#DIV/0!	1.0	1.0	4.0
			Ash Content	0.5																
-	DG96	Talavera	Total Matter	0.2												0.2	#DIV/0!	0.2	0.2	4.0
			Ash Content	<0.1																
EPL#28	DG98	Kyooma	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.4																
-	DG101	Westfall	Total Matter	2.5												2.5	2.5	2.5	2.5	4.0
			Ash Content	1.1																
-	DG103	West Street	Total Matter	0.9												0.9	0.9	0.9	0.9	4.0
			Ash Content	0.6																

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2014-2015

	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 2014	0.6	10%	20%	70%	0.8	10%	30%	60%	0.7	30%	30%	40%	0.2	10%	40%	50%	0.6	20%	20%	60%	1.1	10%	60%	30%	4.0
May 2014	1.0	10%	20%	65%	0.8	15%	25%	60%	0.7	20%	10%	70%	0.4	15%	25%	60%	0.6	10%	<1%	90%	2.0	<1%	20%	10%	4.0
June 2014	2.2	15%	35%	40%	1.5	15%	35%	40%	1.0	10%	40%	40%	1.9	10%	30%	60%	1.5	10%	30%	60%	2.7	10%	40%	30%	4.0
July 2014	1.6	15%	10%	75%	-	-	-	-	0.8	10%	5%	85%	0.9	5%	20%	75%	0.6	5%	25%	65%	0.8	5%	25%	70%	4.0
August 2014	0.4	10%	30%	60%	1.2	10%	35%	55%	1.2	40%	15%	45%	1.3	10%	25%	65%	3.2	10%	<1%	90%	0.7	10%	40%	50%	4.0
September 2014	1.9	30%	25%	40%	2.2	40%	15%	45%	3.0	50%	15%	35%	2.4	15%	35%	40%	1.0	20%	30%	50%	2.5	15%	30%	45%	4.0
October 2014	1.6	15%	20%	50%	1.7	20%	20%	45%	1.3	20%	25%	40%	1.6	25%	20%	40%	1.6	20%	25%	40%	1.2	20%	20%	45%	4.0
November 2014	2.3	25%	30%	25%	3.1	40%	10%	35%	1.6	80%	5%	10%	3.9	20%	10%	30%	2.1	40%	10%	40%	2.9	50%	10%	30%	4.0
December 2014	1.2	5%	15%	75%	3.1	10%	15%	20%	1.8	30%	20%	45%	2.8	30%	15%	55%	2.1	35%	15%	50%	1.8	15%	20%	65%	4.0
January 2015	0.7	5%	20%	75%	1.2	<1	25%	70%	1.0	<1	10%	85%	1.0	5%	15%	75%	3.8	5%	25%	40%	1.1	<1	25%	70%	4.0
February 2015	0.7	10%	5%	80%	0.5	10%	15%	70%	0.3	30%	5%	65%	0.4	15%	10%	75%	0.4	5%	10%	80%	2.2	5%	20%	55%	4.0
March 2015	1.3	20%	20%	60%	1.3	30%	20%	50%	1.3	25%	25%	40%	1.1	60%	20%	20%	1.0	10%	35%	50%	1.9	5%	40%	45%	4.0
ANNUAL AVERAGE	**1.3**				**1.6**				**1.2**				**1.5**				**1.5**				**1.7**				**4.0**
Average Coal %	**14.2%**				**20.0%**				**31.4%**				**18.3%**				**15.8%**				**14.5%**				**-**
Average Coal g/m2	**0.18**				**0.32**				**0.38**				**0.27**				**0.24**				**0.25**				**-**
MINIMUM	**0.4**				**0.5**				**0.3**				**0.2**				**0.4**				**0.7**				**-**
MAXIMUM	**2.3**				**3.1**				**3.0**				**3.9**				**3.8**				**2.9**				**4.0**

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

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 2014	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 2014																									4.0
June 2014																									4.0
July 2014																									4.0
August 2014																									4.0
September 2014																									4.0
October 2014																									4.0
November 2014																									4.0
December 2014																									4.0
January 2015																									4.0
February 2015																									4.0
March 2015																									4.0
ANNUAL AVERAGE	**1.0**				**1.1**				**0.8**				**1.2**				**1.1**				**1.1**				**4.0**
Average Coal %	**10.0%**				**10.0%**				**5.0%**				**20.0%**				**10.0%**				**5.0%**				**-**
Average Coal g/m2	**0.10**				**0.11**				**0.04**				**0.24**				**0.11**				**0.06**				**-**
MINIMUM	**1.0**				**1.1**				**0.8**				**1.2**				**1.1**				**1.1**				**-**
MAXIMUM	**1.0**				**1.1**				**0.8**				**1.2**				**1.1**				**1.1**				**4.0**

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

Appendix 4 – Noise Monitoring Results

30 April 2015

Ref: 04035/5774

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

RE: APRIL 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 Tuesday 28th of April, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 28th April 2015 had the 5600 excavator in Strip 14 east at RL275m; the 3600 in Strip 14 east at RL275m and the 1900 excavators in Strip 16 east at RL370m until 2:30am. All in pit overburden truck fleets were running to the dump at RL400m east and out of pit overburden trucks were running to the dump at RL400m west. The coal processing and train load out operated to 11:40pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 28 April 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	3:09 pm	36	35	n/a	1.7,117	Birds & insects (36), traffic (24), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	3:29 pm	48	40*	n/a	2.3,162	Birds (48), traffic (23), WCC inaudible
C R10 Meadholme/ R11 Glenara	3:49 pm	35	40*	n/a	1.8,191	Birds (35), WCC inaudible
D R24 Hazeldene	4:09 pm	41	37	n/a	2.3,183	Traffic (40), birds (35), WCC faintly audible
E R12 Railway Cottage	1:58 pm	38	38	n/a	1.5,140	Traffic (37), birds (30), WCC inaudible
F R96 Talavera	2:03 pm	27	38	n/a	1.5,140	Birds (27), WCC inaudible
G R97	5:22 pm	30	35	n/a	4.2,164	Birds (30), WCC inaudible
H R98 Kyooma	3:11 pm	25	40*	n/a	1.5,152	Birds (25), WCC inaudible
I R57 Kurrara St	3:58 pm	38	35	n/a	2.8,176	Traffic (38), birds (25), train yard (23), WCC inaudible
J R57 Coronation Ave	3:38 pm	36	35	n/a	2.2,173	Birds (33), train yard (30), traffic (29), WCC inaudible
K R21 Alco Park	5:31 pm	42	40*	n/a	4.2,162	Traffic (42), train yard (27), WCC (23)
L R103	5:10 pm	41	35	n/a	4.2,166	Train yard (41), traffic (28), WCC inaudible

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 28 April 2015 (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	7:58 pm	n/a	30	35	+0.8,2.0,173	Traffic (30), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	8:17 pm	20	31	40*	+0.9,1.9,185	Traffic (31), WCC faintly audible
C R10 Meadholme/ R11 Glenara	8:36 pm	n/a	37	40*	+1.2,2.1,185	Traffic (37), insects (22), WCC inaudible
D R24 Hazeldene	8:55 pm	21	44	37	+3.3,1.6,172	Traffic (44), WCC faintly audible
E R12 Railway Cottage	10:01 pm	n/a	45	38	+4.1,2.4,180	Traffic (45), WCC inaudible
F R96 Talavera	7:20 pm	n/a	28	37	+0.8,2.7,157	Insects (25), cattle (25), WCC inaudible
G R97	7:29 pm	n/a	26	35	+0.9,3.1,149	Wind (26), WCC inaudible
H R98 Kyooma	8:27 pm	n/a	33	40*	+0.7,2.2,191	Wind (33), WCC inaudible
I R57 Kurrara St	9:20 pm	n/a	32	35	+4.0,2.4,177	Traffic (32), WCC inaudible
J R57 Coronation Ave	8:59 pm	n/a	30	35	+2.3,1.7,165	Traffic (28), train yard (25), WCC inaudible
K R21 Alco Park	10:48 pm	27	34	40*	+2.6,2.4,232	Traffic (34), WCC (23)
L R103	10:29 pm	n/a	38	35	+4.0,2.1,158	Train yard (38), traffic (25), WCC inaudible

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 location during any monitoring period.

General mine hum was the only audible noise source from WCC and this was audible at just three receiver locations during the evening/night time period.

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.

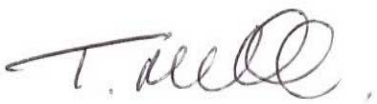
To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than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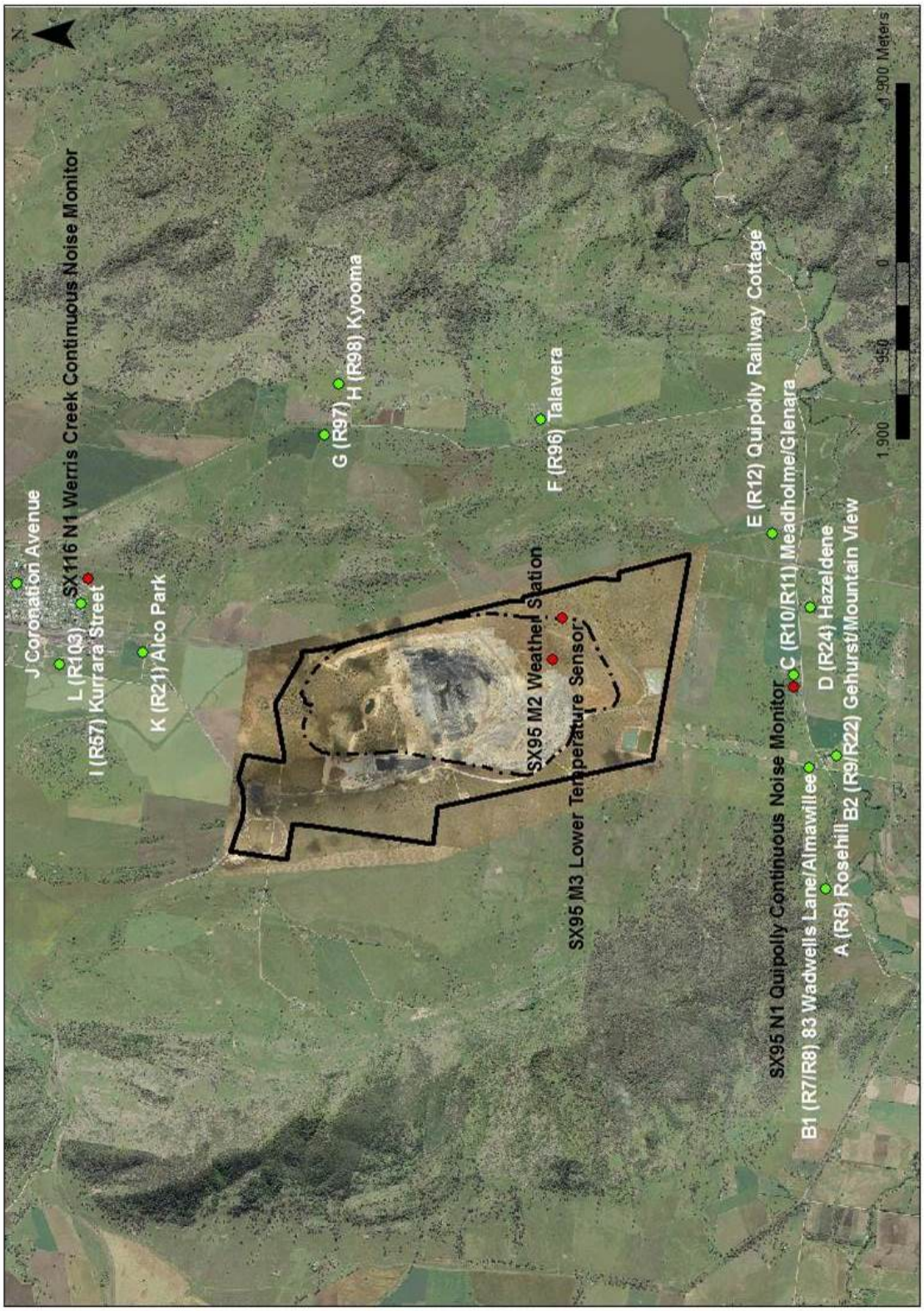
Appendix I



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

25 February 2015

Ref: 04035/5643

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

RE: FEBRUARY 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 Tuesday 17th of February, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 17th February 2015 had the 5600 excavator in Strip 16 west at RL370m; the 3600 in Strip 14 east at RL290m and one 1900 excavator in Strip 16 east at RL370m and the other 1900 excavator in Strip 16 west at RL370m. All overburden truck fleets were running to the in pit dump at RL360m. The coal processing and train load out operated to 10:30pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 17 February 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	1:26 pm	37	35	n/a	2.1,108	Birds & insects (37), traffic (26), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:46 pm	42	40*	n/a	0.5,209	Birds & insects (42), wind (28), WCC faintly audible
C R10 Meadholme/ R11 Glenara	2:05 pm	42	40*	n/a	3.4,116	Birds & insects (40), wind (37), traffic (25), WCC inaudible
D R24 Hazeldene	2:25 pm	39	37	n/a	2.0,116	Birds & insects (38), traffic (30), wind (27), WCC inaudible
E R12 Railway Cottage	4:01 pm	40	38	n/a	3.8,80	Wind (39), traffic (32), birds & insects (30), WCC faintly audible
F R96 Talavera	1:24 pm	38	38	n/a	2.1,108	Birds (36), wind (33), WCC inaudible
G R97	3:36 pm	36	35	n/a	5.9,46	Birds & insects (34), wind (31), WCC (25)
H R98 Kyooma	3:34 pm	33	40*	n/a	2.4,94	Birds (31), wind (28), WCC faintly audible
I R57 Kurrara St	3:14 pm	37	35	n/a	2.8,126	Birds (35), traffic (30), wind (29), WCC inaudible
J R57 Coronation Ave	2:56 pm	41	35	n/a	1.8,85	Birds & insects (38), wind (37), train yard (28), traffic (28), WCC inaudible
K R21 Alco Park	4:44 pm	42	40*	n/a	5.9,55	Rail track work (42), traffic (29), wind (28), WCC faintly audible
L R103	4:25 pm	43	35	n/a	3.4,59	Wind (42), train yard (34), birds (29), traffic (26), WCC inaudible

* Private Agreement in place – see Appendix II.

Table 3
WCC Noise Monitoring Results – 17 February 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	8:51 pm	29	62	35	Lapse,4.9,45	Insects (62), traffic (28), WCC (25)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	9:09 pm	28	40	40*	Lapse,6.3,56	Insects (39), wind (31), WCC (25), traffic (24)
C R10 Meadholme/ R11 Glenara	9:28 pm	n/a	44	40*	Lapse,7.2,61	Wind (43), insects (36), traffic (27), WCC inaudible
D R24 Hazeldene	9:47 pm	n/a	46	37	Lapse,7.0,62	Traffic (43), wind (43), insects (30), WCC inaudible
E R12 Railway Cottage	7:44 pm	n/a	43	38	Lapse,5.2,45	Wind (41), insects (35), traffic (35), WCC inaudible
F R96 Talavera	7:23 pm	n/a	44	37	Lapse,6.1,48	Insects (44), wind (25), WCC inaudible
G R97	7:19 pm	n/a	45	35	Lapse,6.2,48	Insects (45), wind (31), WCC inaudible
H R98 Kyooma	8:31 pm	n/a	40	40*	Lapse,4.7,50	Insects (40), wind (26), WCC inaudible
I R57 Kurrara St	9:11 pm	n/a	41	35	Lapse,6.3,56	Wind (40), insects (32), traffic (27), WCC inaudible
J R57 Coronation Ave	8:53 pm	n/a	39	35	Lapse,5.0,58	Wind (39), insects (28), WCC inaudible
K R21 Alco Park	10:39 pm	n/a	50	40*	Lapse,7.4,60	Insects (47), wind (47), traffic (24), WCC inaudible
L R103	10:20 pm	n/a	47	35	Lapse,7.4,58	Insects (44), wind (44), train yard (30), WCC inaudible

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 location during any monitoring period.

The audible noise sources from WCC included truck revs and 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.

Plant Sound Power Levels

In keeping with the NMP, the sound power levels of the major noise producing plant and equipment operating on the WCC site is to be determined from sound pressure level measurements. The measurement programme is to be undertaken progressively to capture noise levels from all plant over the period of a year.

The results of the sound power level calculations to date are shown in **Appendix III**. The table in Appendix III lists SWL's for plant items as taken from those used in the noise modelling for the latest EA for WCM. The SWL's from the EA, therefore, represent a calculated Leq (15 minute) noise level. For mobile plant this calculation is based on the length of time each noise source representing a plant item(s) is at a particular location on the mine site.

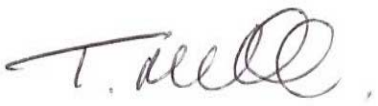
For example the noise model includes a number of noise sources located at intervals along the various haul roads to approximate the haul fleet working throughout a 15 minute operational period. The SWL for the point source is calculated based on the length of time any truck is expected to be passing that location during the assessment period.

For mobile plant, the measured Leq noise levels in the table in Appendix III represent a single passby for each plant item whereas the values adopted in the EA (particularly for haul trucks) are for the 15-minute calculated sound power level of 350m long sections of haul road. These values are typically 7-10 dB lower than the single pass-by level.

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
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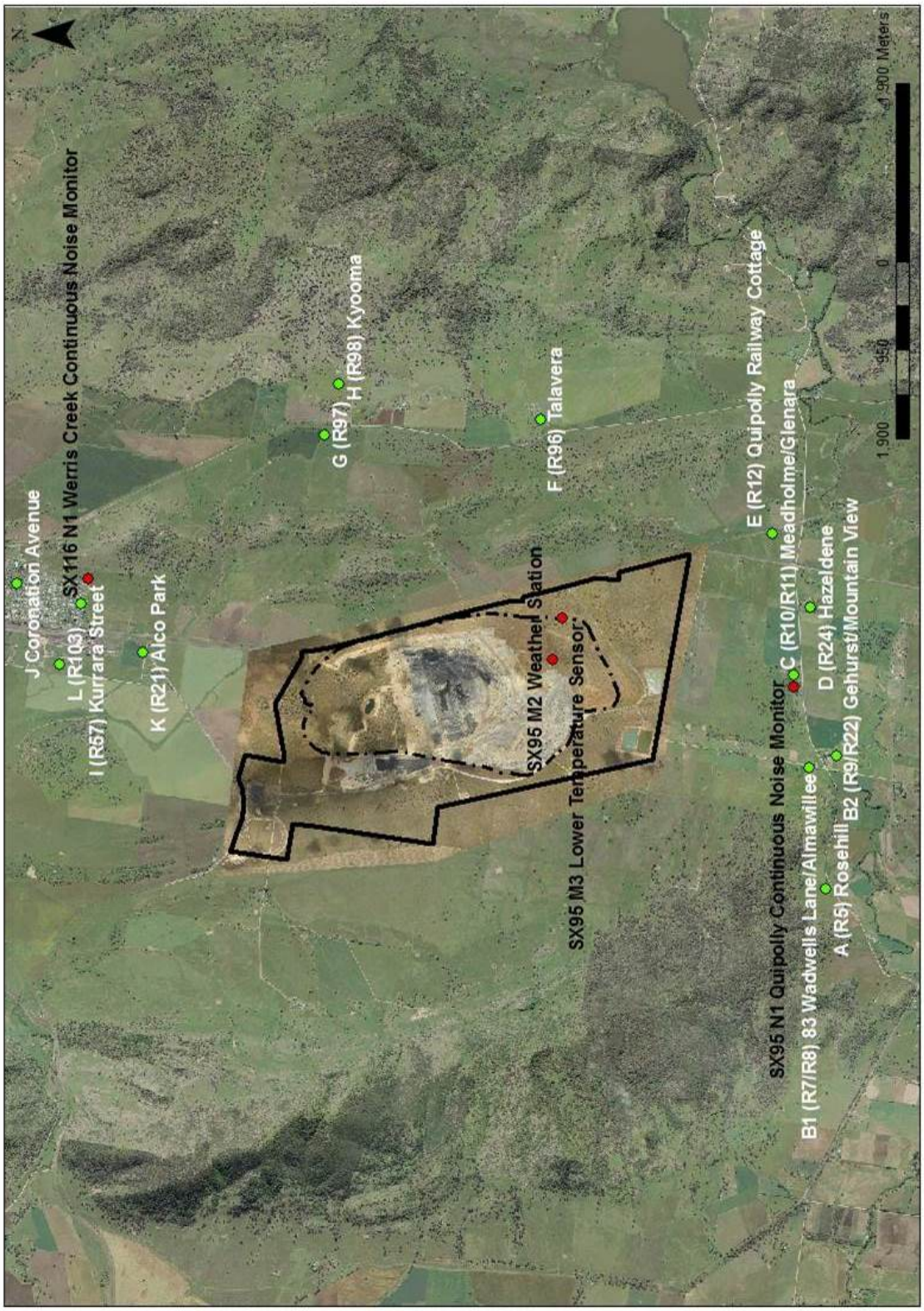
Appendix I



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

Appendix III

Plant Sound Power Levels

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Haul truck CAT 785C (unattenuated)	608	117.7	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	117.7	116.7	118	24/4/14
Haul truck CAT 785C (unattenuated)	614	117.7	119	121	28/1/14
Haul truck CAT 785C (attenuated)	614	117.7	117.5	119	24/4/14
Haul truck CAT 785C (unattenuated)	609	117.7	120		11/9/12
Haul truck CAT 785C (attenuated)	609	117.7	117.4	119	11/9/12
Haul truck CAT 785C (unattenuated)	610	117.7	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	117.7	120		11/9/12
Haul truck CAT 785C (unattenuated)	612	117.7	120	122	28/1/14
Haul truck CAT 785C (attenuated)	612	117.7	117.8	120	24/4/14
Haul truck CAT 785C (unattenuated)	600	117.7	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	117.7	122		8/8/13
Haul truck CAT 785C (attenuated)	613	117.7	117.9		24/4/14
Haul truck CAT 785C (unattenuated)	624	117.7	121		8/8/13
Haul truck CAT 785C (attenuated)	624	117.7	118.1		24/4/14
Haul truck CAT 789 (unattenuated)	875	117.7	119	121	28/1/14
Water Cart	WA897	113	113		11/9/12
Scraper	SC882	118	113		11/9/12
Excavator (PC 3600)	EX551	116	115		11/9/12
Dozer	829	118	115		24/4/14
Dozer (D10T)	832	118	113	118	28/1/14
Crushing Plant	n/a	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	117.7		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	117.7		124	11/9/12
Excavator (PC4000)	EX837	116	115		18/12/12
Dozer D10T (1^{st} gear)	505	118	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	118	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	118	119 113	122 118	6/2/13

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Excavator (EX 5600)	570	121	116	119	28/1/14
Haul truck CAT 793XQ	660	115	116	119	28/1/14
Haul truck CAT 793XQ	661	115	115	118	28/1/14
Haul truck CAT 793XQ	662	115	116	119	28/1/14
Haul truck CAT 793XQ	663	115	116	119	8/8/13
Haul truck CAT 793XQ	664	115	114	117	8/8/13
Haul truck CAT 793XQ	665	115	115	118	28/1/14
Haul truck CAT 793XQ	666	115	116	118	28/1/14
Haul truck CAT 793XQ	667	115	115	118	28/1/14
Hitachi Excavator 1900	543	116	115	118	28/1/14
Grader	849	n/a	110	113	28/1/14
Warrior 2400 crusher	n/a	116	117	117	8/8/13
Kleeman screen	MCR401	116	111	112	8/8/13
Water Cart (Volvo)	863	113	114	118	28/1/14
Water Cart (Cat 773D)	869	113	119	123	28/1/14
Water Cart (Cat 773D)	869	113	117.5	119	24/4/14
Drill (Bucyrus)	524	116	107	-	28/1/14
Drill (Cat 6420)	526	116	108	-	28/1/14
Water pump (Dam 4)	--	--	106	--	24/4/14
Evaporation fan (Dam 4)	--	--	105	--	24/4/14

*Leq noise level from vehicle pass by only (modelled levels in the EA for LOM are based on an Leq (15 min) for an attenuated haul truck.

13 March 2015

Ref: 04035/5672

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

RE: MARCH 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 Thursday 5th of March, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 Thursday 5th March 2015 had the 5600 excavator in Strip 14 centre at RL295m; the 3600 in Strip 14 centre at RL295m and both 1900 excavators in Strip 14 west until 2:30am. All overburden truck fleets were running to the in pit dump at RL360m. The coal processing and train load out operated to 11:40pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 5 March 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	1:10 pm	43	35	n/a	5.2,262	Wind (42), birds & insects (35), traffic (26), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:30 pm	48	40*	n/a	5.4,270	Wind (48), birds & insects (32), traffic (24), WCC inaudible
C R10 Meadholme/ R11 Glenara	1:49 pm	48	40*	n/a	6.3,266	Wind (48), birds & insects (34), WCC inaudible
D R24 Hazeldene	2:09 pm	48	37	n/a	6.0,254	Wind (48), birds & insects (31), traffic (27), WCC faintly audible
E R12 Railway Cottage	3:43 pm	48	38	n/a	5.7,252	Wind (45), traffic (45), birds & insects (27), WCC inaudible
F R96 Talavera	1:13 pm	43	38	n/a	5.8,263	Wind (42), birds & insects (36), traffic (24), WCC faintly audible
G R97	3:20 pm	47	35	n/a	6.0,259	Wind (47), WCC (26), birds & insects (26)
H R98 Kyooma	2:18 pm	49	40*	n/a	6.2,265	Wind (49), birds (29), WCC inaudible
I R57 Kurrara St	3:03 pm	50	35	n/a	5.9,253	Wind (50), train yard (37), traffic (28), birds (27), WCC inaudible
J R57 Coronation Ave	2:42 pm	48	35	n/a	5.7,248	Wind (48), birds (36), traffic (25), WCC inaudible
K R21 Alco Park	4:30 pm	46	40*	n/a	5.8,258	Train yard (45), traffic (37), birds (32), wind (27), WCC inaudible
L R103	4:10 pm	37	35	n/a	6.0,250	Wind (33), traffic (32), train yard (30), birds (27), WCC inaudible

* Private Agreement in place – see Appendix II.

Table 3
WCC Noise Monitoring Results – 5 March 2015 (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	8:45 pm	n/a	40	35	+4.5,3.6,201	Insects (40), traffic (25), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	9:04 pm	n/a	32	40*	+5.4,3.3,202	Traffic (30), insects (27), WCC inaudible
C R10 Meadholme/ R11 Glenara	9:23 pm	n/a	33	40*	+5.2,3.2,200	Insects (30), traffic (30), WCC inaudible
D R24 Hazeldene	9:42 pm	n/a	35	37	+4.9,3.7,195	Traffic (35), insects (24), WCC inaudible
E R12 Railway Cottage	7:39 pm	n/a	45	38	+2.8,3.1,209	Traffic (45), insects (31), WCC inaudible
F R96 Talavera	7:15 pm	28	47	37	+1.6,3.9,231	Birds & insects (47), traffic (31), WCC (24)
G R97	7:16 pm	30	43	35	+1.6,4.2,242	Insects (43), WCC (27), traffic (24)
H R98 Kyooma	8:21 pm	34	37	40*	+3.5,2.6,197	Insects (35), traffic (29), WCC (29)
I R57 Kurrara St	9:04 pm	n/a	46	35	+5.3,3.3,200	Train yard (46), insects (32), traffic (28), WCC inaudible
J R57 Coronation Ave	8:45 pm	19	37	35	+4.5,3.6,201	Traffic (36), train yard (29), insects (24), WCC faintly audible
K R21 Alco Park	10:29 pm	35	43	40*	+4.3,3.7,184	Insects (40), traffic (38), train yard (32), WCC (30)
L R103	10:09 pm	n/a	39	35	+4.8,3.8,197	Train yard (37), insects (33), mine (25), WCC inaudible

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 location during any monitoring period.

The audible noise sources from WCC included truck revs, dozer tracks and 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.

Plant Sound Power Levels

In keeping with the NMP, the sound power levels of the major noise producing plant and equipment operating on the WCC site is to be determined from sound pressure level measurements. The measurement programme is to be undertaken progressively to capture noise levels from all plant over the period of a year.

The results of the sound power level calculations to date are shown in **Appendix III**. The table in Appendix III lists SWL's for plant items as taken from those used in the noise modelling for the latest EA for WCM. The SWL's from the EA, therefore, represent a calculated Leq (15 minute) noise level. For mobile plant this calculation is based on the length of time each noise source representing a plant item(s) is at a particular location on the mine site.

For example the noise model includes a number of noise sources located at intervals along the various haul roads to approximate the haul fleet working throughout a 15 minute operational period. The SWL for the point source is calculated based on the length of time any truck is expected to be passing that location during the assessment period.

For mobile plant, the measured Leq noise levels in the table in Appendix III represent a single passby for each plant item whereas the values adopted in the EA (particularly for haul trucks) are for the 15-minute calculated sound power level of 350m long sections of haul road. These values are typically 7-10 dB lower than the single pass-by level.

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:

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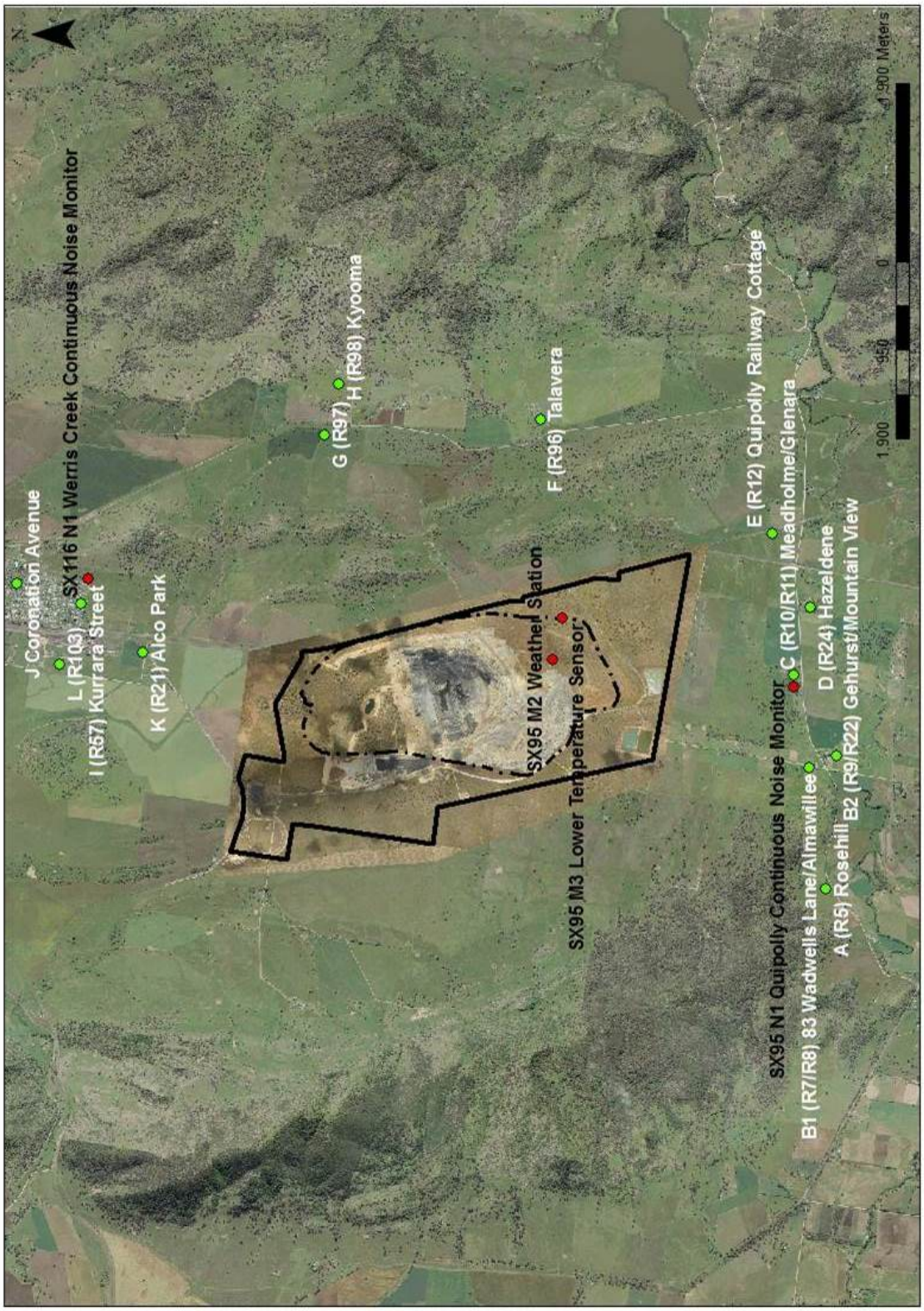
Appendix I



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

Appendix III

Plant Sound Power Levels

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Haul truck CAT 785C (unattenuated)	608	117.7	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	117.7	116.7	118	24/4/14
Haul truck CAT 785C (unattenuated)	614	117.7	119	121	28/1/14
Haul truck CAT 785C (attenuated)	614	117.7	117.5	119	24/4/14
Haul truck CAT 785C (unattenuated)	609	117.7	120		11/9/12
Haul truck CAT 785C (attenuated)	609	117.7	117.4	119	11/9/12
Haul truck CAT 785C (unattenuated)	610	117.7	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	117.7	120		11/9/12
Haul truck CAT 785C (unattenuated)	612	117.7	120	122	28/1/14
Haul truck CAT 785C (attenuated)	612	117.7	117.8	120	24/4/14
Haul truck CAT 785C (unattenuated)	600	117.7	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	117.7	122		8/8/13
Haul truck CAT 785C (attenuated)	613	117.7	117.9		24/4/14
Haul truck CAT 785C (unattenuated)	624	117.7	121		8/8/13
Haul truck CAT 785C (attenuated)	624	117.7	118.1		24/4/14
Haul truck CAT 789 (unattenuated)	875	117.7	119	121	28/1/14
Water Cart	WA897	113	113		11/9/12
Scraper	SC882	118	113		11/9/12
Excavator (PC 3600)	EX551	116	115		11/9/12
Dozer	829	118	115		24/4/14
Dozer (D10T)	832	118	113	118	28/1/14
Crushing Plant	n/a	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	117.7		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	117.7		124	11/9/12
Excavator (PC4000)	EX837	116	115		18/12/12
Dozer D10T (1^{st} gear)	505	118	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	118	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	118	119 113	122 118	6/2/13

Plant Item		NMP SWL dB(A) Leq	Actual dB(A) Leq	Actual dB(A) Lmax	Date Measured
Type	No.				
Excavator (EX 5600)	570	121	116	119	28/1/14
Haul truck CAT 793XQ	660	115	116	119	28/1/14
Haul truck CAT 793XQ	661	115	115	118	28/1/14
Haul truck CAT 793XQ	662	115	116	119	28/1/14
Haul truck CAT 793XQ	663	115	116	119	8/8/13
Haul truck CAT 793XQ	664	115	114	117	8/8/13
Haul truck CAT 793XQ	665	115	115	118	28/1/14
Haul truck CAT 793XQ	666	115	116	118	28/1/14
Haul truck CAT 793XQ	667	115	115	118	28/1/14
Hitachi Excavator 1900	543	116	115	118	28/1/14
Grader	849	n/a	110	113	28/1/14
Warrior 2400 crusher	n/a	116	117	117	8/8/13
Kleeman screen	MCR401	116	111	112	8/8/13
Water Cart (Volvo)	863	113	114	118	28/1/14
Water Cart (Cat 773D)	869	113	119	123	28/1/14
Water Cart (Cat 773D)	869	113	117.5	119	24/4/14
Drill (Bucyrus)	524	116	107	-	28/1/14
Drill (Cat 6420)	526	116	108	-	28/1/14
Water pump (Dam 4)	--	--	106	--	24/4/14
Evaporation fan (Dam 4)	--	--	105	--	24/4/14

*Leq noise level from vehicle pass by only (modelled levels in the EA for LOM are based on an Leq (15 min) for an attenuated haul truck.

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 APRIL 2015																							
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		SINGLE FREQUENCY >0.02			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
43	2015-49	2/04/2015	12:22	S14_B15-B17_RL260_TSB	0.6	TSB	0.25	94.6	1.37	99.1	0.50	92.7	0.25	89.5	10.00	120.0	Not Monitored		50.00	-3.3	286	1.4	10.6	13.4	10.4	0	OK	1	0	0
44	2015-50	10/04/2015	13:02	S14_B12-B15_RL275	0.7	TSB	0.27	96.9	1.25	94.9	0.86	91.5	0.20	90.2	10.00	120.0	Not Monitored		50.00	-3.4	127	4.1	2.8	2.8	11.5	0	OK	2	0	0
	2015-51	10/04/2015	13:02	S14_B8-10_PS	0.4	PS	0.27	96.9	1.25	94.9	0.86	91.5	0.20	90.2	10.00	120.0	9.64	110.6	50.00	-3.4	127	4.1	2.8	2.8	11.5	1A	OK	0	0	0
45	2015-52	16/04/2015	12:18	S14_B10-B12_RL275_TSB	0.5	TSB	0.27	98.4	2.42	105.0	0.54	99.9	0.30	102.4	10.00	120.0	Not Monitored		50.00	-3.2	310	2.9	14.0	10.9	11	0	Road	0	0	0
46	2015-53	17/04/2015	13:08	S16_B6_RL320_Wedge	0.2	IB	0.06	95.2	0.32	102.5	0.17	103.0	0.09	100.8	10.00	120.0	3.01	123.7	50.00	-3.3	261	0.8	3.0	3.1	14	0	Road	0	0	0
47	2015-54	23/04/2015	12:13	S14_B7-B10_RL275_TSB	0.6	TSB	0.17	94.9	0.83	96.6	0.43	97.7	0.27	96.6	10.00	120.0	5.57	115.7	50.00	-2.7	326	1.9	16.5	11.5	12.8	0	OK	0	0	0
	2015-55	23/04/2015	12:13	S16_B14-B19_RL320_PS	0.4	PS	0.22	94.9	0.66	92.3	0.43	91.5	0.30	96.6	10.00	120.0	Not Monitored		50.00	-2.7	326	1.9	2.3	3.1	3.1	2A	OK	0	0	0
48	2015-55a	23/04/2015	12:33	S16_B14-B19_RL320_PS Misfire	0.4	Misfire	0.29	94.1	0.94	89.7	0.40	87.7	0.34	86.2	10.00	120.0	Not Monitored		50.00	-2.6	349	1.6	3.5	3.1	3.1	2A	OK	0	0	0
49	2015-56	28/04/2015	13:14	S16_B18-B20_RL335_TSB	0.6	TSB	0.16	95.1	0.51	95.0	0.26	94.0	0.14	95.3	10.00	120.0	Not Monitored		50.00	-3.2	121	1.9	10.3	12.1	10	0	Onsite	0	0	0
	TOTALS	**APRIL 2015**	**# BLAST**	**7**	**TARGET**	**AVERAGE**	**0.22**	**95.7**	**1.06**	**96.7**	**0.49**	**94.4**	**0.23**	**94.2**	**5.00**	**115.0**														
	TOTALS	**APRIL 2015**	**#>0.5mm**	**6**	**<1mm/s**	**HIGHEST**	**0.29**	**98.4**	**2.42**	**105.0**	**0.86**	**103.0**	**0.34**	**102.4**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**7**	**<115dBL**	**AVERAGE**	**0.22**	**95.7**	**1.06**	**96.7**	**0.49**	**94.4**	**0.23**	**94.2**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

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 FEBRUARY 2015																							
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FFT SINGLE 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
17	2015-19	3/02/2015	16:04	S15_B21-B23_RL335_TSB	0.8	TSB	0.19	107.3	0.57	109.3	0.40	103.9	0.29	105.5	10.00	120.0	Not Monitored		50.00	-3.7	109	6.7	11.3	12.3	11.4	0	Onsite	0	0	0
18	2015-20	4/02/2015	12:07	S14_B6_Wedge	0.1	IB	0.02	97.1	0.13	104.8	0.04	100.2	0.02	88.3	10.00	120.0	Not Monitored		50.00	-4.1	117	5.0	-	-	-	0	OK	0	0	0
19	2015-21	4/02/2015	16:38	S14_B9-B10_Panel3_UG	0.6	UG	0.04	99.0	0.35	110.9	0.07	104.8	0.04	98.5	10.00	120.0	Not Monitored		50.00	-2.7	143	4.8	-	-	3.0	0	OK	0	0	0
20	2015-22	6/02/2015	12:04	S17_B14-B18_RL350	0.7	IB	0.21	96.6	0.74	95.7	0.46	99.3	0.25	94.4	10.00	120.0	Not Monitored		50.00	-3.4	153	2.3	17.9	12.6	18	0	Onsite	0	0	0
21	2015-23	9/02/2015	13:18	S16_B3-B4_RL370_TSB	0.5	TSB	0.08	112.9	0.40	105.3	0.19	110.4	0.11	107.1	10.00	120.0	0.67	104.2	50.00	-3.5	128	5.3	-	3.5	4.3	0	OK	0	0	0
22	2015-24	10/02/2015	13:08	S18_B11-B12_RL390	0.6	OB	0.12	105.9	0.61	112.3	0.41	107.8	0.28	107.6	10.00	120.0	Not Monitored		50.00	-3.4	105	3.3	3.5	11.2	11.6	2B	Onsite	1	0	0
23	2015-25	11/02/2015	13:39	S14_B8-B9_P3_UG#7	0.3	UG	0.06	106.1	0.31	100.2	0.10	100.5	0.06	106.1	10.00	120.0	Not Monitored		50.00	-4	115	3.3	-	2.8	2.9	2B	OK	0	0	0
24	2015-26	13/02/2015	13:23	S14_B9-B10_P3_UG#8	0.6	UG	0.23	107.1	0.82	106.4	0.40	104.5	0.23	107.1	10.00	120.0	Not Monitored		50.00	-3.2	143	2.0	14.0	13.2	13.5	1A	OK	0	0	0
	2015-27	13/02/2015	13:23	S14_B20_RL275_TSB	0.6	TSB	0.23	107.1	0.82	106.4	0.40	104.5	0.23	107.1	10.00	120.0	Not Monitored		50.00	-3.2	143	2.0	14.0	13.2	13.5	0	OK	0	0	0
25	2015-28	16/02/2015	13:04	S14_B16-B18_RL260_PS	0.5	PS	0.32	100.4	0.76	89.5	0.28	91.3	0.22	90.7	10.00	120.0	Not Monitored		50.00	-2.8	346	1.1	2.1	2.9	3.1	1A	OK	0	0	0
26	2015-29	19/02/2015	12:08	S14_B17-B20_RL275	0.4	TSB	0.17	102.1	0.65	103.5	0.40	100.9	0.25	101.7	10.00	120.0	Not Monitored		50.00	-3.1	26	2.3	3.1	-	29.2	0	Onsite	0	0	0
27	2015-29a	19/02/2015	12:48	S14_B17-B20_RL275 refire misfire	-	Misfire	0.00	104.9	0.03	99.2	0.01	88.8	0.00	104.9	10.00	120.0	Not Monitored		50.00	-4	119	4.0	-	-	-	0	OK	0	0	0
28	2015-30	20/02/2015	12:07	S14_B11-B15_DESeam	0.4	UG	0.08	103.5	0.70	99.6	0.32	99.0	0.14	100.1	10.00	120.0	Not Monitored		50.00	-2.7	140	3.2	3.1	3.0	2.6	0	Onsite	0	0	0
29	2015-31	23/02/2015	13:18	S14_B12-B13_PS	0.3	PS	0.08	97.1	0.43	91.0	0.18	92.0	0.10	90.1	10.00	120.0	Not Monitored		50.00	-3.2	157	3.9	-	2.4	3.1	0	OK	0	0	0
30	2015-32	26/02/2015	13:43	S14+B11-B15_Dseam_UG	0.7	UG	0.12	98.2	1.00	101.2	0.37	98.7	0.21	98.9	10.00	120.0	2.80	117.6	50.00	-3.1	320	4.2	2.3	2.4	2.4	0	OK	0	0	0
	2015-33	26/02/2015	13:43	S17_B6-B8_RL350_UGPS	0.3	PS	0.12	98.2	1.00	101.2	0.37	98.7	0.21	98.9	10.00	120.0	2.80	117.6	50.00	-3.1	320	4.2	2.3	2.4	2.4	2A	OK	0	0	0
	TOTALS	**FEBRUARY 2015**	**# BLAST**	**14**	**TARGET**	**AVERAGE**	**0.13**	**102.7**	**0.58**	**102.3**	**0.28**	**100.3**	**0.17**	**100.4**	**5.00**	**115.0**														
	TOTALS	**FEBRUARY 2015**	**#>0.5mm**	**8**	**<1mm/s**	**HIGHEST**	**0.32**	**112.9**	**1.00**	**112.3**	**0.46**	**110.4**	**0.29**	**107.6**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**130**	**<115dBL**	**AVERAGE**	**0.15**	**100.2**	**0.73**	**100.5**	**0.34**	**97.8**	**0.22**	**97.4**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0.8%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

Blast Number	Shot number	Date fired	Time Fired	Location	WC South Predicted Vibration K50 mm/s	Type	WERRIS CREEK COAL BLASTING RESULTS MARCH 2015																							
							Glenara R11		Kyooma R98		Werris Ck Sth R62		Werris Ck Mid R92		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FFT SINGLE 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
31	2015-34	2/03/2015	13:04	S17_B16-B18_RL320	0.3	IB	0.21	108.6	0.47	103.2	0.30	108.3	0.33	106.0	10.00	120.0	Not Monitored		50.00	-3.8	153	6.5	3.1	2.4	3.2	2A	Onsite	0	0	0
32	2015-35	4/03/2015	13:24	S16_B7-B8_Cseam_RL350	0.7	IB	0.16	106.3	1.01	115.3	0.35	98.5	0.27	103.0	10.00	120.0	4.35	118.6	50.00	-4.2	309	7.5	8.4	3.1	3.2	0	Offsite	0	0	0
33	2015-36	6/03/2015	13:28	S18_B15-B17_RL370	0.7	IB	0.15	102.6	0.35	101.6	0.26	103.8	0.12	101.2	10.00	120.0	Not Monitored		50.00	-4.8	250	3.8	11.0	11.0	11.1	0	Onsite	0	0	0
	2015-37	6/03/2015	13:29	S14_B6-B8_RL290_TSB	0.6	TSB	0.17	95.1	1.01	101.1	0.48	92.9	0.22	96.7	10.00	120.0	6.23	119.6	50.00	-4.8	250	3.8	9.5	12.7	10.1	0	Road	0	0	0
34	2015-38	9/03/2015	13:09	S16_B6_Cseam	-	IB	0.01	85.3	0.12	92.8	0.05	99.3	0.04	97.0	10.00	120.0	DNT	DNT	50.00	-2.8	230	3.0	-	-	-	0	Road	0	0	0
35	2015-39	11/03/2015	9:32	S20_B13-B16_Blseam	0.5	OB	0.11	105.2	0.46	104.1	0.31	104.1	0.22	102.4	10.00	120.0	Not Monitored		50.00	-2.8	343	1.8	4.3	2.9	9.8	1A	Onsite	0	0	0
36	2015-40	13/03/2015	13:59	S20_B13-B16_Blseam #2	0.5	OB	0.28	111.3	1.17	99.0	0.47	108.1	0.38	100.4	10.00	120.0	Not Monitored		50.00	-3.8	140	6.9	3.1	3.0	3.1	2B	Onsite	0	0	0
	2015-41	13/03/2015	13:59	S14_B7-B10_RL290_TSB	0.7	TSB	0.30	110.4	1.90	103.7	0.83	107.4	0.47	97.6	10.00	120.0	1.75	114.4	50.00	-3.8	140	6.9	15.9	15.2	14.9	0	OK	2	0	0
	2015-42	13/03/2015	13:59	S14_B7-B10_RL290_PS	0.3	PS	0.30	110.4	1.90	103.7	0.83	107.4	0.47	97.6	10.00	120.0	Not Monitored		50.00	-3.8	140	6.9	15.9	15.2	14.9	0	OK	0	0	0
37	2015-43	17/03/2015	13:08	S14_B8-B10_RL290	0.5	IB	0.14	105.3	0.73	106.4	0.42	98.3	0.15	99.5	10.00	120.0	Not Monitored		50.00	-2.9	6	6.3	13.9	-	10.1	0	OK	0	0	0
38	2015-44	20/03/2015	14:02	S14_B17-B20_RL260_TSB	0.7	TSB	0.27	98.8	1.36	100.8	0.39	98.5	0.27	97.2	10.00	120.0	Not Monitored		50.00	-4.4	285	2.3	10.2	10.3	10.4	0	Road	0	0	0
39	2015-45	23/03/2015	13:07	S14_B8-B13_Gseam_PS	0.5	PS	0.24	84.8	1.85	87.6	0.38	85.9	0.29	80.2	10.00	120.0	Not Monitored		50.00	-3.0	337	1.5	3.6	3.0	3.1	3A	OK	0	0	0
40	2015-46	26/03/2015	16:04	S14_B13-B17_Gseam_PS	0.5	PS	0.25	88.9	0.81	90.8	0.29	98.4	0.28	96.3	10.00	120.0	Not Monitored		50.00	-2.9	312	2.8	2.2	3.0	3.1	3A	OK	0	0	0
41	2015-47	27/03/2015	13:08	S15_B18-B22_RL320	0.6	TSB	0.09	100.2	0.45	98.1	0.23	96.6	0.16	97.4	10.00	120.0	Not Monitored		50.00	-4.3	171	1.7	-	12.0	9.9	0	Onsite	0	0	0
42	2015-48	30/03/2015	13:02	S16_B6_Panel#1_UG	0.3	UG	0.04	100.6	0.51	107.0	0.10	107.7	0.07	106.1	10.00	120.0	1.01	125.3	50.00	-2.5	14	2.2	3.5	-	-	0	OK	0	0	0
	TOTALS	**MARCH 2015**	**# BLAST**	**12**	**TARGET**	**AVERAGE**	**0.18**	**100.9**	**0.94**	**101.0**	**0.38**	**101.0**	**0.25**	**98.6**	**5.00**	**115.0**														
	TOTALS	**MARCH 2015**	**#>0.5mm**	**9**	**<1mm/s**	**HIGHEST**	**0.30**	**111.3**	**1.90**	**115.3**	**0.83**	**108.3**	**0.47**	**106.1**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**142**	**<115dBL**	**AVERAGE**	**0.15**	**100.0**	**0.71**	**100.5**	**0.35**	**97.8**	**0.21**	**98.1**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**1.4%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

DNT = Did not trigger

Appendix 6 – Groundwater Monitoring Results

WO # [illegible]

...EET - SURFACE & GROUNDWATER

...REEK COAL PTY LTD

...CE:

...WERRIS CREEK COAL QUARTERLY GROUNDWATERS

...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

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

ALS ACIRL

Sample ID	Date	Time	Standing Water Level (□mbgl □mbtoc □m)	Bore depth (□mbgl □mbtoc □m)	Stick Up	Pump Type (Pump / Bailer)	Purge Volume (L)	Pump Set Depth (□mbgl □mbtoc □m)	EC - field (µS/cm)	pH - field (pH units)	Temp - field (°C)	Appearance	Odour	Colour	Comments
MW1	19/3/15	13:00	60.82		0.25	Bail			1195	7.0	22.0	Clear	Nil	Clear	6 Monthly Hill View
MW2	19/3/15	13:30	31.84		0.15	Tap			864	7.5	21.4	Clear	Nil	Clear	6 Monthly
MW3	19/3/15	10:30	18.15		0.95	Pump	~200L		3480	6.7	22.1	Clear		Clear	6 Monthly (Always Purge)
MW4	16/3/15	—	Broken Stickup. Blockage ~30cm below ground												Mine " "
MW4B	16/3/15	13:20.	14.68		0.7	Bail			1004	7.8	21.9	Clear	Nil	Clear	6 Monthly mine site. [illegible]
MW5	16/3/15	10:45	11.46		1.15	Bail			2230	7.3	20.7	Clear	Nil	Clear	6 Monthly Mine site.
MW5B	16/2/15	10:15	10.95		0.7	Bail			2510	7.1	20.3	Clear	Nil	Clear	Mine site
MW6	16/3/15	13:00	14.18		1.05	Bail			1839	7.4	21.7	Turbid	Nil	Sandy	6 Monthly mine site
MW9	—		Broken Stickup Blockage.												—
MW10	19/3/15	12:30	[illegible]		0.2	Pump			1230	7.5	27.1	Clear	Nil	Clear	Escott ln. - Shed.
MW11															Escott ln - Irrigation (near [illegible])
MW14	16/3/15	14:00	19.21		0.95	Bail			1690	7.5	21.3	Clear	Nil	Clear	Mine site (Bail loop)
MW14B	16/3/15	13:40	19.02		0.75	Bail			905	7.3	21.2	Slightly Turbid	Nil	Grey	" " (" ")
MW17B	18/3/15	12:00.	17.60		0.65	Tank	(Running)		2620	8.[illegible]	23.1	Clear	Nil	Clear	Wadwell ln. Mill (Hansen)
MW20															Tonsley Park
MW24A															Marengo.
MW25A															
MW25B															
[redacted]															
[redacted]															
[redacted]															
MW27	19/3/15	11:10	50.04		0.45	Bail			975	7.5	23.7	Slightly Turbid	Nil	Rusty brown	Escott ln. - [illegible]
MW29															Kyeema + Wirewell
MW31	—		No longer monitored.												Tolavera - Wadwell

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

Sample ID / Piezo ID	Date	Time	Standing Water Level ☐mbgl ☐mbtoc ☐m	Bore depth ☐mbgl ☐mbtoc ☐m	Stick up m	Purge Type Pump / Bail	Purge Volume L	Pump Set Depth ☐mbgl ☐mbtoc ☐m	EC - field uS/cm	pH - field pH units	Temp - field °C	Appearance	Odor	Colour	Comments
MW8															Roseneath
MW12	18/3/15	13:50	12.24		0.5	Tap			557	7.5	22.1	Clear	Nil	Clear	Hazeldene.
MW13	18/3/15	11:20	6.63		0.4	Bail			673	7.2	20.3	Clear	Nil	Clear	Wadwell lane - Well.
MW13B	18/3/15	10:40.	5.15		0.3	Bail			1168	8.0	20.4	Slight Turbid	Nil	Brown	Taylors ln - Opp Hayshed.
MW13D	18/3/15	11:00	5.16		0.2	Bail			1276	7.8	20.6	Clear	Nil	Clear	Taylors ln - Windmill
MW15	18/3/15	11:40	6.15		0.2	Bail			987.	7.4	21.7	Clear	Nil	Clear	Paynes ln - Windmill (Flowing)
MW16	18/3/15	12:50	7.27		0.3	Tap			752	7.2	23.1	Clear	Nil	Clear	Mountainview
MW17A	18/3/15	12:35	6.32		0.5	Tap			931	7.2	23.0	Clear	Nil	Clear	83 Wadwell ln.
MW18A	18/3/15	12:20	6.28		—	"			973	7.4	21.6	Clear	Nil	Clear	82 Wadwell ln.
MW19A															Lintona.
MW21A	19/3/15	13:50	10.10		0.3	←			No sample	Windmill	disconected	(to Dry)			Glenara (Windmill)
MW22A	18/3/15	13:30	7.41		0.55	Tap			625.	7.2	21.9	Clear	Nil	Clear	308 Paynes Inc. - House.
MW22B	18/3/15	13:15	7.68		0.45	Bail			457	7.8	20.7	Slight Turbid	Nil	Brown	" " " - Irrigation
MW23A	18/3/15	9:40	4.03		0.2	Tap			790	7.1	21.0	Clear	Nil	Clear	Peggy Ivy - Horse yard
MW23B	18/3/15	10:66	4.23		0.1	Bail			776	7.3	21.2	Clear	Nil	Clear	" " - Irrigation
MW28A															Woodlands Rd. (Windmill LH
MW28B															

SPECIAL COMMENTS: M

Sheet of

FIELD LOG 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

Regulated / Analysis	Sample ID / Bore	Date	Time	Bore Data: Standing Water Level (□mbgl □mbtoc □m)	Bore Data: Bore Depth (□mbgl □mbtoc □m)	Bore Data: Bore Dia. (")	Sampling Data: Purge Type (Pump / Bailer)	Sampling Data: Purge Volume (L)	Sampling Data: Pump Set Depth (□mbgl □mbtoc □m)	Field Tests: EC - field (uS/cm)	Field Tests: pH - field (pH units)	Field Tests: Temp - field (°C)	Field Observations: Appearance	Field Observations: Odour	Field Observations: Colour	Comments
	MW7	18/3/15	9:00	4.85		–	Bail			475	7.0	20.7	Clear	Nil	Clear	Adaraana - Well
	MW7B	18/3/15	9:25	4.97		0.9.		*Sample only								Adaraana - Windmill.
	MW32	19/3/15	10:20	4.19		0.45	Top			760	7.3	21.2	Clear	Nil	Clear	"Naranji" - Pump Shed - 3 Johns Lane
✱	MW36A	19/3/15	12:05	24.34		0.95	Bail			1069	7.3	22.6				*Mine site - opp FLO Nth
✱	MW36B	19/3/15	11:40	24.04		0.95	Bail			507	8.0	22.4	Clear	Nil	Clear	*Mine site - N FLO Sth.
	[redacted]															
	MW34	18/3/15	14:10	11.80			Top			1053	7.6	27.4	Clear	Nil	Clear	Warrah Creek - Off Cry Rd.
	MW5D	16/3/15	11:05	13.68		0.68	Bail			2720	7.1	20.1	Clear	Nil	Clear	Mine Site
	MW5C	16/3/15	11:30	11.23		0.93	Bail			4040	7.2	21.6	Clear	Slight Sulphur	Clear	Mine Site
	MW5E	16/3/15	12:15	12.92		0.76	Bail			1287	7.8	22.0	Clear	Nil	Clear	Mine Site
	MW5F	16/3/15	11:50	18.61		1.20	Bail			1469	7.7	21.2	Slightly Turbid	Nil	Sandy	Mine Site
	MW5G	16/3/15	12:40	13.86		0.85	Bail			1057	7.8	21.8	Clear	Nil	Clear	Mine Site

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

CERTIFICATE OF ANALYSIS

Work Order	: **ES1504190**	Page	: 1 of 5
Client	: **WHITEHAVEN PTY LTD C/O ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
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	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE - WATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 9639		
C-O-C number	: ----	Date Samples Received	: 20-FEB-2015
Sampler	: BP	Issue Date	: 27-FEB-2015
Site	: ----		
		No. of samples received	: 8
Quote number	: SY-457-11	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Helen Simpson	Inorganic Chemist	ACIRL Sampling

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SD4	VWD1	VWD2	QCU	QCD
				Client sampling date / time	19-FEB-2015 12:40	19-FEB-2015 12:15	19-FEB-2015 11:15	19-FEB-2015 10:25	19-FEB-2015 10:40
Compound	CAS Number	LOR	Unit		ES1504190-001	ES1504190-002	ES1504190-003	ES1504190-004	ES1504190-005
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		501	1030	1020	1450	1120
pH	----	0.01	pH Unit		9.10	9.00	8.40	8.40	8.30
Temperature	----	0.1	°C		27.1	26.3	25.2	22.6	22.9
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.37	8.47	8.09	8.04	8.07
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		531	1090	1090	1540	1170
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		116	20	13	33	8
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.03	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	1.59	2.77	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	1.62	2.79	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.9	0.7	0.7	2.2	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.9	2.3	3.5	2.2	0.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.36	0.02	<0.01	0.23	0.15
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.07	<0.01	<0.01	<0.01	0.11
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WCD	VWD3	VWD4	-----	-----
				Client sampling date / time	19-FEB-2015 09:15	19-FEB-2015 11:40	19-FEB-2015 12:00	----	----
Compound	CAS Number	LOR	Unit		ES1504190-006	ES1504190-007	ES1504190-008	----	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		1190	936	995	----	----
pH	----	0.01	pH Unit		7.90	9.10	9.10	----	----
Temperature	----	0.1	°C		23.6	25.2	24.7	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.32	8.50	7.91	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1240	981	1040	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		40	12	10	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.02	0.05	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	2.22	1.97	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	2.24	2.02	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.8	0.8	0.8	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.8	3.0	2.8	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.24	<0.01	0.02	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.16	<0.01	<0.01	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		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	SD4 - 19-FEB-2015 12:40	Turbid
AC04: Appearance	VWD1 - 19-FEB-2015 12:15	Clear
AC04: Appearance	VWD2 - 19-FEB-2015 11:15	Clear
AC04: Appearance	QCU - 19-FEB-2015 10:25	Slight Turbid
AC04: Appearance	QCD - 19-FEB-2015 10:40	Clear
AC04: Appearance	WCD - 19-FEB-2015 09:15	Clear
AC04: Appearance	VWD3 - 19-FEB-2015 11:40	Clear
AC04: Appearance	VWD4 - 19-FEB-2015 12:00	Clear
AC04: Odour	SD4 - 19-FEB-2015 12:40	Nil
AC04: Odour	VWD1 - 19-FEB-2015 12:15	Nil
AC04: Odour	VWD2 - 19-FEB-2015 11:15	Nil
AC04: Odour	QCU - 19-FEB-2015 10:25	Nil
AC04: Odour	QCD - 19-FEB-2015 10:40	Nil
AC04: Odour	WCD - 19-FEB-2015 09:15	Nil
AC04: Odour	VWD3 - 19-FEB-2015 11:40	Nil
AC04: Odour	VWD4 - 19-FEB-2015 12:00	Nil
AC04: Colour	SD4 - 19-FEB-2015 12:40	Brown
AC04: Colour	VWD1 - 19-FEB-2015 12:15	Clear
AC04: Colour	VWD2 - 19-FEB-2015 11:15	Clear
AC04: Colour	QCU - 19-FEB-2015 10:25	Green
AC04: Colour	QCD - 19-FEB-2015 10:40	Clear
AC04: Colour	WCD - 19-FEB-2015 09:15	Clear
AC04: Colour	VWD3 - 19-FEB-2015 11:40	Clear
AC04: Colour	VWD4 - 19-FEB-2015 12:00	Clear

Appendix 8 – Discharge Monitoring Results

Werris Creek Coal Community Consultative Committee

Thirty Sixth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 27th August 2015

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site inspecting operations from the southern lookout and the western rehabilitation before the meeting.

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); Geoff Dunn (Community Representative); Mike Lomax (Community Representative); Donna Ausling (LPSC – Acting Director Environmental Services); Rod Hicks (WCC – Operations Manager) and Andrew Wright (WCC – Environmental Officer and Minute Taker).

Apologies: Dave Goldman (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. New Matters for Discussion under General Business

Four new items of business were:

a) Update on Community Enhancement Fund;
b) WCC Project Approval Modification Update;
c) Recent Media enquiries regarding Water; and
d) Tabled a Letter of Complaint regarding Groundwater.

4. Minutes of Previous Meeting

Minutes of the previous meeting on the 28th May 2015 were reviewed by the committee.

Motion moved to accept the meeting minutes on the 28th May 2015 as a true and accurate representation of business conducted on that day.

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

5. Matters Arising

a) Actions from Previous Meeting

a) Donna Ausling was to present further information regarding Spring Ridge's community request for playground softfall installation but as funding had been secured from another source, this project did not need to be presented to the Committee;

b) Other Matters Arising

None.

6. Environmental Monitoring Report: May, June and July 2015

Meteorology – May 2015 had above average rainfall and cold to warm temperatures; while June and July 2015 had cold to mild temperatures and average rainfall. For the last three months the prevailing wind direction changed from the south-south easterly transitioning to a north-north westerly wind.

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 DG17 ("Woodlands"), DG20 ("Tonsley Park"), DG24 ("Hazeldene") and DG34 (8 Kurrara St). DG17 and DG20 were impacted by organic matter contamination. Based on low dust levels measured at adjacent dust gauges, DG24 and DG34 were impacted by localised dust sources not related to WCC mine.

Overall the dust fallout levels adjacent to the train line in Quirindi are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC.

There were no dust complaints during the period.

Noise – There were no noise exceedances during May, June and July 2015. The last recorded noise exceedance was in October 2014.

There was one noise complaint during the period for non-WCC related rail noise from the Werris Creek Rail Yard.

Blasting – During the period a total of twenty blasts were fired by WCC. All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s).

There were nine blast complaints during the period from six separate blast events on 23rd and 29th May, 4th and 10th June and 8th and 24th July 2015. All blasts were in compliance however eight blasting complaints were related to vibration impacts with five of those complaints specifically for G Coal Interburden blasts that have caused community complaints in the past; even though each shot is designed for a target vibration level less than 0.8mm/s (target reduced from 1mm/s to help reduce complaints). One blasting complaint on 8th July 2015 was in relation to a small fume cloud generated by the blast that rapidly dispersed on the mine site.

Groundwater – While average rain fell across May to July 2015; the rainfall was not sufficient enough to result in rainfall recharge to aquifers with the majority of monitoring bores groundwater levels 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 dry conditions. There was community and media attention on this issue culminating in a Community Meeting held in Werris Creek to discuss the results of groundwater monitoring and modeling on 29th July 2015.

There were two groundwater complaints during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer which had a number of bores at the lowest levels ever measured by WCC.

Surface Water – Quarterly surface water monitoring was undertaken on 13th May 2015 with all onsite and offsite water quality within longer term averages and the Site Water Management Plan trigger values despite most locations were either dry or concentrated in small pools/not flowing.

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 were thirteen complaints received during the period with the details summarised below. There were nine complaints related to blasting; two complaints relating to groundwater; one complaint related to lighting and one complaint related to noise. There were nine different complainants during the period with eleven complaints from Werris Creek residents and two complaints from Quipolly residents.

Motion moved to accept the Environmental Monitoring Report for May, June and July 2015.

Moved: Col Stewart. Seconded: Geoff Dunn. Motion Carried.

6. General Business

a. Community Enhancement Fund (CEF) Update

Donna Ausling provided an update on the Hoamme Park Playground Project indicating that the LPSC had committed the extra $70,000 in addition to the CEF and other contributions received to commence works on the ground now that ARTC had provided land owner's consent as part of the Development Application for the expansion of the playground facilities. The LPSC had completed the installation of the additional public seating in Single Street, Werris Creek outside of the main CBD. Donna Ausling indicated that LPSC were still scoping up the 2016 proposed playground improvement project for the other villages in the shire to be funded from the last remaining $50,000 in the CEF.

b. WCC Project Approval Modification Update

WCC is waiting for the Department of Planning & Environment to finalise it's assessment of the modification to the Project Approval under which WCC currently operates (PA 10_0059) which will allow (if approved) the offsite transfer of void water for agricultural use. If the modification is approved, WCC will undertake a trial irrigation project on the adjacent "Escott" property.

c. Recent Media enquiries regarding Water

There have been a number of assertions made through the media about water resource management at WCC. WCC refutes the claim that the depletion of bores being reported anecdotally by some local landholders and others is in any way related to the workings of the mine. The geology of aquifers and groundwater systems around the WCC Mine and WCC's own monitoring suggests that the onset of drought conditions in 2012 resulting in rainfall recharge not keeping pace with groundwater extraction for surrounding uses not related to mining, are the major factors implicated in declining water levels.

d. Tabled a Letter of Complaint regarding Groundwater

Noel Taylor tabled a Letter of Complaint regarding Alleged Groundwater Impacts as a result of WCC operations. WCC met face to face with the complainant, requested a groundwater expert to review their groundwater monitoring data and has now provided a response to the author of the letter. The Committee was satisfied with this approach.

Meeting Closed 12:00pm.

Next Meeting scheduled for Thursday 26th November 2015.

Copy to:

Gae Swain	Independent Chairperson
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Geoff Dunn	Community Representative
Mike Lomax	Community Representative
Dave Goldman	Community Representative

Ron Van Katwyk	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Andrew Wright	Werris Creek Coal
Wayne Jones	DPE		
John Trotter	DRE		
Kharl Turnbull	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

May, June and July 2015

This Environmental Monitoring Report covers the period 1st May 2015 to 30th July 2015 for the Werris Creek No.2 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

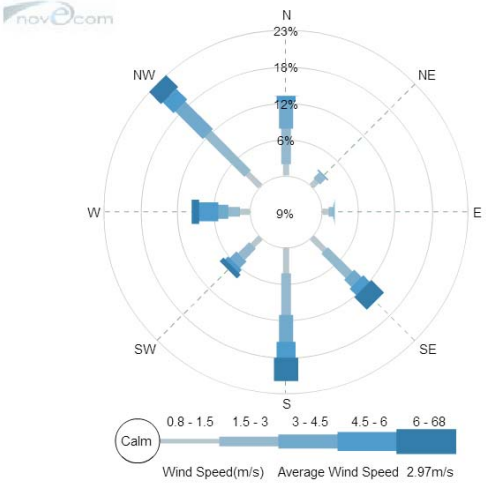
1.0 METEOROLOGY

1.1 WEATHER STATION

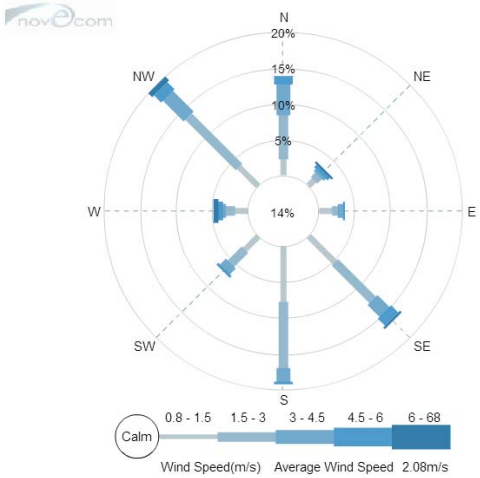
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. May 2015 had above average rainfall and cold to warm temperatures; while June and July 2015 had cold to mild temperatures and average rainfall. For the last three months the prevailing wind direction changed from the south-south easterly transitioning to a north-north westerly wind.

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*
May 2015	-2.0	12.5	24.9	0.4	13.6	24.1	3.7	13.6	23.5	+0.6	+6.3	71.4	54.2	59.6	146.6
June 2015	-2.6	8.9	20.2	-0.2	11.1	20.8	1.1	11.3	19.5	+1.0	+6.6	61.8	34.6	34.8	208.4
July 2015	-3.3	7.8	17.9	-1.4	9.3	17.9	0.7	9.4	16.9	-0.8	+6.3	37.8	31.2	32.8	246.2

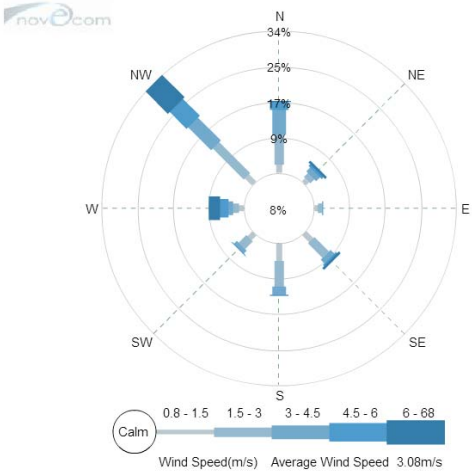
* Annual cumulative total since July 2012 to June 2013 from a composite data set based on the onsite Weather Station at WCC.



May 2015



June 2015



July 2015

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”

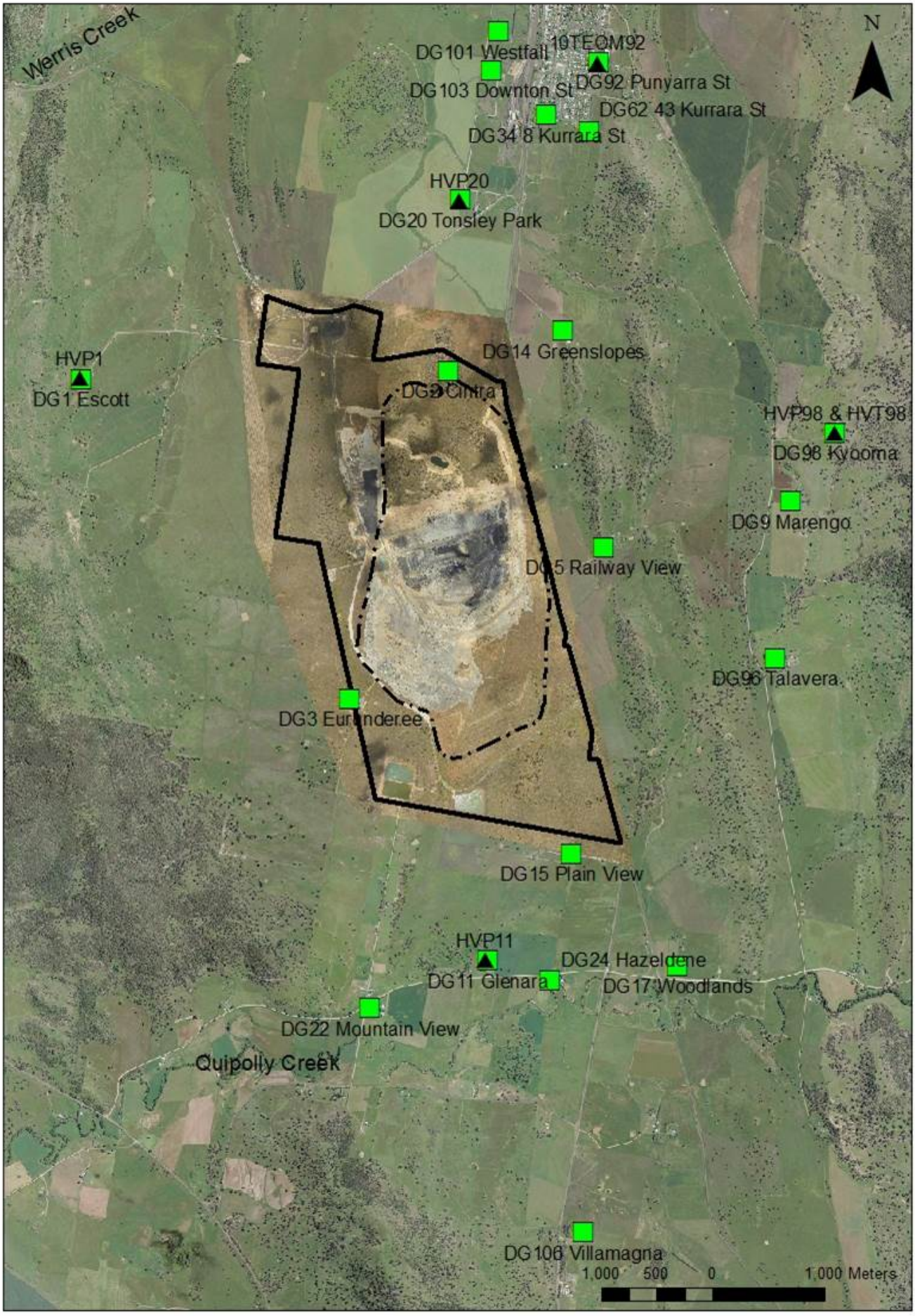


Figure 1 – WCC Dust Monitoring Locations

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)	May 2015 (µg/m^3)	June 2015 (µg/m^3)	July 2015 (µg/m^3)	2015-2016 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	7.3	2.9	1.9	2.6	2.6	8	25
PM10 – TEOM92 "Werris Creek"	15.0	4.5	4.0	5.5	4.9	30	50
PM10 – HVP20 "Tonsley Park"	14.4	8.5	9.0	7.3	9.2	30	50
PM10 - HVP1 "Escott"	9.0	6.6	4.3	4.2	6.4	30	50
PM10 – HVP20 "Glenara"	19.0	12.6	7.6	10.1	11.0	30	50
PM10 – HVP98 "Kyooma"	12.1	6.8	6.5	3.1	5.1	30	50
TSP – HVT98 "Kyooma"	29.7	15.7	7.9	6.2	10.2	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 micron 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 metre squared 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	May 2015 (g/m^2/month)	June 2015 (g/m^2/month)	July 2015 (g/m^2/month)	2015-2016 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.2*	<0.1	<0.1	0.2	4.0
DG2 "Cintra"	2.7	1.5*	1.6	1.8	4.0
DG3 "Eurunderee"	2.4*	0.5*	0.7*	1.2	4.0
DG5 "Railway View"	1.8*	0.4	1.3	1.4	4.0
DG9 "Marengo"	0.8	<0.1	0.4	0.7	4.0
DG11 "Glenara"	0.5*	0.6	0.3*	0.6	4.0
DG14 "Greenslopes"	0.5*	0.1	0.3*	0.6	4.0
DG15 "Plain View"	0.6	0.4*	**4.0**	1.5	4.0
DG17 "Woodlands"	**4.8c***	**8.3c***	1.0*	**4.2**	4.0
DG20 "Tonsley Park"	**11.9c***	3.1	**c27.6***	**11.8**	4.0
DG22 "Mountain View"	2.2	1.2	0.3*	2.0	4.0
DG24 "Hazeldene"	**4.5c**	0.6*	0.5	2.7	4.0
DG34 8 Kurrara St	**29.5c**	0.5*	0.3*	**7.8**	4.0
DG62 Werris Creek South	0.8*	<0.1	0.5*	2.3	4.0
DG92 Werris Creek Centre	0.4	0.1	2.7*	1.1	4.0
DG96 "Talavera"	0.5*	NS	0.8*	0.5	4.0
DG98 "Kyooma"	0.2*	<0.1	<0.1	0.3	4.0
DG101 "Westfall"	0.9*	1.0	0.5*	1.2	4.0
DG103 West Street	0.9*	0.3*	0.1*	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 DG17 ("Woodlands"), DG20 ("Tonsley Park"), DG24 ("Hazeldene") and DG34 (8 Kurrara St). DG17 and DG20 were impacted by organic matter contamination. Based on low dust levels measured at adjacent dust gauges, DG24 and DG34 were impacted by localised dust sources not related to 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	May 2015		June 2015		July 2015		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.2	10%	4.8	10%	1.2	20%	2.1
DDW20	1.0	10%	0.6	<1%	0.6	40%	0.8
DDW13	1.0	10%	0.5	5%	1.1	20%	0.9
Train Line							
DDE13	3.9	10%	1.9	10%	2.4	40%	2.4
DDE20	0.8	5%	0.9	15%	0.8	50%	0.9
DDE30	1.2	5%	0.6	5%	0.4	10%	0.8

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) and comparable to the levels monitored around WCC.

2.4 AIR QUALITY COMPLAINTS

There were no dust complaints 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**.

Wednesday 13th May 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#	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Inaudible#	39	Inaudible#	39
D	**"Hazeldene"** R24	Faintly Audible#	37	Faintly Audible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible#	38
F	**"Talavera"** R96	24#	38	25#	37
G	R97	Inaudible#	35	35#	35
H	**"Kyooma"** R98*	26#	36	31#	36
I	**Kurrara St, WC**	Inaudible#	35	28#	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible#	35
K	**South St, WC** (R20*, R21*)	23#	39	26#	37
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 2nd June 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	20	35	20#	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	20	37/36[1]	20	37/36[1]
C	**Central Quipolly**(R10*,R11*)	20#	39	20	39
D	**"Hazeldene"** R24	20#	37	20	37
E	**"Railway Cottage"** R12	20	38	25	38
F	**"Talavera"** R96	20	38	15#	37
G	R97	20	35	15#	35
H	**"Kyooma"** R98*	25	36	33	36
I	**Kurrara St, WC**	25	35	28	35
J	**Coronation Ave, WC**	25#	35	25	35
K	**South St, WC** (R20*, R21*)	29	39	30	37
L	**West St, WC** (R103)	25	35	25	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 14th July 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	20#	35	20#	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	20#	37/36[1]	26	37/36[1]
C	**Central Quipolly**(R10*,R11*)	20#	39	23#	39
D	**"Hazeldene"** R24	23#	37	31#	37
E	**"Railway Cottage"** R12	20#	38	25#	38
F	**"Talavera"** R96	28#	38	28#	37
G	R97	27#	35	33#	35
H	**"Kyooma"** R98*	24#	36	34#	36
I	**Kurrara St, WC**	20#	35	20#	35
J	**Coronation Ave, WC**	25#	35	20	35
K	**South St, WC** (R20*, R21*)	20#	39	26#	37
L	**West St, WC** (R103)	20#	35	25#	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) $L_{eq\ 15min}$

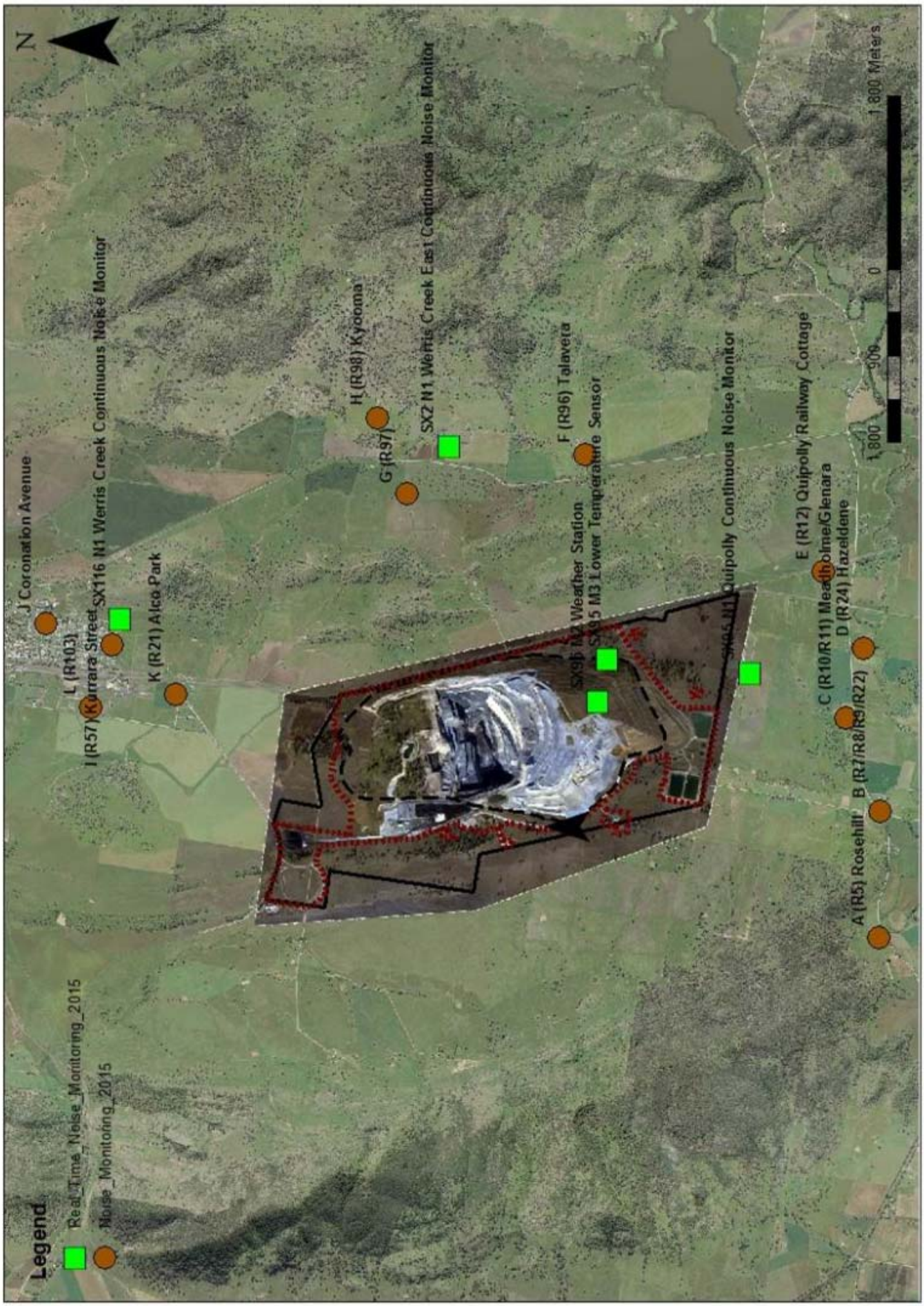


Figure 2 – WCC Noise Monitoring Locations

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during February, March and April 2015. The last recorded noise exceedance was in October 2014.

3.2 NOISE COMPLAINTS

There was one noise complaint during the period. Specific actions taken in relation to this complaint are outlined in **Section 6.**

4.0 BLAST

During the period a total of twenty two 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.

May 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	0.21	99.3	1.09	100.5	0.48	98.4	0.33	97.8
Monthly Maximum	0.31	108.6	2.88	112.6	0.98	107.4	0.60	110.5
Annual Average	0.21	97.5	1.08	98.6	0.49	96.4	0.28	96.0
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	0.8%	0%	1.2%	0%	0%
# Blasts >0.5mm/s	7 out of 8 blast events							

June 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	100.1	0.76	101.8	0.37	102.4	0.28	101.1
Monthly Maximum	0.16	104.0	1.48	105.3	0.59	107.1	0.44	105.7
Annual Average	0.19	98.4	0.97	99.7	0.45	98.4	0.28	97.7
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	1.4%	0%	1.2%	0%	0%
# Blasts >0.5mm/s	3 out of 4 blast events							

July 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	99.3	0.75	100.5	0.35	101.9	0.29	100.9
Monthly Maximum	0.30	103.5	1.73	104.1	0.74	108.9	0.63	108.0
Annual Average	0.17	98.6	0.92	99.9	0.42	99.3	0.28	98.5
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Blasts >0.5mm/s	5 out of 10 blast events							

Yellow – overpressure >115dB(L) or Werris Creek vibration >1mm/s.

4.1.2 Discussion - Compliance / Non Compliance

All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s).

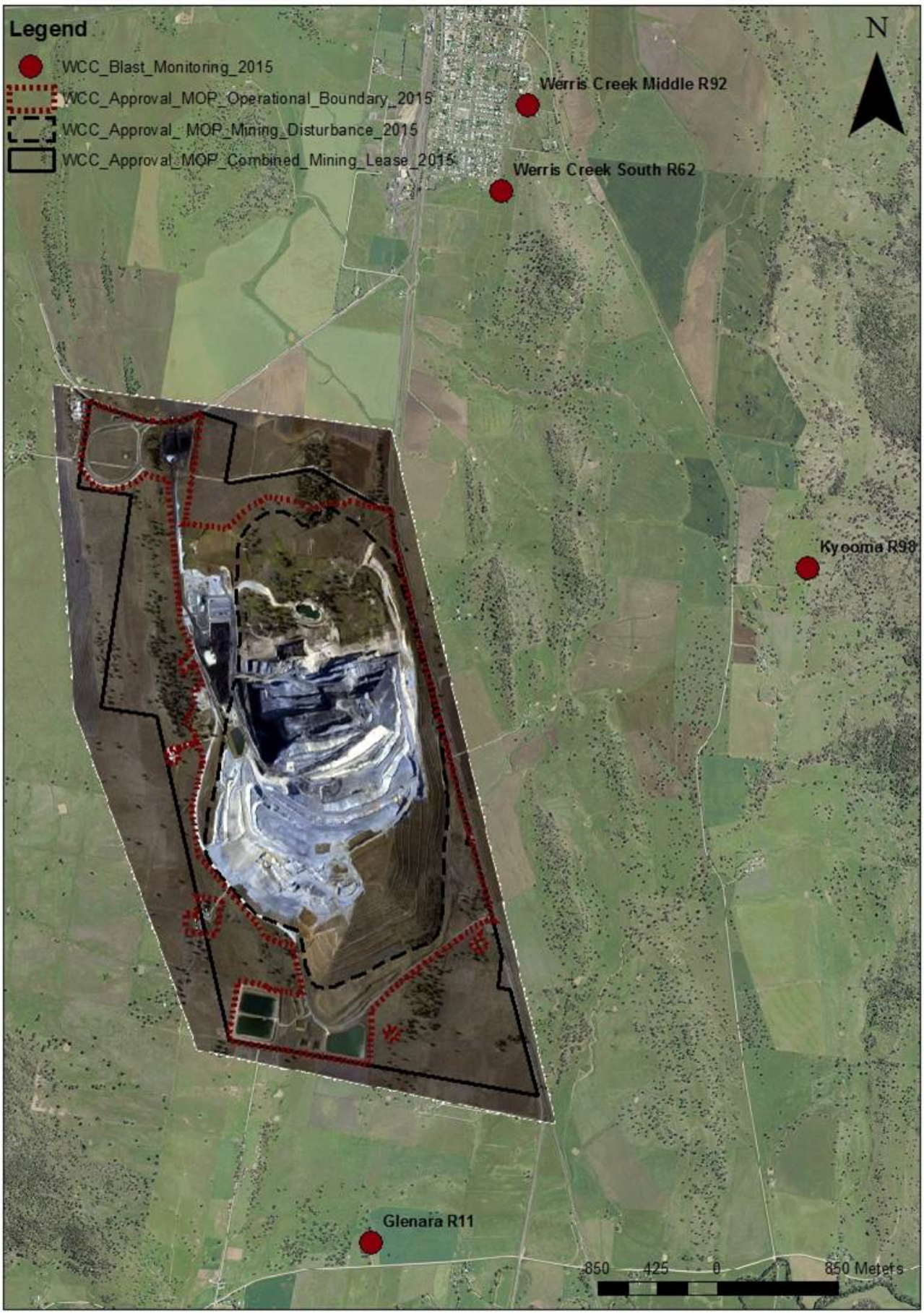


Figure 3 – WCC Blast Monitoring Locations

4.2 BLAST COMPLAINTS

There were nine blast complaints during the period from six separate blast events on 23rd and 29th May, 4th and 10th June and 8th and 24th July 2015. All blasts were in compliance however eight blasting complaints were related to vibration impacts with five of those complaints specifically for G Coal Interburden blasts that have caused community complaints in the past; even though each shot is designed for a target vibration level less than 0.8mm/s (target reduced from 1mm/s to help reduce complaints). One blasting complaint on 8th July 2015 was in relation to a small fume cloud generated by the blast that rapidly dispersed on the mine site. 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 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 31 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 was completed between the 12th and 14th May 2015 and 27th and 29th July 2015. 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	May 2015		July 2015		Comments
		mbgl	%	mbgl	%	
Werrie Basalt Near WCC	MW1	61.33	-1%	62.64	-2%	No rainfall recharge, Level down
	MW2	32.59	-2%	33.69	-3%	No rainfall recharge, Level down
	MW3	18.35	-1%	18.61	-1%	No rainfall recharge, Level down
	MW4B	15.02	-2%	15.53	-3%	No rainfall recharge, Level down
	MW5	11.61	-1%	11.87	-2%	No rainfall recharge, Level down
	MW6	14.4	-2%	14.72	-2%	No rainfall recharge, Level down
	MW27*	51.83	-3%	55.04	-6%	No rainfall recharge, Level down
	MW36A	22.97	6%	22.79	+1%	Limited rainfall recharge
	MW36B	22.75	6%	22.68	0%	Limited rainfall recharge
Werrie Basalt	MW8*	18.79	-1%	18.95	-1%	No rainfall recharge, Level down
	MW10	17.29	0%	17.60	-2%	No rainfall recharge, Level down
	MW14	18.35	5%	17.72	+4%	Limited rainfall recharge
	MW17B*	12.64	-3%	12.89	-2%	No rainfall recharge, Level down
	MW19A*	9.37	-1%	9.49	-1%	No rainfall recharge, Level down
	MW20*	21.12	0%	21.26	-1%	No rainfall recharge, Level down
Quipolly Alluvium	MW7*	-	-	-	-	-
	MW12*	12.54	-2%	12.92	-3%	No rainfall recharge, Level down
	MW13*	6.76	-2%	6.90	-2%	No rainfall recharge, Level down
	MW13B*	5.28	-2%	5.33	-1%	No rainfall recharge, Level down
	MW13D*	5.16	0%	5.15	0%	Limited rainfall recharge
	MW15*	6.28	-2%	6.44	-2%	No rainfall recharge, Level down
	MW16*	7.38	-1%	7.63	-3%	No rainfall recharge, Level down
	MW17A*	6.44	-2%	6.68	-4%	No rainfall recharge, Level down
	MW18A*	6.32	-1%	6.54	-3%	No rainfall recharge, Level down
	MW21A*	10.28	-2%	10.54	-2%	No rainfall recharge, Level down
	MW22A*	7.62	-3%	7.77	-2%	No rainfall recharge, Level down
	MW22B*	7.87	-2%	Dry	-	No rainfall recharge, Level down
	MW23A*	4.00	1%	3.97	+1%	Limited rainfall recharge
	MW23B*	4.22	0%	4.18	+1%	Limited rainfall recharge
	MW28A*	14.45	-1%	14.76	-2%	No rainfall recharge, Level down
	MW32*	4.13	1%	4.25	-3%	No rainfall recharge, Level down

mbgl – meters below ground level is the distance in meters from top of bore to groundwater surface; Red – Greater than 15% change/potential compliance issue; 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).

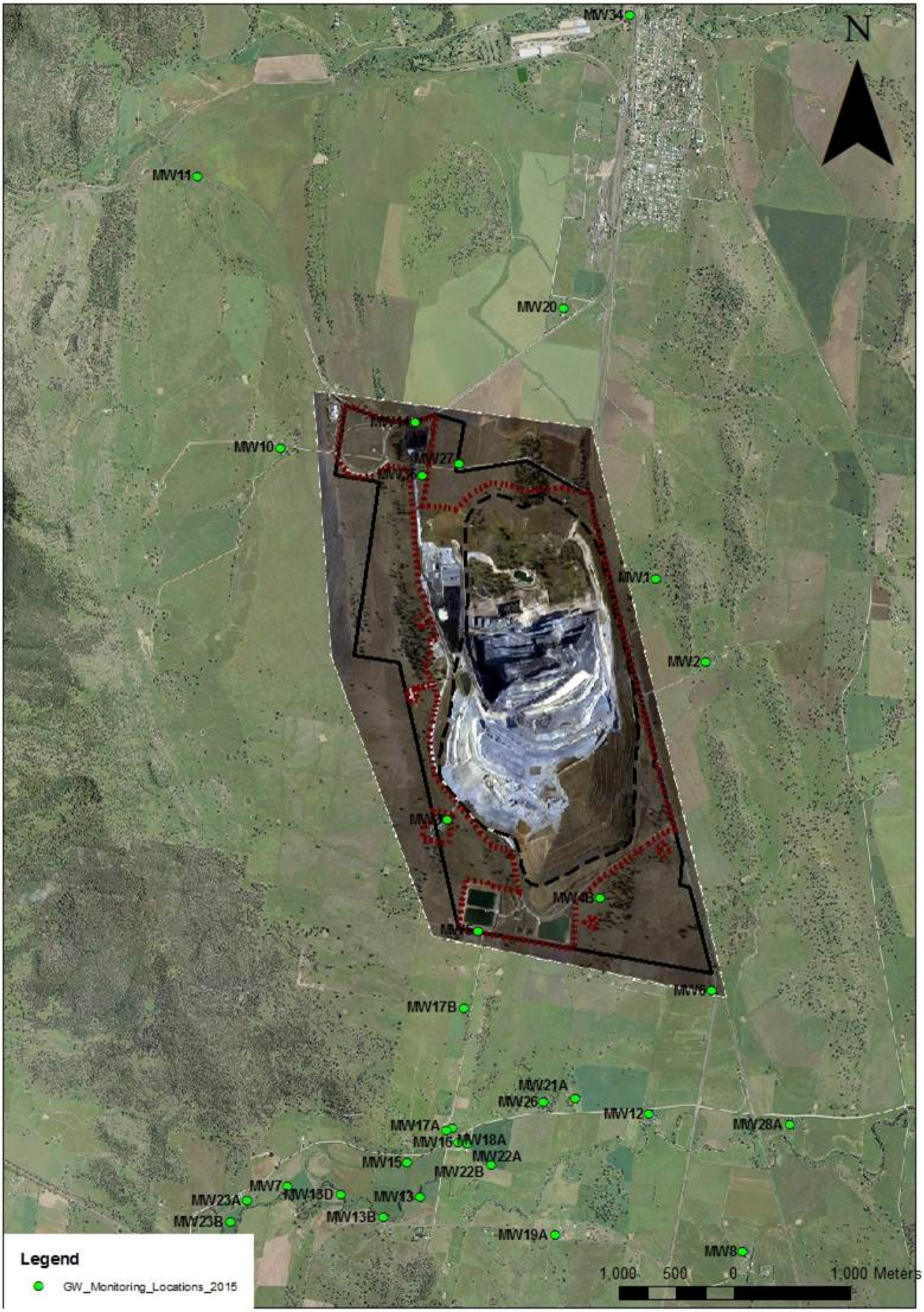


Figure 4 – WCC Groundwater Monitoring Locations

5.1.2 Discussion - Compliance / Non Compliance

While average rain fell across May to July 2015; the rainfall was not sufficient enough to result in rainfall recharge to aquifers with the majority of monitoring bores groundwater levels 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 dry conditions. There was community and media attention on this issue culminating in a Community Meeting held in Werris Creek to discuss the results of groundwater monitoring and modeling on 29th July 2015.

5.2 SURFACE WATER

Surface water monitoring is undertaken from 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 13th May 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	Dry	Dry	Dry	Dry	Dry.
SB10	Dry	Dry	Dry	Dry	Dry.
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry.
QCD	8.08	1100	6	<5	pH increased 0.01, EC decreased 70, TSS decreased 2, O&G no change.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.29	1360	34	<5	pH decreased 0.03, EC decreased 120, TSS decreased 6, O&G no change.

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 13th May 2015 with all onsite and offsite water quality within longer term averages and the Site Water Management Plan trigger values despite most locations were either dry or concentrated in small pools/not flowing.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no discharge events during the period. A summary of discharge monitoring results is provided below with the laboratory reports provided in **Appendix 8**.

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 a result of the dirty water discharge events.

5.3 WATER COMPLAINTS

There were two groundwater complaints during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer which had a number of bores at the lowest levels ever measured by WCC. Specific actions taken in relation to these complaints are outlined in **Section 6.**

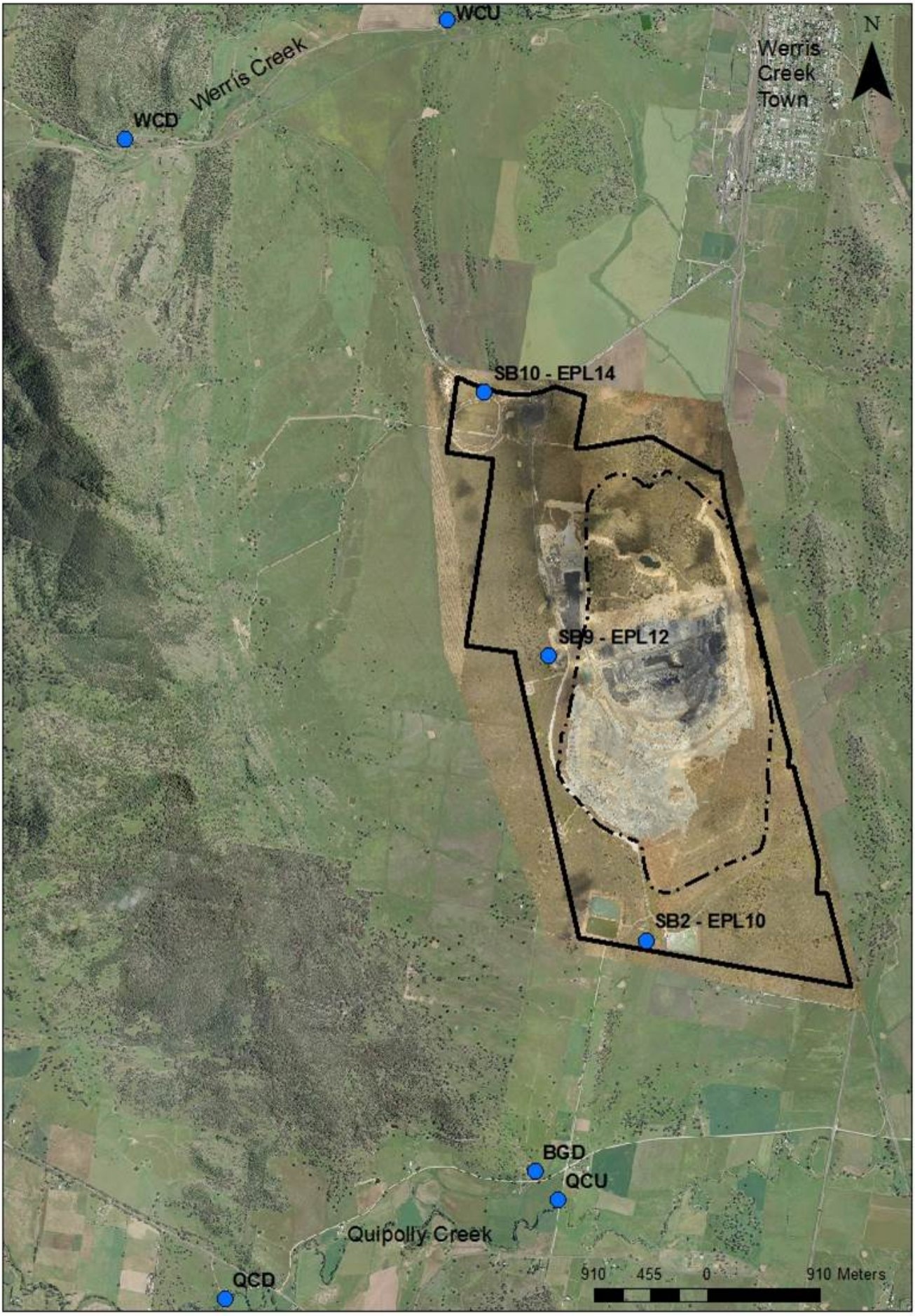


Figure 5 – WCC Surface Water Monitoring Locations

6.0 COMPLAINTS SUMMARY

There were thirteen complaints received during the period with the details summarised below. There were nine complaints related to blasting; two complaints relating to groundwater; one complaint related to lighting and one complaint related to noise. There were nine different complainants during the period with eleven complaints from Werris Creek residents and two complaints from Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
471	11/05/2015 8:28am	DP&E/A Werris Creek	A light at the Train Load Out from 6:45 pm until 9:40 pm 10th May 2015 on the left hand side of the Train Loading Bin.	A train was loaded between 18:38 and 21:30 Sunday 10th May 2015. It was the first train loaded at night since the 1st May 2015. The lighting camera identifies the dominant light was from the dozer on the Product Coal Stockpile but is mobile. No fixed lighting impact was identified.	Written response provided to DP&E.
472	23/05/2015 10:27am	I Werris Creek	Blast shook the house very hard and not sure how much more the house can take. Very rude to blast like that on a Saturday.	Blast #64-2015 S14_B7-B10_RL255 was fired at 10:23am on Saturday 23rd May 2015 was in compliance. Actual blast vibration was above the predicted vibration of 0.8mm/s and also above the vibration target of 0.8mm/s. Community complaints for blasting is likely above the anecdotal threshold of 0.5mm/s. Weather conditions were a moderate southerly wind (168o) @ 4.1m/s with no inversion present.	A written response provided to complainant. The blast was the largest fired since July 2014. Review the need to fire large blasts >250,000bcm. Undertake a follow up Structural Inspection of the property to confirm no damage from blasting.
473	29/05/2015 2:40pm	BI Werris Creek	Blast vibration was very strong lasting for 2 sec but not as violent or as long as the previous bad blasts.	Blast #66-2015 S14_B10-B12_RL255_TSB was fired at 2:38pm on Friday 29th May 2015 was a shot in the centre and at a lower elevation in pit was in compliance. Actual blast vibration was below the predicted vibration of 0.7mm/s but above the anecdotal complaint threshold of 0.5mm/s. Weather conditions were a light northerly wind (2o) @ 1.2m/s with no inversion present.	Written response provided to complainant. Monitor at the complainants property for next G seam blast.
474	04/06/2015 9:40am	BI Werris Creek	Blast vibration strong enough to wake from sleep which was disconcerting.	Blast #67-2015 S17_B2-B5_RL390 was fired at 9:38am on Thursday 4th June 2015 was a shot on the eastern side of the pit at natural surface was in compliance. Actual blast vibration was below the predicted vibration of 0.7mm/s but above the anecdotal complaint threshold of 0.5mm/s. Weather conditions were a very light northerly wind (43o) @ 0.3m/s with no inversion present.	Written response provided to complainant. Investigate options for permanent blast monitor at northern Werris Creek.
475	10/06/2015 12:37pm	A Werris Creek	The mine blast shook house severely.	Blast #69-2015 S20_B19-B21_RL395 was fired at 12:08pm on Wednesday 10th June 2015 was a shot on the western side of the pit at natural surface was in compliance. The shot being at natural surface, it was more likely to have been air blast impact given the very low vibration level. The weather conditions were a moderate southerly wind (170o) @ 2.1m/s with no inversion present.	Written response provided to complainant.
476	22/06/2015 9:49pm	U Werris Creek	The complainant alleged "what's all the noise, thought mine production was on hold".	A review of the audio found the elevated noise levels to be due to passing vehicles. The average weather conditions were a light north north westerly wind (333o @ 1.2m/s) with +6.6oC/100m inversion present.	Written response provided to complainant.
477 & 478	08/07/2015 1:35pm	U/EPA Werris Creek	The blast shook the house with sufficient force waking the complainant; who then saw a fume cloud from the blast.	Blast #71&74-2015 (S17_B1-B2_RL390 and S16_B6_UG_Cwedge) shots were fired at 1:33pm on Wednesday 8th July 2015 on the eastern side of the pit at natural surface and also an underground collapse hot shot 40m below natural were in compliance. The shot at natural surface actual blast vibration was below the predicted vibration of 0.8mm/s but just below the anecdotal complaint threshold of 0.5mm/s. The underground collapse hot shot was 40m below natural surface with less than 1 days sleep time resulting in a Fume Event Level 3A which dispersed in pit. The weather conditions were a moderate south easterly wind (138o) @ 3.9m/s with no inversion present.	Written response provided to complainant and EPA.
479 & 480	13/07/2015 & 17/07/2015	BN & BO Quipolly	Bore has never run so low before despite experiencing more severe droughts than currently and believes that the mine is the reason for the change.	This level of decline is common across the Quipolly Alluvium aquifer due to a lack of rainfall recharge to the aquifer resulting in 15,000ML leaving the system over that time. The adjacent Quirindi Creek Alluvium aquifer does not have mining or dam within the catchment but has declined by 6m since 2012 and by 12m since 1970 in response to extraction and reduce rainfall recharge over time. While WCC has a surplus of water due to rainfall over the same period, the catchment characteristics are different resulting in a high percentage of runoff (average 1.2ML per mm of rain). Continued surface and groundwater modelling and reports do not indicate that WCC is the cause of the aquifer decline.	Groundwater consultant engaged to provide a review of groundwater levels and trends. Met with complainants on 17th July 2015 at WCC to discuss their complaint. Written response provided to the complainant.

481 - 483	24/07/2015 4:00pm	AL & AQ & BP Werris Creek	The mine blast was felt in the house.	Blast #79-2015 S14_B11-B13_Gseam was fired at 4:00pm on Friday 24th July 2015 was a shot in the centre and at the bottom of the pit was in compliance. Actual blast vibration was just below the predicted vibration of 0.8mm/s but above the anecdotal complaint threshold of 0.5mm/s. Weather conditions were a strong northerly wind (4o) @ 5.5m/s with no inversion present.	Written response provided to complainant.

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									9.2			5.1			6.4			11.0			10.2	50	30	90
03-Aug-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
09-Aug-15			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
15-Aug-15								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
21-Aug-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
27-Aug-15									9.2			5.1			6.4			11.0			10.2	50	30	90
02-Sep-15									9.2			5.1			6.4			11.0			10.2	50	30	90
08-Sep-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
14-Sep-15			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
20-Sep-15								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
26-Sep-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
02-Oct-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
08-Oct-15								#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
14-Oct-15			2.5			4.7		#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
20-Oct-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
26-Oct-15									9.2			5.1			6.4			11.0			10.2	50	30	90
01-Nov-15									9.2			5.1			6.4			11.0			10.2	50	30	90
07-Nov-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
13-Nov-15			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
19-Nov-15								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
25-Nov-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
01-Dec-15									9.2			5.1			6.4			11.0			10.2	50	30	90
07-Dec-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
13-Dec-15			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
19-Dec-15								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
25-Dec-15								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
31-Dec-15									9.2			5.1			6.4			11.0			10.2	50	30	90
06-Jan-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
12-Jan-16			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
18-Jan-16								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
24-Jan-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
30-Jan-16									9.2			5.1			6.4			11.0			10.2	50	30	90
05-Feb-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
11-Feb-16			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
17-Feb-16								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
23-Feb-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
29-Feb-16									9.2			5.1			6.4			11.0			10.2	50	30	90
06-Mar-16									9.2			5.1			6.4			11.0			10.2	50	30	90
12-Mar-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
18-Mar-16			2.5			4.7		#DIV/0!	9.2		#DIV/0!	5.1		#DIV/0!	6.4		#DIV/0!	11.0		#DIV/0!	10.2	50	30	90
24-Mar-16								#NUM!	9.2		#NUM!	5.1		#NUM!	6.4		#NUM!	11.0		#NUM!	10.2	50	30	90
30-Mar-16								0.0	9.2		0.0	5.1		0.0	6.4		0.0	11.0		0.0	10.2	50	30	90
Min					**0.0**		**0.7**			**1.2**			**0.4**			**1.8**			**3.3**					
Median					**4.7**		**7.6**			**3.6**			**5.2**			**10.6**			**7.9**					
Max					**15.0**		**33.8**			**21.0**			**20.8**			**34.5**			**33.8**					
Capture							**31%**			**31%**			**31%**			**31%**			**31%**					

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	0.1	0.1	0.3	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1													
-	DG2	Cintra	Total Matter	1.2	2.7	1.5	1.6									1.8	2.2	1.2	2.7	4.0
			Ash Content	0.3	1.4	0.5	0.8													
-	DG3	Eurunderee	Total Matter	1.2	2.4	0.5	0.7									1.2	1.2	0.5	2.4	4.0
			Ash Content	0.8	0.7	0.2	0.2													
-	DG5	Railway View	Total Matter	1.9	1.8	0.4	1.3									1.4	1.2	0.4	1.9	4.0
			Ash Content	1.1	0.7	0.2	0.7													
-	DG9	Marengo	Total Matter	1.6	0.8	0.1	0.4									0.7	0.7	0.1	1.6	4.0
			Ash Content	1.1	0.4	0.1	0.2													
EPL#29	DG11	Glenara	Total Matter	0.8	0.5	0.6	0.3									0.6	0.7	0.3	0.8	4.0
			Ash Content	0.4	0.2	0.4	<0.1													
-	DG14	Greenslopes	Total Matter	1.3	0.5	0.1	0.3									0.6	0.7	0.1	1.3	4.0
			Ash Content	0.8	0.2	<0.1	0.1													
-	DG15	Plain View	Total Matter	1.0	0.6	0.4	4.0									1.5	0.8	0.4	4.0	4.0
			Ash Content	0.5	0.3	0.1	2.0													
-	DG17	Woodlands	Total Matter	2.6	4.8	8.3	1.0									4.2	#DIV/0!	1.0	8.3	4.0
			Ash Content	1.2	1.2	0.6	0.4													
-	DG20	Tonsley Park	Total Matter	4.4	11.9	3.1	27.6									11.8	3.1	3.1	27.6	4.0
			Ash Content	1.8	5.7	2.4	24.0													
-	DG22	Mountain View	Total Matter	4.3	2.2	1.2	0.3									2.0	1.7	0.3	4.3	4.0
			Ash Content	1.2	1.8	0.9	0.1													
-	DG24	Hazeldene	Total Matter	5.1	4.5	0.6	0.5									2.7	0.5	0.5	5.1	4.0
			Ash Content	3.8	3.1	0.1	0.3													
-	DG34	8 Kurrara Street	Total Matter	0.7	29.5	0.5	0.3									7.8	#DIV/0!	0.3	29.5	4.0
			Ash Content	0.3	20.7	0.2	0.1													
-	DG62	Werris Creek South	Total Matter	7.7	0.8	0.1	0.5									2.3	0.1	0.1	7.7	4.0
			Ash Content	0.8	0.3	<0.1	0.2													
EPL#30	DG92	Werris Creek Centre	Total Matter	1.0	0.4	0.1	2.7									1.1	0.5	0.1	2.7	4.0
			Ash Content	0.5	0.2	<0.1	0.7													
-	DG96	Talavera	Total Matter	0.2	0.5	NS	0.8									0.5	#DIV/0!	0.2	0.8	4.0
			Ash Content	<0.1	0.2	NS	0.2													
EPL#28	DG98	Kyooma	Total Matter	0.8	0.2	0.1	0.1									0.3	0.3	0.1	0.8	4.0
			Ash Content	0.4	<0.1	<0.1	<0.1													
-	DG101	Westfall	Total Matter	2.5	0.9	1.0	0.5									1.2	#DIV/0!	0.5	2.5	4.0
			Ash Content	1.1	0.4	0.4	0.2													
-	DG103	West Street	Total Matter	0.9	0.9	0.3	0.1									0.6	0.9	0.1	0.9	4.0
			Ash Content	0.6	0.4	0.1	<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	<1%	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																									4.0
September 2015																									4.0
October 2015																									4.0
November 2015																									4.0
December 2015																									4.0
January 2016																									4.0
February 2016																									4.0
March 2016																									4.0
ANNUAL AVERAGE	**2.1**				**0.8**				**0.9**				**2.4**				**0.9**				**0.8**				**4.0**
Average Coal %	**12.5%**				**20.0%**				**10.0%**				**20.0%**				**20.0%**				**6.3%**				**-**
Average Coal g/m2	**0.26**				**0.17**				**0.09**				**0.47**				**0.18**				**0.05**				**-**
MINIMUM	**1.0**				**0.6**				**0.5**				**1.2**				**0.8**				**0.4**				**-**
MAXIMUM	**4.8**				**1.1**				**1.1**				**3.9**				**1.1**				**1.2**				**4.0**

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

Appendix 4 – Noise Monitoring Results

19 May 2015

Ref: 04035/5799

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

RE: MAY 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 13th of May, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 13th May 2015 had the 5600 excavator in Strip 14 centre at RL260m; the 3600 in Strip 14 west at RL260m and one 1900 excavator in Strip 16 east at RL370m until suspended at 7:15pm and never restarted to manage noise impacts. Strip 14 overburden truck fleets were running to the dump at RL400m east and Strip 16 overburden trucks were running to the dump at RL400m west. At 7:15pm, shutting down of the entire pit commenced to manage noise. At about 9pm the 5600/trucks, drill and ancillary equipment restarted and 3600/trucks restarted at 9:15pm. Shutting down of the entire pit commenced again at 10pm to manage noise impacts and an early crib was called at 10:30pm. At 11:40pm a small excavator and trucks were restarted with the ancillary equipment restarted at 11:50pm. At 12:25am the 5600/trucks were restarted but shutdown again at 12:40pm. The 3600/trucks were restarted at 12:55am and 5600/trucks were restarted at 1:20am and operated until the end of shift at 2:30am. The dozers at the Train Load Out were also suspended at about 7:30pm for the rest of the night however coal processing operated to 11:40pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 13 May 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	1:26 pm	39	35	n/a	6.1,223	Wind (38), traffic (28), birds (26), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:47 pm	42	40*	n/a	5.1,234	Wind (41), birds (35), tractor (32), traffic (25), WCC inaudible
C R10 Meadholme/ R11 Glenara	2:10 pm	41	40*	n/a	6.0,232	Wind (39), birds (36), traffic (26), WCC inaudible
D R24 Hazeldene	2:30 pm	46	37	n/a	7.7,230	Wind (46), birds (30), traffic (28), WCC faintly audible
E R12 Railway Cottage	4:09 pm	49	38	n/a	8.0,218	Traffic (47), wind (45), WCC inaudible
F R96 Talavera	1:31 pm	38	38	n/a	5.7,231	Traffic (34), wind (33), birds (32), WCC (24)
G R97	3:44 pm	52	35	n/a	7.9,217	Wind (52), WCC inaudible
H R98 Kyooma	2:38 pm	44	40*	n/a	6.6,227	Birds (41), wind (41), WCC (26)
I R57 Kurrara St	3:20 pm	49	35	n/a	7.9,218	Wind (49), traffic (35), train yard (27), WCC inaudible
J R57 Coronation Ave	3:01 pm	49	35	n/a	8.8,241	Wind (49), traffic (32), birds (30), train (26), WCC inaudible
K R21 Alco Park	4:47 pm	46	40*	n/a	8.4,214	Wind (43), traffic (42), WCC (23)
L R103	4:28 pm	43	35	n/a	8.3,220	Wind (43), traffic (29), train yard (29), WCC inaudible

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 13 May 2015 (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	7:02 pm	n/a	35	35	+2.2,4.3,2.4	Traffic (33), wind (30), WCC inaudible
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:31 pm	n/a	32	40*	+3.4,3.1,192	Traffic (32), WCC inaudible
C R10 Meadholme/ R11 Glenara	7:50 pm	n/a	28	40*	+4.3,3.9,202	Traffic (28), WCC inaudible
D R24 Hazeldene	8:10 pm	21	34	37	+3.9,3.5,218	Traffic (34), WCC faintly audible
E R12 Railway Cottage	10:07 pm	n/a	38	38	+5.0,3.0,205	Traffic (38), WCC inaudible
F R96 Talavera	6:57 pm	30	34	37	+2.8,4.1,205	Traffic (33), WCC (25)
G R97	9:37 pm	41	35	35	+4.9,2.8,195	WCC (35)
H R98 Kyooma	8:03 pm	36	34	40*	+3.9,3.8,216	Wind (31), WCC (31)
I R57 Kurrara St	8:47 pm	32	35	35	+5.1,3.0,213	Traffic (34), WCC (28)
J R57 Coronation Ave	8:28 pm	n/a	42	35	+3.1,3.3,218	Train yard (41), traffic (35), WCC inaudible
K R21 Alco Park	10:02 pm	32	38	40*	+5.4,3.4,205	Traffic (38), WCC (26)
L R103	10:21 pm	n/a	42	35	+5.5,3.8,223	Train yard (40), traffic (37), WCC inaudible

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 location during any monitoring period.

Operational noise from WCC was generally audible at the receiver locations situated to the north and to the east of the pit and this consisted of general mine hum, truck revs and occasional 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.

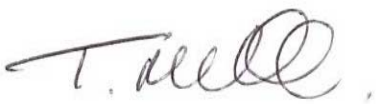
To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than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

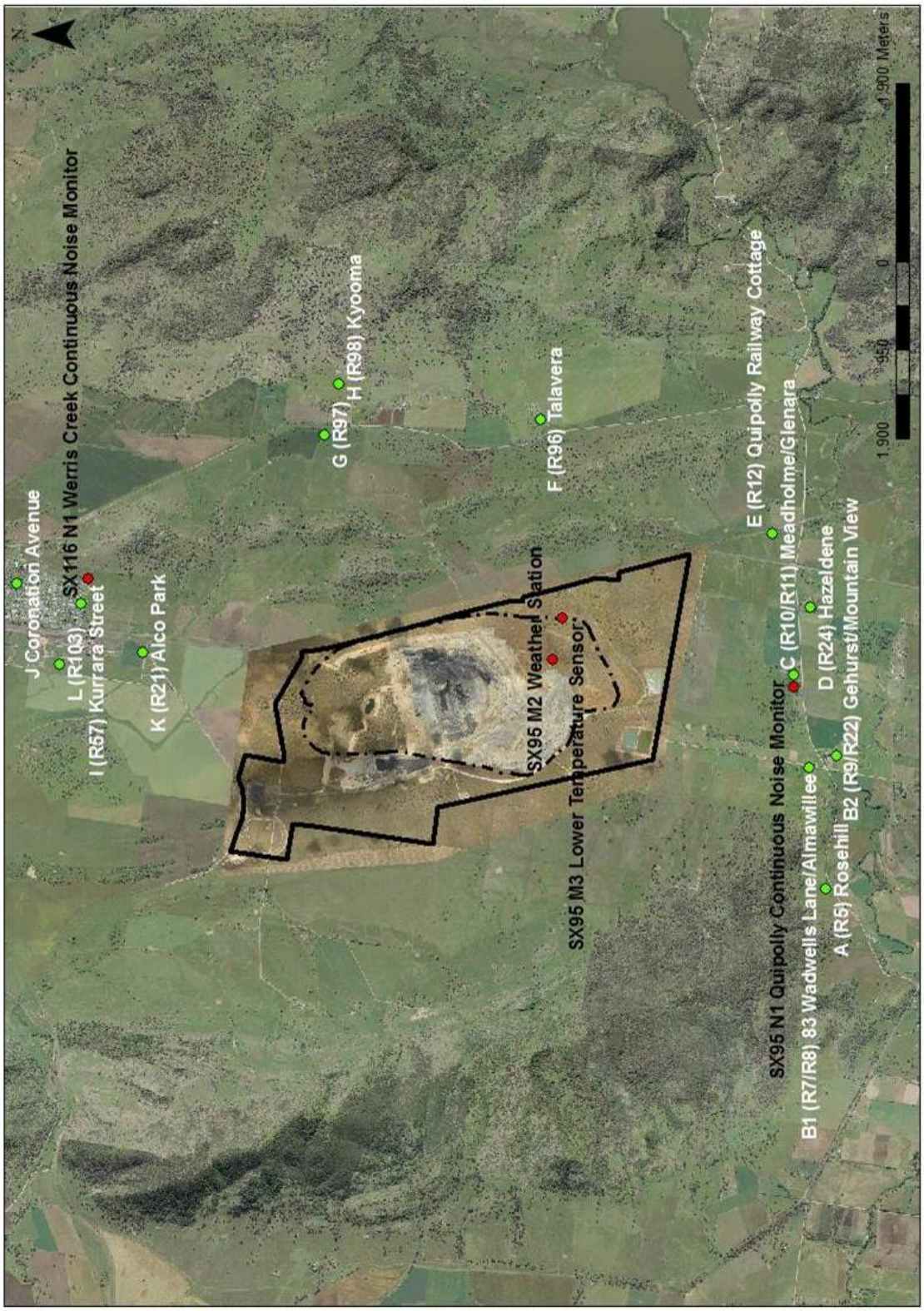


Tristan McCormick
Acoustical Consultant

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

16 June 2015

Ref: 04035/5865

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

RE: JUNE 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 Tuesday 2nd of June, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 2nd June 2015 had the 5600 excavator in Strip 14 centre at RL260m; the 3600 in Strip 14 west at RL250m and one 1900 excavator in Strip 18 centre at RL400m until suspended at 1am for 1.6 hours to manage noise impacts. Strip 14 overburden truck fleets were running to the dump at RL425m east and Strip 18 overburden trucks were running to the dump at RL425m west with no in pit dumping available. At 8:45pm, the Drill DRG526 was suspended for 6 hours to manage noise impacts. At 11:10pm, the Drill DRG524 was suspended for 3 hours to manage noise impacts. The Coal Processing and Train Load Out facility operated to 9:40pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 2 June 2015 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed (m/s),dir°	Identified Noise Sources
A R5 Rosehill	1:21 pm	38	35	n/a	2.1,127	Birds (36), wind (32), traffic (27), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:44 pm	33	40*	n/a	1.9,168	Birds (32), traffic (25), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	3:30 pm	34	40*	n/a	3.2,189	Traffic (34), birds (21), **WCC inaudible (<20)**
D R24 Hazeldene	2:25 pm	40	37	n/a	3.0,182	Traffic (39), birds (32), **WCC inaudible (<20)**
E R12 Railway Cottage	4:25 pm	48	38	n/a	2.6,194	Traffic (48), birds (27), **WCC inaudible (<20)**
F R96 Talavera	1:05 pm	35	38	n/a	2.2,149	Wind (32), birds (32), **WCC inaudible (<20)**
G R97	3:58 pm	30	35	n/a	2.7,185	Wind (27), traffic (27), **WCC inaudible (<20)**
H R98 Kyooma	2:20 pm	41	40*	n/a	1.3,182	Birds (41), **WCC (25)**
I R57 Kurrara St	3:09 pm	45	35	n/a	2.9,183	Train yard (44), birds (37), traffic (33), **WCC inaudible (<25)**
J R57 Coronation Ave	2:50 pm	42	35	n/a	3.4,188	Train yard (40), lawn mower (34), traffic (32), birds (29), **WCC inaudible (<25)**
K R21 Alco Park	4:48 pm	44	40*	n/a	2.4,195	Traffic (43), train yard (33), birds (32), **WCC (29)**
L R103	4:27 pm	49	35	n/a	2.4,193	Construction (49), traffic (30), train yard (28), **WCC inaudible (<25)**

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 2 June 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	7:40 pm	n/a	37	35	+5.3,2.0,156	Traffic (37), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	8:03 pm	n/a	35	40*	+5.4,0.7,133	Traffic (34), train (27), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	8:54 pm	n/a	32	40*	+6.1,0.8,144	Traffic (32), domestic (22), **WCC inaudible (<20)**
D R24 Hazeldene	9:17 pm	n/a	41	37	+5.8,0.8,135	Traffic (41), **WCC inaudible (<20)**
E R12 Railway Cottage	10:24 pm	21	38	38	+4.8,0.8,85	Traffic (38), **WCC faintly audible (<25)**
F R96 Talavera	6:45 pm	n/a	25	37	+4.7,2.1,143	Traffic (25), **WCC inaudible (<15)**
G R97	7:05 pm	n/a	25	35	+4.8,2.1,143	Traffic (25), **WCC inaudible (<15)**
H R98 Kyooma	7:52 pm	38	36	40*	+5.4,1.1,135	Train (33), **WCC (33)**
I R57 Kurrara St	8:38 pm	33	40	35	+5.9,0.9,121	Traffic (38), traffic (34), **WCC (28)**
J R57 Coronation Ave	8:18 pm	28	40	35	+5.3,0.8,181	Train yard (39), traffic (34), **WCC (25)**
K R21 Alco Park	10:06 pm	33	38	40*	+5.0,1.3,135	Traffic (36), train yard (31), **WCC (30)**
L R103	9:47 pm	n/a	41	35	+5.4,0.5,188	Train yard (40), traffic (34), **WCC inaudible (<25)**

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 location during any monitoring period.

Operational noise from WCC was generally audible at the receiver locations situated to the north and to the east of the pit and this consisted of general mine hum, truck revs and occasional 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 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

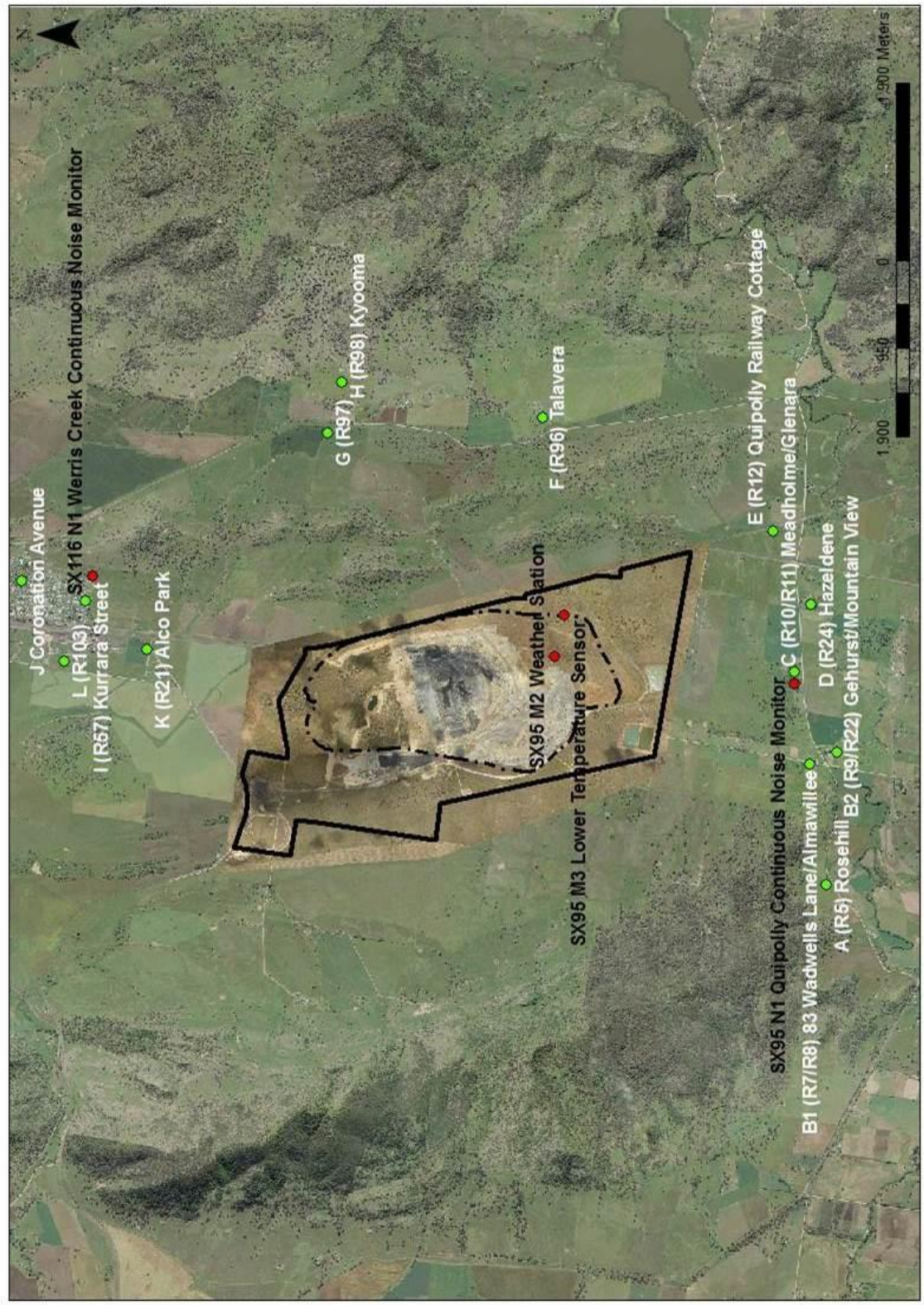
Author:

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 July 2015

Ref: 04035/5926

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

RE: JULY 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 Tuesday 14th of July, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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.

Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 14th July 2015 had the 5600 excavator in Strip 14 east at RL260m; the 3600 in Strip 14 east at RL260m and one 1900 excavator in Strip 16 west at RL350m working until end of shift at 2:40pm. Strip 14 overburden truck fleets were running to the dump at RL425m east and Strip 16 overburden trucks were running to the dump at RL400m west. The coal processing and train load out operated to 10pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 14 July 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	1:58 pm	35	35	n/a	6.6,308	Traffic (31), birds (31), wind (28), WCC inaudible (<20)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	2:19 pm	46	40*	n/a	5.6,292	Birds (46), wind (30), traffic (24), WCC inaudible (<20)
C R10 Meadholme/ R11 Glenara	2:43 pm	44	40*	n/a	6.0,292	Birds (44), wind (28), traffic (26), WCC inaudible (<20)
D R24 Hazeldene	3:04 pm	41	37	n/a	5.4,297	Wind (40), birds (31), traffic (29), WCC (23)
E R12 Railway Cottage	4:10 pm	53	38	n/a	3.7,292	Traffic (52), rail construction (44), wind (31), birds (29), WCC inaudible (<20)
F R96 Talavera	3:59 pm	45	38	n/a	3.9,292	Birds (43), wind (40), WCC (28)
G R97	1:31 pm	42	35	n/a	5.6,285	Wind (41), birds (33), WCC (27)
H R98 Kyooma	3:38 pm	41	40*	n/a	5.7,300	Wind (40), birds (34), WCC (24)
I R57 Kurrara St	2:05 pm	44	35	n/a	6.0,296	Traffic (42), birds (40), wind (28), WCC inaudible (<20)
J R57 Coronation Ave	3:09 pm	36	35	n/a	5.4,302	Traffic (35), birds (27), wind (26), WCC inaudible (<25)
K R21 Alco Park	1:41 pm	39	40*	n/a	5.9,292	Wind (37), birds (34), traffic (29), WCC inaudible (<20)
L R103	1:20 pm	36	35	n/a	5.7,293	Wind (34), construction (30), traffic (25), WCC inaudible (<20)

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 14 July 2015 (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	10:46 pm	<20	25	35	Lapse,4.0,275	Traffic (25), WCC inaudible (<20)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	10:25 pm	29	31	40*	Lapse,2.8,257	Traffic (29), WCC (26)
C R10 Meadholme/ R11 Glenara	10:06 pm	27	23	40*	Lapse,4.5,259	WCC inaudible (23)
D R24 Hazeldene	9:02 pm	35	35	37	Lapse,3.1,275	Traffic (33), WCC (31)
E R12 Railway Cottage	7:57 pm	29	42	38	Lapse,3.6,270	Traffic (42), WCC (25)
F R96 Talavera	10:02 pm	34	29	37	Lapse,4.2,339	WCC (28), traffic (23)
G R97	7:24 pm	37	33	35	Lapse,5.6,288	WCC (33)
H R98 Kyooma	9:40 pm	39	34	40*	Lapse,3.9,261	WCC (34)
I R57 Kurrara St	8:09 pm	<20	38	35	Lapse,3.6,270	Traffic (37), train yard (31), WCC inaudible (<20)
J R57 Coronation Ave	9:17 pm	<20	35	35	Lapse,2.5,288	Traffic (34), wind (28), WCC inaudible (<20)
K R21 Alco Park	7:45 pm	31	32	40*	Lapse,5.6,292	Traffic (31), WCC (26)
L R103	7:24 pm	20	33	35	Lapse,5.6,288	Traffic (33), WCC inaudible (<25)

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 location during any monitoring period.

Operational noise from WCC was audible at a range of receiver locations situated to the north, south and to the east of the pit and this consisted of general mine hum and occasional 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.

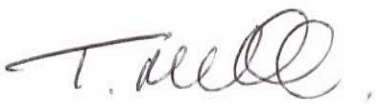
To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than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

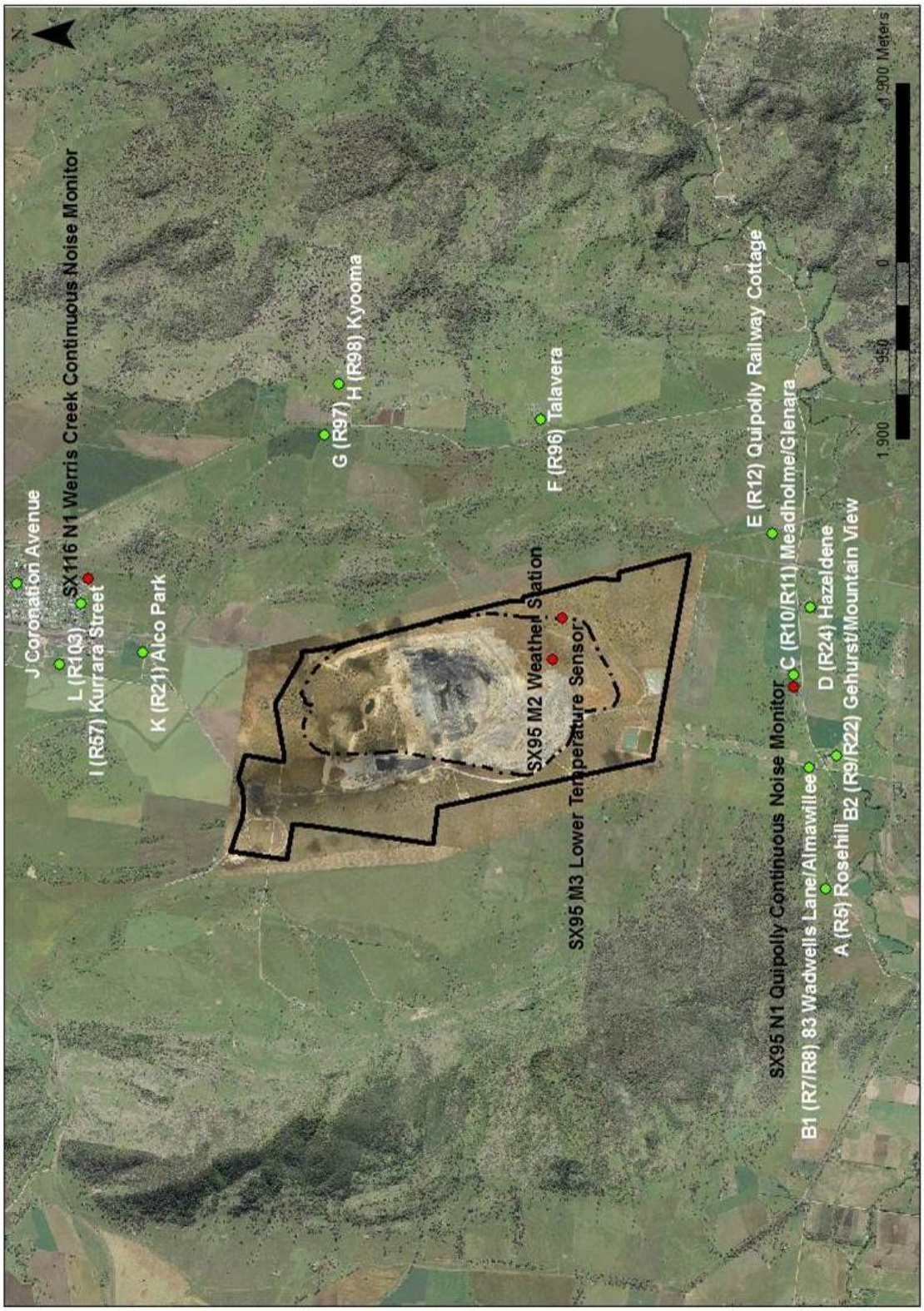


Tristan McCormick
Acoustical Consultant

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
MAY 2015

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		SINGLE FREQUENCY >0.02			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
50	2015-57	1/05/2015	12:53	S14_B12-B14_RL255_TSB	0.7	TSB	0.29	93.1	2.88	112.6	0.60	103.9	0.43	101.2	10.00	120.0	Not Monitored		50.00	-2.4	176	6.7	12.8	11.0	11.0	0	Onsite	0	0	0
51	2015-58&59	5/05/2015	13:08	S14_B18-B19_Gseam & S16_B20_Wedge	0.6	IB	0.25	108.6	0.62	106.2	0.49	105.2	0.29	110.5	10.00	120.0	Not Monitored		50.00	-3.2	310	7.2	8.3	12.4	15.9	0	OK	0	0	0
52	2015-60	8/05/2015	12:28	S16_B4-B6_RL350_PS	0.5	PS	0.10	95.8	0.39	99.5	0.18	100.2	0.12	99.4	10.00	120.0	0.72	<88.0	50.00	-2.6	133	1.2	3.1	-	-	0	Onsite	0	0	0
	2015-61	8/05/2015	12:28	S14_B15-B17_Gseam	0.7	IB	0.22	95.8	0.86	99.5	0.30	100.2	0.24	99.4	10.00	120.0	Not Monitored		50.00	-2.6	133	1.2	17.9	12.3	11.6	0	Onsite	0	0	0
53	2015-62	12/05/2015	13:08	S16_B3-B5_RL350_TSB	0.7	TSB	0.15	96.9	0.61	98.4	0.41	92.6	0.26	97.1	10.00	120.0	8.50	115.9	50.00	-3.7	288	5.2	16.5	12.9	13.7	0	Onsite	0	0	0
54	2015-63	15/05/2015	12:48	S16_B13-B18_RL335_TSB	0.7	TSB	0.15	104.9	1.05	107.9	0.43	107.4	0.31	98.9	10.00	120.0	Not Monitored		50.00	-3.6	137	6.8	10.4	10.3	10.8	0	Onsite	0	0	0
55	2015-64	23/05/2015	10:23	S14_B7-B10_RL255	0.8	IB	0.24	107.2	1.53	93.4	0.98	96.1	0.60	96.1	10.00	120.0	Not Monitored		50.00	-3.0	168	4.1	17.7	12.1	12.5	1A	OK	1	0	0
56	2015-65	27/05/2015	13:04	S14_B18-B19_Gseam_1_ Sump	0.5	IB	0.18	93.1	0.37	90.5	0.38	90.6	0.28	90.6	10.00	120.0	Not Monitored		50.00	-2.7	307	2.5	9.9	10.1	10.4	0	OK	0	0	0
57	2015-66	29/05/2015	14:38	S14_B10-B12_RL255_TSB	0.7	TSB	0.31	98.5	1.54	96.9	0.58	89.3	0.41	86.9	10.00	120.0	Not Monitored		50.00	-3.3	2	1.2	12.7	14.6	18.9	2A	OK	1	0	0
	TOTALS	**MAY 2015**	**# BLAST**	**8**	**TARGET**	**AVERAGE**	**0.21**	**99.3**	**1.09**	**100.5**	**0.48**	**98.4**	**0.33**	**97.8**	**5.00**	**115.0**														
	TOTALS	**MAY 2015**	**#>0.5mm**	**7**	**<1mm/s**	**HIGHEST**	**0.31**	**108.6**	**2.88**	**112.6**	**0.98**	**107.4**	**0.60**	**110.5**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**15**	**<115dBL**	**AVERAGE**	**0.21**	**97.5**	**1.08**	**98.6**	**0.49**	**96.4**	**0.28**	**96.0**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

WERRIS CREEK COAL BLASTING RESULTS
JUNE 2015

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		SINGLE FREQUENCY >0.02			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
58	2015-67	4/06/2015	9:38	S17_B2-B5_RL390	0.7	OB	0.16	104.0	0.70	102.2	0.59	99.8	0.44	98.8	10.00	120.0	7.98	122.7	50.00	-2.1	43	0.3	11.0	12.7	12.5	1A	Onsite	1	0	0
59	2015-68	5/06/2015	12:08	S20_B17-B19_RL380	0.8	OB	0.13	103.1	0.67	105.3	0.33	103.0	0.21	101.2	10.00	120.0	Not Monitored		50.00	-3.7	315	2.0	3.1	13.2	9.4	1A	OK	0	0	0
60	2015-69	10/06/2015	12:08	S20_B19-B21_RL395	0.5	OB	0.06	95.0	0.19	100.7	0.12	107.1	0.09	105.7	10.00	120.0	Not Monitored		50.00	-3.9	170	2.1	-	-	-	0	Onsite	1	0	0
61	2015-70	12/06/2015	9:29	S14_B13-B14_Gseam	0.3	IB	0.16	98.2	1.48	99.0	0.45	99.6	0.38	98.8	10.00	120.0	Not Monitored		50.00	-1.2	163	1.4	11.5	12.9	11.6	0	OK	0	0	0
	TOTALS	**JUNE 2015**	**# BLAST**	**4**	**TARGET**	**AVERAGE**	**0.13**	**100.1**	**0.76**	**101.8**	**0.37**	**102.4**	**0.28**	**101.1**	**5.00**	**115.0**														
	TOTALS	**JUNE 2015**	**#>0.5mm**	**3**	**<1mm/s**	**HIGHEST**	**0.16**	**104.0**	**1.48**	**105.3**	**0.59**	**107.1**	**0.44**	**105.7**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**19**	**<115dBL**	**AVERAGE**	**0.19**	**98.4**	**0.97**	**99.7**	**0.45**	**98.4**	**0.28**	**97.7**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

WERRIS CREEK COAL BLASTING RESULTS
JULY 2015

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		SINGLE FREQUENCY >0.02			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
62	2015-72	3/07/2015	14:08	S14_Rocks	0.2	Rocks	0.03	96.0	0.18	97.7	0.03	101.0	0.02	99.0	10.00	120.0	Not Monitored		50.00	-3.7	203	1.9	-	-	-	0	OK	0	0	0
63	2015-73	7/07/2015	13:23	S21_B19-B20_RL395	0.8	OB	0.16	98.2	0.90	99.1	0.29	106.4	0.21	102.9	10.00	120.0	Not Monitored		50.00	-4.1	186	3.4	10.6	3.8	9.2	0	Onsite	0	0	0
64	2015-71	8/07/2015	13:33	S17_B1-B2_RL390	0.8	OB	0.14	103.5	1.11	103.8	0.48	108.9	0.47	108.0	10.00	120.0	12.30	130.0	50.00	-3.8	138	3.9	17.5	3.2	16.2	0	OK	1	0	0
	2015-74	8/07/2015	13:33	S16_B6_UG_Cwedge	0.7	UG	0.14	103.5	1.11	103.8	0.48	108.9	0.47	108.0	10.00	120.0	12.30	130.0	50.00	-3.8	138	3.9	17.5	3.2	16.2	3A	OK	0	1	0
65	2015-75	10/07/2015	13:08	S24_Dam6_1	0.3	OB	0.04	94.8	0.24	97.6	0.11	105.2	0.13	101.9	10.00	120.0	Not Monitored		50.00	-4.0	337	3.2	-	-	-	0	OK	0	0	0
66	2015-76	15/07/2015	13:07	S20_B16-B18_RL410	0.4	OB	0.08	98.6	0.42	101.7	0.22	103.4	0.18	101.6	10.00	120.0	Not Monitored		50.00	-3.6	316	1.9	2.9	2.3	-	0	OK	0	0	0
67	2015-77	18/07/2015	9:08	S21_B16-B18_RL410	0.4	OB	0.13	102.2	0.49	101.4	0.31	101.7	0.22	101.0	10.00	120.0	Not Monitored		50.00	-0.4	314	0.9	3.1	12.4	12.7	0	OK	0	0	0
68	2015-78	21/07/2015	13:13	S18_B1-B2_RL400	0.5	OB	0.16	94.9	0.56	97.0	0.48	98.1	0.31	97.6	10.00	120.0	6.79	117.1	50.00	-4.2	22	3.0	13.5	15.2	15.1	0	OK	0	0	0
69	2015-79	24/07/2015	16:00	S14_B11-B13_Gseam + Rocks	0.8	IB	0.30	96.9	1.73	96.0	0.74	88.0	0.63	87.9	10.00	120.0	Not Monitored		50.00	-3.2	4	5.5	16.5	9.9	9.9	1A	OK	3	0	0
70	2015-81	29/07/2015	14:54	S16_B6_UG_Cwedge1 + C16_B5_RL350_Ewedge	0.6	UG	0.07	101.4	0.39	103.4	0.21	104.3	0.17	103.0	10.00	120.0	Not Monitored		50.00	-3.7	210	3.2	-	3.1	3.1	2A	Onsite	0	0	0
71	2015-80	30/07/2015	16:04	S14_B8-B10_Gseam	0.4	IB	0.17	102.0	1.13	104.1	0.49	95.0	0.35	99.3	10.00	120.0	Not Monitored		50.00	-2.6	309	4.0	16.6	26.4	15.7	0	OK	0	0	0
	TOTALS	**JULY 2015**	**# BLAST**	**10**	**TARGET**	**AVERAGE**	**0.13**	**99.3**	**0.75**	**100.5**	**0.35**	**101.9**	**0.29**	**100.9**	**5.00**	**115.0**														
	TOTALS	**JULY 2015**	**#>0.5mm**	**5**	**<1mm/s**	**HIGHEST**	**0.30**	**103.5**	**1.73**	**104.1**	**0.74**	**108.9**	**0.63**	**108.0**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**29**	**<115dBL**	**AVERAGE**	**0.17**	**98.6**	**0.92**	**99.9**	**0.42**	**99.3**	**0.28**	**98.5**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

DNT = Did not trigger

Appendix 6 – Groundwater Monitoring Results

July '15

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: B Phillipes

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 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	27/7	11:10	62.64		0.25										6 Monthly Hillview
	MW2	27/7	10:55	33.69		0.15										6 Monthly Railway view
	MW3	28/7	9:40	18.61		0.95										6 Monthly (Always Purge) Euncarec.
	MW4	28/7	—													"Broken stick up. water ~3m Mine - Front
	MW4B	28/7	11:20	15.53		0.7										6 Monthly ✓ ✓
	MW5	28/7	10:00	11.87		1.15										6 Monthly ✓ ✓
	MW5B	28/7	10:10	11.40		0.7										✓ ✓
	MW6	28/7	11:45	14.72		1.05										6 Monthly ✓ (111 W/C Rd.)
	MW9	—														"Broken stickup". Rail loop.
	MW10	27/7	11:30	17.60		0.2										Escott In. - sled.
	MW11	27/7	—													"Pump over bore." " - Irrigation. (gap
	MW14	28/7	12:05	17.72		0.95										Mine - Rail loop.
	MW14B	28/7	12:15	17.80		0.75										" "
	MW17B	27/7	12:45	12.89		0.65										Wadwell In - Windmill (Horses
	MW20	27/7	12:00	21.26		0.55										Tonsley Park
	MW24A	27/7	9:45	15.25		0.5										Maranoa - pump.
	~~MW25A~~	27/7	—													Mine site.
	MW25B	27/7	—													"Pump over bore." " "
	P1															"Pump over bore."
	P2															
	PUG															
	MW27	27/7	11:45	55.04		0.45										
	MW29	27/7	9:20	13.57		—										Cintra. - Escott In.
	MW31	—														Kyoona - Windmill.
																Talawana - Windmill.
																"No longer monitored."

SPECIAL COMMENTS: M

Sheet: of

July '15

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

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				
	MW8	27/7	10:25	18.95		0.2										Roseneath
	MW12	29/7	12:05	12.92		0.5										Hazeldene
	MW13	27/7	13:45	6.90		0.4										Wadwell In. - well
	MW13B	27/7	14:00	5.33		0.3										Taylors In. - Opp sled.
	MW13D	27/7	14:15	5.15		0.2										Taylors In. - Windmill
	MW15	27/7	13:20	6.44		0.2										Paynes In. - Windmill
	MW16	27/7	13:30	7.63		0.3										Mountain View - sled.
	MW17A	27/7	13:00	6.68		0.5										83 Wadwell In.
	MW18A	29/7	12:20	6.54		←										82 Wadwell In.
	MW19A	29/7	11:50	9.49		0.15										Lintona
	MW21A	29/7	11:10	10.54		0.3										Glenara (Windmill)
	MW22A	29/7	11:25	7.77		0.55										308 Paynes In. - House
	MW22B	29/7	11:35	—		0.45										308 Paynes In. - Irrigation
	MW23A	28/7	13:15	3.97		0.2										Pegg Easy - Horse yard.
	MW23B	28/7	13:35	4.18		0.1										" " - Irrigation
	MW28A	27/7	10:05	14.76		0.25										Wetlands Rd (windmill)
	MW28B	27/7	—													" " (Pump R+S).

"Dry" - Just mud at the wells bottom!

" (walked it. "Don't drive on the lucerne.)

"Pump over base."

SPECIAL COMMENTS: M

Sheet: of

July '15

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: R Phillipes

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															Mrs Andersen - well
	MW7B															" " - Windmill.
	MW32	27/7	14:30	4.25		0.45										"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	28/7	12:30	22.79		0.95										Mine. - Opp. TLO Nth
	MW36B	28/7	12:40	22.68		0.95										" - " " Sth.
	MW35	—														—
	MW34	29/7	12:40	10.98		—										Werris Creek - off Opp Rd.
	MW5D	28/7	10:20	14.04		0.68										Mine Site - Front
	MW5C	28/7	10:35	11.69		0.93										Mine Site ✓
	MW5E	28/7	10:45	14.07		0.76										Mine Site ✓
	MW5F	28/7	10:55	16.62		1.20										Mine Site ✓
	MW5G	28/7	11:05	14.93		0.85										Mine Site ✓

(He came out & helped me!)
Very wet track - walked.

SPECIAL COMMENTS: M

Sheet: of

WO # 10221

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	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	13/5/15	9:38	61.33		0.25										6 Monthly Hillview.
	MW2	12/5/15	13:00	32.59		0.15										6 Monthly Railway View
	MW3	12/5/15	9:25	18.34		0.95										6 Monthly (Always Purge) Kurrdaree.
	MW4	12/5	—				Broken stickup — blockage 30 cm. down									
	MW4B	12/5	11:25	15.02		0.7										6 Monthly Mine (Front.)
	MW5	12/5	9:55	11.61		1.15										6 Monthly Mine (Front)
	MW5B	12/5.	10:05	11.16		0.7										" "
	MW6	12/5	11:15	14.40		1.05										6 Monthly " FRONT
	MW9	—					Broken Stickup.									" "
	MW10	12/5	12:25	17.29		0.2										Escot ln. - Shed.
	MW11	12/5	—				Pump over bore.									" " (Irrigation - Top)
	MW14	12/5	12:00	18.35		0.95										Mine. (rail loop)
	MW14B	12/5	12:10	18.10		0.75										Mine. "
	MW17B	12/5	9:40	12.64		0.65	(Windmill not running)									Wadwell ln. (Windmill).
	MW20	13/5.	9:10	21.12		0.55										Tanshey Tank
	MW24A	12/5	13:35	15.31		0.5										Marengo.
	MW25A	13/5	—				Pump over bore									Mine site
	MW25B	13/5	—				Pump over bore									" "
	P1															
	P2															
	PUG															
	MW27	12/5	12:40	51.83		0.45										Escott ln. - Central
	MW29	12/5	13:50	14.41		—			(Windmill running / tank over flowing)							Kyoona - Windmill
	MW31	—			No longer maintained.											Talavera - Windmill

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	

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	13/5	9:50	18.79		0.2										Roseneath
	MW12	13/5	13:05	2.54		0.5										Hazel dene.
	MW13	13/5	10:10	6.76		0.4										Wadwell In.- Well
	MW13B	13/5	10:25	5.28		0.3										Taylors In.- Opp shed.
	MW13D	13/5	10:50	5.16		0.2										Taylors In - Windmill
	MW15	13/5	11:25	6.28		0.2		(Windmill running.)								Paynes In - Windmill
	MW16	13/5	12:10	7.38		0.3										Mountain View.
	MW17A	13/5	11:40	6.44		0.5										83 Wadwell In.
	MW18A	13/5	11:50	6.32		—										82 Wadwell In.
	MW19A	13/5	10:00	9.37		0.15										Lintaras
	MW21A	14/5	11:20	10.28		0.3										Glenara (Windmill.)
	MW22A	13/5	12:30	7.62		0.55										308 Paynes In - House
	MW22B	13/5	12:45	7.87		0.45										" " In - Irrigatn
	MW23A	14/5	11:40	4.00		0.2										Pegg Easy - Horse yard
	MW23B	14/5	12:10	4.22		0.1					(Walked it!	Cow's in lucerne.)				" " - Irrigation
	MW28A	12/5	13:20	14.45		0.25										Woodlands Rd (Windmill)
	MW28B	12/5	—	Pump over bore.												" " (Pump R/D

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	

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	Pump 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						Andrew	to	Advise.							Andersen's - Well.
	MW7B						"	"	"							" - Windmill.
	MW32	13/5	11:10	4.13		0.45										"Naranji" - Pump Shed - 3 Johns Lane
	MW36A	12/5	11:45	22.97		0.95										Mine site - Opp TLO. Nth
	MW36B	12/5	11:50	22.75		0.95										" " " " Sth
	MW35															
	MW34	13/5	13:20	11.93		—										Werris Creek - Off Opp Rd. (Front)
	MW5D	12/5	10:15	13.78		0.68										Mine Site
	MW5C	12/5	10:25.	11.47		0.93										Mine Site "
	MW5E	12/5.	10:35	13.31		0.76										Mine Site "
	MW5F	12/5	10:45.	15.96		1.20										Mine Site "
	MW5G	12/5	10:55	14.25		0.85										Mine Site "

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

CERTIFICATE OF ANALYSIS

Work Order	: **ES1521927**	Page	: 1 of 5
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 SURFACE - WATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	:	Date Samples Received	: 14-May-2015 12:45
C-O-C number	: ----	Date Analysis Commenced	: 14-May-2015
Sampler	: BYRON PHILLIPS	Issue Date	: 21-May-2015 15:19
Site	: ----		
		No. of samples received	: 7
Quote number	: ----	No. of samples analysed	: 7

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
Helen Simpson	Inorganic Chemist	ACIRL Sampling

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.
- AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SD4	VWD1	VWD2	QCD	WCD
				Client sampling date / time	13-May-2015 11:35	13-May-2015 11:10	13-May-2015 10:15	13-May-2015 09:25	13-May-2015 08:30
Compound	CAS Number	LOR	Unit		ES1521927-001	ES1521927-002	ES1521927-003	ES1521927-004	ES1521927-005
					Result	Result	Result	Result	Result
AC03: Field Tests									
ø Electrical Conductivity (Non Compensated)	----	1	µS/cm		473	1060	1180	1080	1330
ø pH	----	0.01	pH Unit		9.70	9.60	8.20	8.20	8.50
ø Temperature	----	0.1	°C		14.6	14.9	17.2	13.1	13.3
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.89	8.98	7.98	8.08	8.29
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		496	1100	1210	1100	1360
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		240	<5	44	6	34
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	0.31	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		<0.01	0.49	18.6	0.03	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	0.49	18.9	0.03	0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.1	0.3	9.8	0.2	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.1	0.8	28.7	0.2	0.5
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.22	<0.01	0.01	0.05	0.20
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.05	<0.01	<0.01	0.04	0.14
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	<5	----	<5
^ Oil & Grease	----	5	mg/L		<5	<5	----	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	VWD3	VWD4	----	----	----
			Client sampling date / time	13-May-2015 10:55	13-May-2015 10:40	----	----	----
Compound	CAS Number	LOR	Unit	ES1521927-006	ES1521927-007	--------	--------	--------
				Result	Result	Result	Result	Result
AC03: Field Tests								
ø Electrical Conductivity (Non Compensated)	----	1	µS/cm	1080	1060	----	----	----
ø pH	----	0.01	pH Unit	8.70	9.00	----	----	----
ø Temperature	----	0.1	°C	15.2	15.1	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.26	8.47	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1120	1100	----	----	----
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	15	15	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.05	0.02	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	5.30	1.60	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	5.35	1.62	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	0.5	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	6.6	2.1	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.02	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	----	----	----	----	----
^ Oil & Grease	----	5	mg/L	<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	SD4 - 13-May-2015 11:35:00	Turbid
AC04: Appearance	VWD1 - 13-May-2015 11:10:00	Clear
AC04: Appearance	VWD2 - 13-May-2015 10:15:00	Clear
AC04: Appearance	QCD - 13-May-2015 09:25:00	Clear
AC04: Appearance	WCD - 13-May-2015 08:30:00	Clear
AC04: Appearance	VWD3 - 13-May-2015 10:55:00	Clear
AC04: Appearance	VWD4 - 13-May-2015 10:40:00	Clear
AC04: Odour	SD4 - 13-May-2015 11:35:00	Nil
AC04: Odour	VWD1 - 13-May-2015 11:10:00	Nil
AC04: Odour	VWD2 - 13-May-2015 10:15:00	Nil
AC04: Odour	QCD - 13-May-2015 09:25:00	Nil
AC04: Odour	WCD - 13-May-2015 08:30:00	Nil
AC04: Odour	VWD3 - 13-May-2015 10:55:00	Nil
AC04: Odour	VWD4 - 13-May-2015 10:40:00	Nil
AC04: Colour	SD4 - 13-May-2015 11:35:00	Brown
AC04: Colour	VWD1 - 13-May-2015 11:10:00	Clear
AC04: Colour	VWD2 - 13-May-2015 10:15:00	Clear
AC04: Colour	QCD - 13-May-2015 09:25:00	Clear
AC04: Colour	WCD - 13-May-2015 08:30:00	Clear
AC04: Colour	VWD3 - 13-May-2015 10:55:00	Clear
AC04: Colour	VWD4 - 13-May-2015 10:40:00	Clear

Werris Creek Coal Community Consultative Committee

Thirty Seventh Meeting of the Committee

Meeting Room, Werris Creek Coal

9:30am Thursday 26th November 2015

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:45am for a pit tour of the mine site inspecting operations from the southern lookout and the evaporators on the RL445 overburden emplacement following the meeting.

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); Andrew Wright (former WCC – Environmental Officer); Lexie Frankham (Whitehaven Coal – Environmental Superintendent); and Mark Hammond (WCC – Environmental Officer and Minute Taker)

Apologies: Geoff Dunn (Community Representative). Geoff Dunn has communicated he will be leaving Werris Creek shortly and as such will be resigning from the CCC. Letter of appreciation to be sent to Geoff for his role in the CCC. Mark Hammond will commence finding a replacement for Geoff in accordance with the Department of Planning and Environment (DPE) publication *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects.*

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. New Matters for Discussion under General Business

Six new items of business were:

a) Community Enhancement Fund (CEF) update;
b) Recent media enquiries regarding water;
c) WCC Project Approval Modification Update;
d) Guidelines for Establishing and Operating CCC;
e) Land and Water; and
f) Calculation of Irrigation Water Use.

4. Minutes of Previous Meeting

Minutes of the previous meeting on the 27th August 2015 were reviewed by the committee.

Motion moved to accept the meeting minutes on the 27th August 2015 as a true and accurate representation of business conducted on that day.

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

5. Matters Arising

a) Actions from Previous Meeting

Community Enhancement Fund to be discussed in section 7a

b) Other Matters Arising

None.

6. Environmental Monitoring Report: August, September and October 2015

Meteorology – August and September 2015 had below average rainfall and cold to mild temperatures; while October 2015 had mild to warm temperatures and below average rainfall. For the last three months the prevailing wind direction changed from the north-northwest transitioning to a southerly wind.

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 DG20 ("Tonsley Park") and DG34 (8 Kurrara St), which showed improving trends in annual dust deposition during the period. An audit of all dust gauges was undertaken during September 2015, with bird deterrents installed. DG20 dust gauge was relocated on 21st August to avoid non-mine contamination.

Overall the dust fallout levels adjacent to the train line in Quirindi are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC.

There were two dust complaints recorded during the period, related to dust levels in Werris Creek.

Noise – There was one noise exceedance during the August to October 2015 period, occurring on the 4th August at the Kurrara St (R57) monitoring point. A Formal Warning was received from the EPA in relation to this noise exceedance.

There were no noise complaints during August, September and October 2015.

Blasting – During the period a total of twenty-eight blasts were fired by WCC. All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s).

There were twelve blast complaints during the period from six separate blast events on 13th and 28th August, 11th, 17th and 26th September, and 12th October 2015. All blasts were in compliance however nine blasting complaints were related to overpressure impacts which may be related to blasts at natural surface on the western side of the mine having a direct line of sight to Werris Creek with no buffering/mitigation provided by the ridgeline.

Groundwater – Below average rain fell across August to October 2015 which was not sufficient to result in rainfall recharge to aquifers with the majority of monitoring bores groundwater levels 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 dry conditions. There is ongoing community and media attention on this issue.

There were two groundwater complaints during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer which had a number of bores at the lowest levels ever measured by WCC.

Surface Water – Quarterly surface water monitoring was undertaken on 13th August 2015 with all onsite and offsite water quality within longer term averages and the Site Water Management Plan trigger values except for some parameters due to dry conditions restricting water to pools.

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 were sixteen complaints received during the period. There were twelve complaints related to blasting; two complaints relating to groundwater; and two complaints related to dust generated from the mine. There were eight different complainants during the period with fourteen complaints from Werris Creek residents and two complaints from Quipolly residents.

Mike Lomax requested the addition of the recorded monitoring bores on his property (MW38 series) to future monitoring reports. Noel Taylor queried the method used to derive total water loss in the aquifers as stated in the Complaints section of the monitoring report; Andrew Wright explained the methodology that had been used to make an estimate, that is taking the area of the current monitoring network multiplied by the average drawdown, multiplied by a factor for the porosity of the aquifers.

Motion moved to accept the Environmental Monitoring Report for August, September and October 2015.

Moved: Col Stewart. Seconded: Dave Goldman. Motion Carried.

6. General Business

a. Community Enhancement Fund (CEF) Update

CEF has $50,000 for 2016 to be spent on playground improvement in the shire. LPSC has been asked to nominate specific projects for this improvement. The priority project identified by the LPSC is the Spring Ridge park, adjacent to the Community Hall. Community has unsuccessfully lobbied for project funding through other streams. LPSC is recommending the provision of the remaining funding for this project, as there is significant community support for the funding. This public park is different from the park referred to in the previous minutes, which was a part of the local pre-school. Total project costs would be $40,000 for shade sails and installation, with the remaining $10,000 to be spent on signage and other improvements including playground equipment augmentation. Other projects were examined by LPSC, however this project provided the greatest local benefit and meets the requirements of the remaining spending for the CEF.

Motion to accept the proposal and approve LPSC to proceed with the project.

Moved: Lindsay Bridge. Seconded Noel Taylor. Motion Carried

b. Recent Media enquiries regarding Water

Mike Lomax and Noel Taylor raised the issue of water loss in the aquifers on behalf of concerned landholders following the memorandum from Doug Anderson of the University of NSW Water Research Laboratory. Andrew Wright provided a background of WCC involvement with this report, and that WCC was only informed about and provided a copy of the memo through the media, with no opportunity to provide feedback or any data to assist with this memorandum before it was provided to the media. Andrew Wright outlined that the Department of Primary Industry - Water (DPI-W) are currently investigating the matter and will provide a response shortly.
Col Stewart added that LPSC held a meeting with affected landholders on Tuesday evening, with LPSC suggesting WHC provide information on the status of offsite use of void water for irrigation on their website.

c. WCC Project Approval Modification Update

Queries raised by Noel Taylor as to whether water will be supplied to non-coal properties as opposed to properties owned by WCC. Rod Hicks clarified that there are no individual agreements currently in place to supply water to individual properties.
Mark Hammond outlined the approvals process thus far related to the use of void water for agricultural purposes: The Department of Planning and Environment (DPE) have approved the modification to the Project Approval (PA 10_0059), which amongst other changes, provides the framework for the supply of void water off site for agricultural purposes.

With this approval, WCC are progressing through the other steps to be able to supply water for agricultural use, including:

- Modifying the Site Water Management Plan to include a framework for managing offsite supply, with the plan to be approved by DPE in consultation with the Environmental Protection Authority and DPI-W.
- Amending the Environmental Protection License (EPL) for Werris Creek, which must be approved by the EPA.
- Developing an assessment template that can be used for each individual case of supply of void water for agricultural use. This template will need to be approved by the DPE, in association with the EPA and DPI-W. An assessment template (Pre-Agricultural Void Water Use Assessment) has been provided to the DPI-W for initial comment and feedback.

d. Land and Water

Noel Taylor raised the issue that land is given out privately to people without going out to public tender. Andrew Wright replied that Whitehaven Coal is still a private company, and management are able to make this decision based on commercial and business interests.

e. Calculation of Irrigation Water Use

Mike Lomax raised a query from the LPSC meeting with landholders on Tuesday (24th November) regarding WHC's suggestions of the amount of water used by Quipolly irrigators. Andrew Wright clarified that the number given as to the volume of water that has left the system is not directly attributable to irrigation use and is just an estimate of all the water that has left the aquifers over the past 3 years, as measured through drawdown of bores across the monitoring network.

Meeting Closed 11:00am.

Next Meeting scheduled for Thursday 25th February 2016.

Copy to:

Gae Swain	Independent Chairperson		
Noel Taylor	Community Representative		
Lindsay Bridge	Community Representative		
Geoff Dunn	Community Representative		
Mike Lomax	Community Representative		
Dave Goldman	Community Representative		
Ron Van Katwyk	LPSC	Rod Hicks	Werris Creek Coal
Cr Col Stewart	LPSC	Mark Hammond	Werris Creek Coal
Wayne Jones	DPE		
John Trotter	DRE		
Kharl Turnbull	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

August, September and October 2015

This Environmental Monitoring Report covers the period 1st August 2015 to 31st October 2015 for the Werris Creek No.2 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

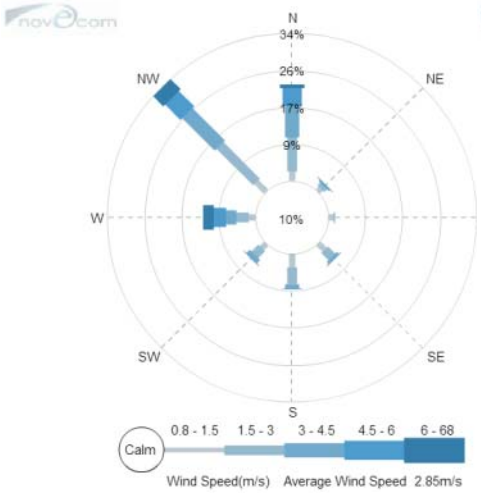
1.0 METEOROLOGY

1.1 WEATHER STATION

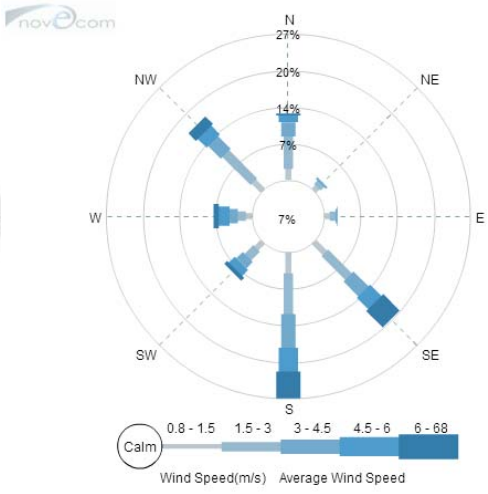
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and the wind data is presented below in windroses. August and September 2015 had below average rainfall and cold to mild temperatures; while October 2015 had mild to warm temperatures and below average rainfall. For the last three months the prevailing wind direction changed from the north-northwest transitioning to southerly wind.

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*
August 2015	-5.0	9.0	23.2	0.3	10.1	22.4	-6.7	11.2	21.9	+0.8	+7.4	21.4	25.0	2.4	267.6
September 2015	3.6	13.6	26.1	2.5	13.9	25.7	4.9	14.0	25.0	+0.5	+7.8	17.6	13.0	19.6	285.2
October 2015	6.8	19.5	33.2	10.6	20.9	33.2	10.7	21.1	32.2	+0.3	+8.8	31.4	30.4	44.4	316.6

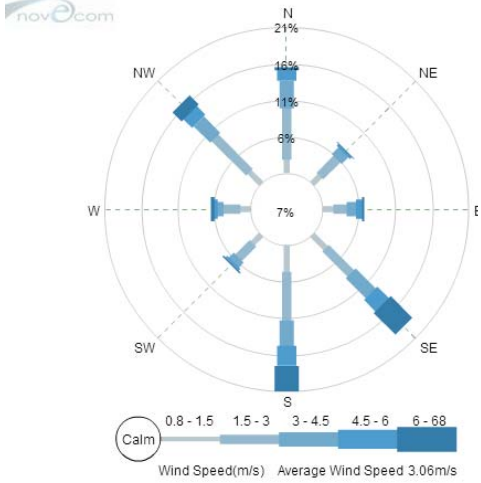
* Annual cumulative total since July 2012 to June 2013 from a composite data set based on the onsite Weather Station at WCC.



August 2015



June 2015



October 2015

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”

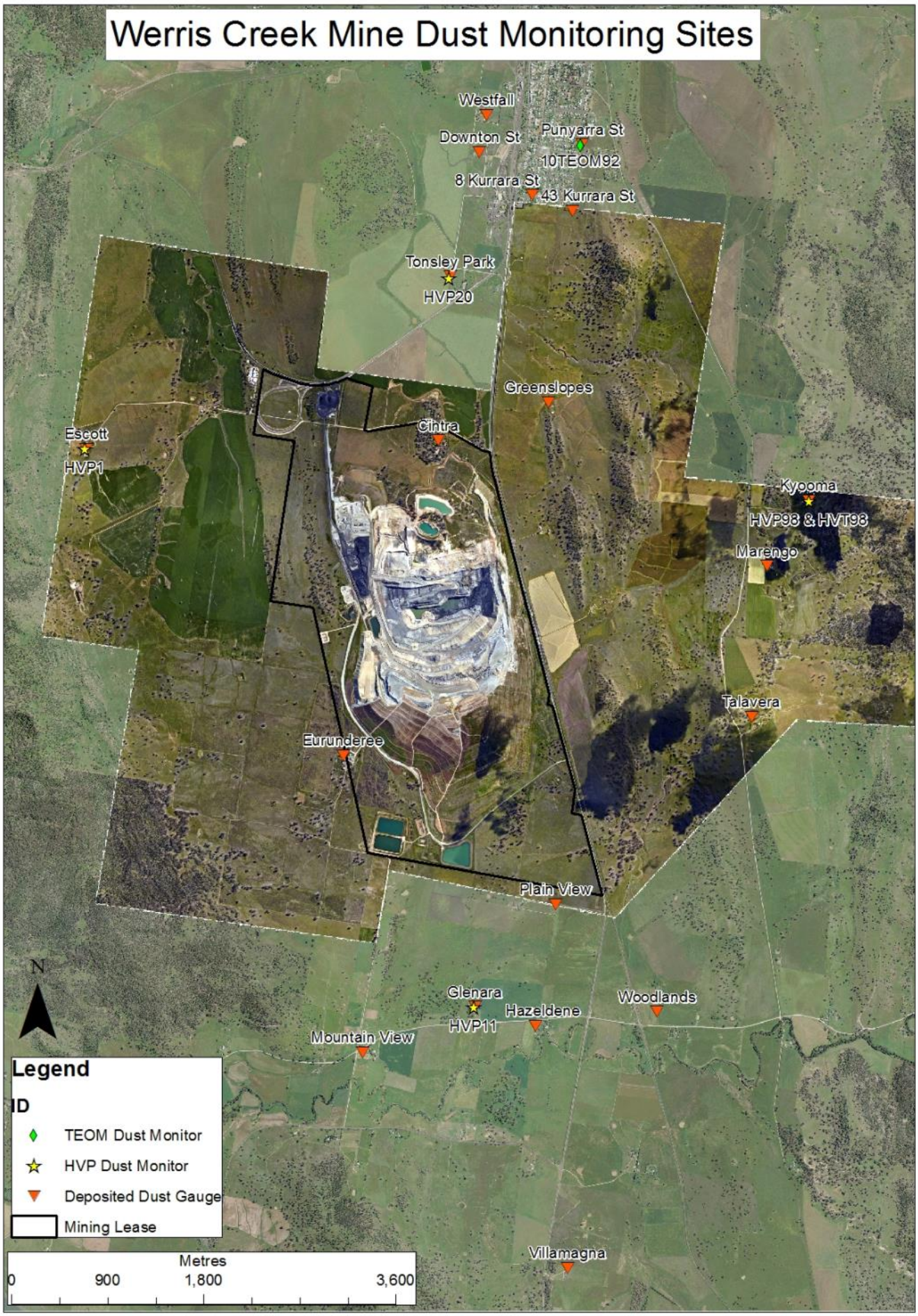


Figure 1 – WCC Dust Monitoring Locations

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)	August 2015 (µg/m^3)	September 2015 (µg/m^3)	October 2015 (µg/m^3)	2015-2016 Average (µg/m^3)	Criteria (µg/m^3)	
						Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	16.2	3.8	1.6	5.0	2.9	8	25
PM10 – TEOM92 "Werris Creek"	29.2	7.7	5.9	11.4	6.3	30	50
PM10 – HVP20 "Tonsley Park"	29.2	16.6	11.2	15.6	11.5	30	50
PM10 - HVP1 "Escott"	21.7	11.0	8.3	13.5	8.4	30	50
PM10 – HVP20 "Glenara"	47.2	19.8	15.9	28.6	15.6	30	50
PM10 – HVP98 "Kyooma"	19.8	14.2	7.7	10.5	7.0	30	50
TSP – HVT98 "Kyooma"	35.7	27.8	20.2	23.4	15.1	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	August 2015 (g/m^2/month)	September 2015 (g/m^2/month)	October 2015 (g/m^2/month)	2015-2016 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
DG1 "Escott"	0.2	1.9	0.3*	0.4	4.0
DG2 "Cintra"	2.1*	3.3*	3.4*	2.3	4.0
DG3 "Eurunderee"	1.1	0.7*	1.2	1.1	4.0
DG5 "Railway View"	1.0	0.8*	2.5*	1.4	4.0
DG9 "Marengo"	1.2	0.4*	0.7*	0.7	4.0
DG11 "Glenara"	0.6	1.0*	0.8	0.7	4.0
DG14 "Greenslopes"	0.2	0.5*	2.0	0.7	4.0
DG15 "Plain View"	0.5	1.5*	1.2	1.3	4.0
DG17 "Woodlands"	0.8	1.6	1.3	2.9	4.0
DG20 "Tonsley Park"	4.2	1.4	2.0	7.8	4.0
DG22 "Mountain View"	0.6	2.2*	0.6*	1.6	4.0
DG24 "Hazeldene"	1.3	0.4*	2.6*	2.1	4.0
DG34 8 Kurrara St	1.4	0.2*	4.3	5.3	4.0
DG62 Werris Creek South	0.3*	0.3*	0.8	1.5	4.0
DG92 Werris Creek Centre	0.3*	0.6*	0.5*	0.8	4.0
DG96 "Talavera"	<0.1	0.6*	0.8	0.5	4.0
DG98 "Kyooma"	0.1	0.3*	0.2*	0.3	4.0
DG101 "Westfall"	0.7*	0.4*	1.3	1.0	4.0
DG103 West Street	0.7	0.2*	0.7*	0.5	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

An audit of all dust gauges was undertaken during September, with bird deterrents installed. DG20 dust gauge was relocated on 21st August to avoid non-mine contamination. All monthly dust deposition gauge results were below the annual criteria of 4.0g/m^2/month except for DG20 ("Tonsley Park") and DG34 (8 Kurrara St), which are showing improving trends in annual dust deposition since last quarterly review.

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	August 2015		September 2015		October 2015		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.8	10%	1.1	5%	1.1	5%	1.7
DDW20	0.7	40%	0.6	20%	1.1	10%	0.8
DDW13	1.8	40%	0.7	30%	1.1	15%	1.0
Train Line							
DDE13	1.1	35%	0.4	10%	1.7	5%	1.8
DDE20	0.7	35%	0.8	20%	0.6	5%	0.8
DDE30	0.3	30%	0.6	5%	1.3	10%	0.8

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) and comparable to the levels monitored around WCC.

2.4 AIR QUALITY COMPLAINTS

There were two dust complaints recorded during the period, related to dust levels in Werris Creek. 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.

- 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**.

Tuesday 4th August 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*)	22#	40*	Inaudible#	40*
C	**Central Quipolly**(R10*,R11*)	29	40*	Inaudible	40*
D	**"Hazeldene"** R24	27	37	24	37
E	**"Railway Cottage"** R12	Inaudible	38	25#	38
F	**"Talavera"** R96	26#	38	37#	37
G	R97	28	35	33#	35
H	**"Kyooma"** R98*	27	40*	34	40*
I	**Kurrara St, WC**	Inaudible	35	**37**	35
J	**Coronation Ave, WC**	Inaudible	35	30	35
K	**South St, WC** (R20*, R21*)	Inaudible	40*	30#	40*
L	**West St, WC** (R103)	Inaudible	35	24#	35

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

Monday 21st September 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	26	35
B	**West Quipolly** (R7*, R8*,R9* & R22*)	Inaudible#	40*	27	40*
C	**Central Quipolly**(R10*,R11*)	Inaudible	40*	32	40*
D	**"Hazeldene"** R24	25#	37	30	37
E	**"Railway Cottage"** R12	Inaudible	38	32	38
F	**"Talavera"** R96	24#	38	29#	37
H	**"Kyooma"** R98*	28	40*	Inaudible	40*
I	**Kurrara St, WC**	Inaudible	35	25	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible	35
K	**South St, WC** (R20*, R21*)	28	40*	33	40*
L	**West St, WC** (R103)	25	35	28	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 29th October 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	25	38	Inaudible#	37
H	**"Kyooma"** R98*	23	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*)	Inaudible	40	33	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

There was one noise exceedances during the August to October 2015 period, occurring on the 4th August at the Kurrara St (R57) monitoring point. A Formal Warning was received from the EPA in relation to this noise exceedance.

3.2 NOISE COMPLAINTS

There were no noise complaints during August, September and October 2015.

4.0 BLAST

During the period a total of twenty 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.

August 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	0.11	101.4	0.63	103.8	0.39	101.6	0.24	100.1
Monthly Maximum	0.17	104.5	1.08	119.1	0.54	111.0	0.31	109.6
Annual Average	0.16	99.1	0.86	100.7	0.42	99.7	0.27	98.8
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	2.7%	0%	0%	0%	0%
# Blasts >0.5mm/s	5 out of 8 blast events							

September 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	0.12	101.5	0.54	101.9	0.36	103.1	0.21	101.0
Monthly Maximum	0.20	108.2	0.89	113.5	0.62	110.2	0.30	108.1
Annual Average	0.15	99.5	0.80	100.9	0.41	100.3	0.26	99.2
Criteria	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	2.1%	0%	1.2%	0%	0%
# Blasts >0.5mm/s	5 out of 10 blast events							

October 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	0.12	98.0	0.62	100.2	0.33	99.7	0.20	98.0
Monthly Maximum	0.29	105.9	1.06	105.0	0.57	107.4	0.33	105.6
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%	1.9%	0%	0%	0%	0%
# Blasts >0.5mm/s	5 out of 10 blast events							

Yellow – overpressure >115dB(L) or Werris Creek vibration >1mm/s.

4.1.2 Discussion - Compliance / Non Compliance

All blasts over the period complied with maximum license limits (120d(B)L and 10mm/s).

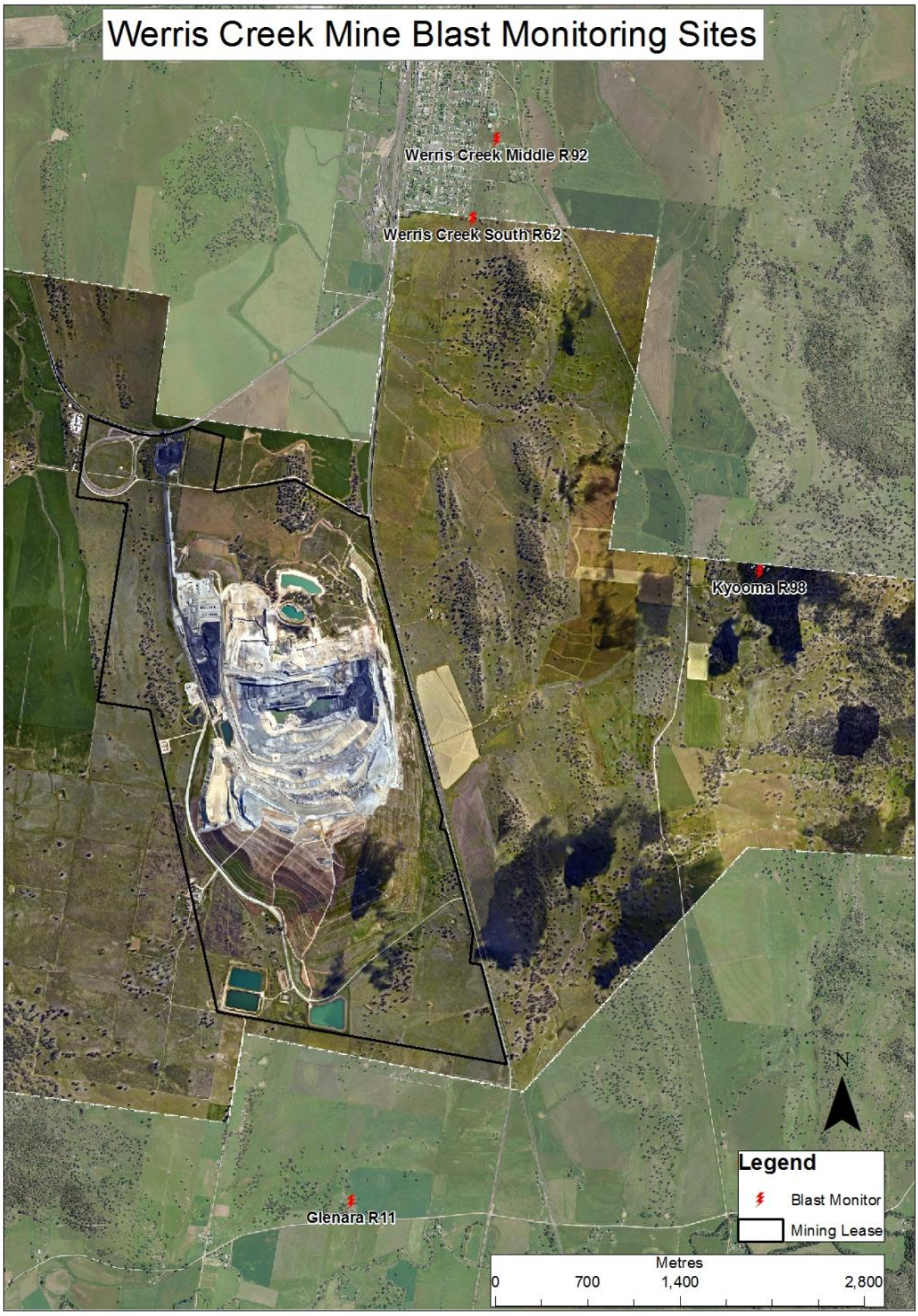


Figure 3 – WCC Blast Monitoring Locations

4.2 BLAST COMPLAINTS

There were twelve blast complaints during the period from six separate blast events on 13th and 28th August, 11th, 17th and 26th September, and 12th October 2015. All blasts were in compliance however nine blasting complaints were related to overpressure impacts which may be related to having a direct line of sight to Werris Creek. All twelve blasting complaints were for blasts at or near the natural surface on the western side of the mine. 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 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 31 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 23rd and 26th September 2015. 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	Sep 2015		Comments
		mbgl	%	
Werrie Basalt Near WCC	MW1	Dry	-	No rainfall recharge, Level down
	MW2	34.68	-3%	No rainfall recharge, Level down
	MW3	18.83	-1%	No rainfall recharge, Level down
	MW4B	15.92	-2%	No rainfall recharge, Level down
	MW5	12.02	-1%	No rainfall recharge, Level down
	MW6	14.94	-1%	No rainfall recharge, Level down
	MW27*	56.02	-2%	No rainfall recharge, Level down
	MW36A	23.54	-3%	No rainfall recharge, Level down
	MW36B	23.39	-3%	No rainfall recharge, Level down
Werrie Basalt	MW8*	19.04	0%	Limited rainfall recharge
	MW10	17.01	3%	Limited rainfall recharge
	MW14	18.84	-6%	No rainfall recharge, Level down
	MW17B*	14.17	-9%	No rainfall recharge, Level down
	MW19A*	8.97	6%	Limited rainfall recharge
	MW20*	21.37	-1%	No rainfall recharge, Level down
Quipolly Alluvium	MW7*	-	-	-
	MW12*	13.2	-2%	No rainfall recharge, Level down
	MW13*	7.06	-2%	No rainfall recharge, Level down
	MW13B*	5.41	-1%	No rainfall recharge, Level down
	MW13D*	5.25	-2%	No rainfall recharge, Level down
	MW15*	6.53	-1%	No rainfall recharge, Level down
	MW16*	7.76	-2%	No rainfall recharge, Level down
	MW17A*	6.82	-2%	No rainfall recharge, Level down
	MW18A*	6.7	-2%	No rainfall recharge, Level down
	MW21A*	10.75	-2%	No rainfall recharge, Level down
	MW22A*	8.92	-13%	No rainfall recharge, Level down
	MW22B*	Dry	-	Limited rainfall recharge
	MW23A*	4.14	-4%	No rainfall recharge, Level down
	MW23B*	4.22	-1%	No rainfall recharge, Level down
	MW28A*	14.94	-1%	No rainfall recharge, Level down
	MW32*	4.15	2%	Limited rainfall recharge

mbgl – meters below ground level is the distance in meters from top of bore to groundwater surface; Red – Greater than 15% change/potential compliance issue; 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).

Figure 4 – WCC Groundwater Monitoring Locations

5.1.2 Discussion - Compliance / Non Compliance

Below average rain fell across August to October 2015 which was not sufficient to result in rainfall recharge to aquifers with the majority of monitoring bores groundwater levels 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 dry conditions. There is ongoing community and media attention on this issue.

5.2 SURFACE WATER

Surface water monitoring is undertaken from 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 13th August 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	7.77	654	6	<5	Was previously dry.
SB10	Dry	Dry	Dry	Dry	Dry.
OFFSITE					
QCU	Dry	Dry	Dry	Dry	Dry.
QCD	8.26	1030	<5	<5	pH increased 0.18, EC decreased 70, TSS decreased 1, O&G no change.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.41	1360	23	5	pH increased 0.12, EC no change, TSS decreased 11, O&G no change.

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 13th August 2015 with all onsite and offsite water quality within longer term averages and the Site Water Management Plan trigger values except for some parameters due to dry conditions restricting water to pools.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no discharge events during the period. A summary of discharge monitoring results is provided below with the laboratory reports provided in **Appendix 8**.

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 a result of the dirty water discharge events.

5.3 WATER COMPLAINTS

There were two groundwater complaints during the period due to declining groundwater levels. As the monitoring results demonstrate in Section 5.1.1; the decline is reflected across all the aquifers regionally including the Quipolly Alluvium aquifer which had a number of bores at the lowest levels ever measured by WCC. Specific actions taken in relation to these complaints are outlined in **Section 6.**

Figure 5 – WCC Surface Water Monitoring Locations

6.0 COMPLAINTS SUMMARY

There were sixteen complaints received during the period with the details summarised below. There were twelve complaints related to blasting; two complaints relating to groundwater; and two complaints related to dust generated from the mine. There were eight different complainants during the period with fourteen complaints from Werris Creek residents and two complaints from Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
484	13/08/2015 1:11pm	BI Werris Creek	The complainant advised that they felt the blast and wished to complain.	Blast #84-2015 S21_B16-B18_RL395 was fired at 1:09pm on Thursday 13th August 2015 was a shot on the western side of pit at natural surface that was in compliance. Actual blast vibration was below the predicted vibration of 0.7mm/s but above the anecdotal complaint threshold of 0.5mm/s. Weather conditions were a strong west north westerly wind (289o) @ 7.1m/s with no inversion present.	Written response provided to complainant.
485-487	28/08/2015 1:10pm	U, I & DP&E Werris Creek	The blast felt like an earthquake through the house.	Blast #89-2015 S22_B15-B18_RL410_2 was fired at 1:09pm on Friday 28th August 2015 was a shot on the western side of pit at natural surface was in compliance. Actual blast vibration was well below the predicted vibration of 0.8mm/s and below the anecdotal complaint threshold of 0.5mm/s. With an overpressure >110dBL the blast would have been audible however no air blast was obvious from the shot. Weather conditions were a moderate westerly wind (268o) @ 4.4m/s with no inversion present.	Written response provided to complainant.
488 & 496	11/09/2015 12:59pm	U & Anonymous (DPE) Werris Creek	The blast shook the entire house. Train stopped across the level crossing on the highway and the blast produced blast smoke.	Blast #95-2015 S22_B16-B18_RL395 was fired at 12:59pm on Friday 11th September 2015 was a shot on the western side of pit near natural surface was in compliance. Actual blast vibration was well below the predicted vibration of 0.7mm/s and below the anecdotal complaint threshold of 0.5mm/s. With an overpressure ~108dBL the blast would have been audible however no air blast was obvious from the shot. Weather conditions were a light southerly wind (186o) @ 0.8m/s with no inversion present.	Written response provided to complainant.
489	14/09/2015 11:32am	BQ Quipolly	Groundwater bore has dried up and no longer can supply water for the house.	Groundwater level decline is common across the Quipolly Alluvium aquifer due to a lack of rainfall recharge to the aquifer resulting in 15,000ML leaving the system since 2012. The adjacent Quirindi Creek Alluvium aquifer does not have mining or dam within the catchment but has declined by 6m since 2012 and by 12m since 1970 in response to extraction and reduce rainfall recharge over time. Continued surface and groundwater modelling and reports do not indicate that WCC is the cause of the aquifer decline.	Groundwater consultant engaged to provide a review of groundwater levels and trends. Met with complainant on 14th September 2015 to measure their bore. Written response provided to the complainant.
490	16/09/2015 7:56pm	U Werris Creek	Lot of dust emitted from the mine.	The shift supervisor (OCE) does not recall or could explain the activities that the complainant allegedly observed on Wednesday 16th September 2015. Sunset was at 5:59pm and last light was at 6:13pm. As the TEOM was downwind and dust levels well below compliance criteria, it is unlikely that WCC was causing any dust impact. Weather conditions were a light south south westerly wind (202o) @ 1.9m/s with an extreme inversion present.	Written response provided to the complainant.
491-494	17/09/2015 1:27pm	U, Y & Anonymous (DPE) Werris Creek	Blast shook house and generated dust/fume over Werris Creek town.	Blast #97-2015 S23_B18-B208_RL395 was fired at 1:26pm on Thursday 17th September 2015 was a shot on the very western edge of the pit at natural surface was in compliance. Actual blast vibration was well below the predicted vibration of 0.7mm/s and below the anecdotal complaint threshold of 0.5mm/s. With an overpressure at 110dBL the blast would have been audible however no air blast was obvious from the shot. the blast generating minor fume (Level 1A) that dispersed onsite and a dust cloud that travelled in a northerly direction dispersing over cultivated paddocks on the "Cintra" property (Whitehaven owned land) approximately 1km north of the mine boundary and 1.5km south west of the closest point of Werris Creek township. Weather conditions were a moderate south westerly wind (219o) @ 4.6m/s with an extreme inversion present.	The blast was delayed by 20 minutes waiting for a wind direction away from Werris Creek. A written response provided to the complainants, DP&E and EPA.

495	26/09/2015 10:46am	U Werris Creek	Blast was felt in the blast in the house and did not appreciate it.	Blast #99&100-2015 (S23_B15-B18_RL410 + S19_B17_RL350_PS) was fired at 10:46am on Saturday 26th September 2015 on the western side of the pit at natural surface (Presplit shot was just below natural surface) was in compliance. The complaint was likely to have been for the overpressure but was only just over 100dBL at Werris Creek South which would have been just audible but well below compliance criteria. Weather conditions were a moderate south easterly wind (144o) @ 4.9m/s with no inversion present.	Written response provided to the complainant.
497	12/10/2015 10:52am	Anonymous (DPE)	Major blast at 1:29pm 8/10/15 and dust blew towards Werris Creek & 2 subsequent blasts at 1:39pm 8/10 that shook houses	WCC shot 2015-105&106 (S22_B15_RL410_TRIM & S16_B04-B06_RL335_TSB) was fired at 1:22pm on Thursday 8th October 2015 on the western side of the pit at natural surface and eastern side of the pit approximately 85 metres below natural surface. The blast was delayed from two previous dates. Maximum vibration was 0.34 and overpressure 97.7 were recorded at Werris Creek South	A written response was provided to the DPE
498	13/10/2015 9:30am	BR Werris Creek	Dust from the mine is causing respiratory problems over the last few months.	Recent earthworks to construct an in-pit holding pond have exposed fresh ground near the top hill of Werris Creek Mine. The ground has not yet stabilized and as such is raising concerns over dust levels in town. Monitoring over the past few months have shown a generally improving trend in air quality, as measured at the Werris Creek TEOM, and when combined with the prevailing wind direction, it is unlikely that dust generated from WCM is causing health impacts on residents in Werris Creek.	EO visited BR to better understand the problem. Agreed that circumstances other than mining were causing the respiratory problems.
499	13/10/2015 9:51am	BN Quipolly	Groundwater bore is no longer reliable and is worried he will not have enough water to sustain cattle over Summer. Wishing for the mine to provide water	EO called back in response to email to discuss complainants situation. Complainant was aware of the recent investigation into groundwater impacts and had spoken to the hydrogeologist, but disputed some of the assumptions used, especially around rainfall runoff. EO stressed that the changes in groundwater were part of a regional trend and not the result of mining activities. EO also stressed that the hydrogeologist is highly qualified to undertake the study. Complainant agreed with these qualifications, but stressed the potential errors in groundwater modelling and disputed some of the findings on this basis. No agreement or resolution was forthcoming.	EO called back in response to email to discuss. No further actions taken at this stage.

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									11.5			7.0			8.4			15.6			15.1	50	30	90
01-Nov-15									11.5			7.0			8.4			15.6			15.1	50	30	90
07-Nov-15								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
13-Nov-15			2.9			6.3		#DIV/0!	11.5		#DIV/0!	7.0		#DIV/0!	8.4		#DIV/0!	15.6		#DIV/0!	15.1	50	30	90
19-Nov-15								#NUM!	11.5		#NUM!	7.0		#NUM!	8.4		#NUM!	15.6		#NUM!	15.1	50	30	90
25-Nov-15								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
01-Dec-15									11.5			7.0			8.4			15.6			15.1	50	30	90
07-Dec-15								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
13-Dec-15			2.9			6.3		#DIV/0!	11.5		#DIV/0!	7.0		#DIV/0!	8.4		#DIV/0!	15.6		#DIV/0!	15.1	50	30	90
19-Dec-15								#NUM!	11.5		#NUM!	7.0		#NUM!	8.4		#NUM!	15.6		#NUM!	15.1	50	30	90
25-Dec-15								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
31-Dec-15									11.5			7.0			8.4			15.6			15.1	50	30	90
06-Jan-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
12-Jan-16			2.9			6.3		#DIV/0!	11.5		#DIV/0!	7.0		#DIV/0!	8.4		#DIV/0!	15.6		#DIV/0!	15.1	50	30	90
18-Jan-16								#NUM!	11.5		#NUM!	7.0		#NUM!	8.4		#NUM!	15.6		#NUM!	15.1	50	30	90
24-Jan-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
30-Jan-16									11.5			7.0			8.4			15.6			15.1	50	30	90
05-Feb-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
11-Feb-16			2.9			6.3		#DIV/0!	11.5		#DIV/0!	7.0		#DIV/0!	8.4		#DIV/0!	15.6		#DIV/0!	15.1	50	30	90
17-Feb-16								#NUM!	11.5		#NUM!	7.0		#NUM!	8.4		#NUM!	15.6		#NUM!	15.1	50	30	90
23-Feb-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
29-Feb-16									11.5			7.0			8.4			15.6			15.1	50	30	90
06-Mar-16									11.5			7.0			8.4			15.6			15.1	50	30	90
12-Mar-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
18-Mar-16			2.9			6.3		#DIV/0!	11.5		#DIV/0!	7.0		#DIV/0!	8.4		#DIV/0!	15.6		#DIV/0!	15.1	50	30	90
24-Mar-16								#NUM!	11.5		#NUM!	7.0		#NUM!	8.4		#NUM!	15.6		#NUM!	15.1	50	30	90
30-Mar-16								0.0	11.5		0.0	7.0		0.0	8.4		0.0	15.6		0.0	15.1	50	30	90
Min					0.0		0.7			1.1			0.4			1.8			3.3					
Median					5.7		10.5			5.5			7.9			13.6			9.8					
Max					29.2		33.8			21.0			21.7			47.2			35.7					
Capture							56%			51%			56%			56%			51%					

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						0.4	0.5	0.1	1.9	4.0
			Ash Content	<0.1	<0.1	<0.1	<0.1	0.1	1.0	<0.1										
-	DG2	Cintra	Total Matter	1.2	2.7	1.5	1.6	2.1	3.3	3.4						2.3	2.2	1.2	3.4	4.0
			Ash Content	0.3	1.4	0.5	0.8	1.0	1.6	1.5										
-	DG3	Eurunderee	Total Matter	1.2	2.4	0.5	0.7	1.1	0.7	1.2						1.1	1.1	0.5	2.4	4.0
			Ash Content	0.8	0.7	0.2	0.2	0.7	0.3	0.6										
-	DG5	Railway View	Total Matter	1.9	1.8	0.4	1.3	1.0	0.8	2.5						1.4	1.3	0.4	2.5	4.0
			Ash Content	1.1	0.7	0.2	0.7	0.6	0.3	1.1										
-	DG9	Marengo	Total Matter	1.6	0.8	0.1	0.4	1.2	0.4	0.7						0.7	0.7	0.1	1.6	4.0
			Ash Content	1.1	0.4	0.1	0.2	0.7	0.1	0.3										
EPL#29	DG11	Glenara	Total Matter	0.8	0.5	0.6	0.3	0.6	1.0	0.8						0.7	0.8	0.3	1.0	4.0
			Ash Content	0.4	0.2	0.4	<0.1	0.3	0.4	0.5										
-	DG14	Greenslopes	Total Matter	1.3	0.5	0.1	0.3	0.2	0.5	2.0						0.7	0.8	0.1	2.0	4.0
			Ash Content	0.8	0.2	<0.1	0.1	0.1	0.1	1.1										
-	DG15	Plain View	Total Matter	1.0	0.6	0.4	4.0	0.5	1.5	1.2						1.3	1.5	0.4	4.0	4.0
			Ash Content	0.5	0.3	0.1	2.0	0.3	0.7	0.6										
-	DG17	Woodlands	Total Matter	2.6	4.8	8.3	1.0	0.8	1.6	1.3						2.9	1.2	0.8	8.3	4.0
			Ash Content	1.2	1.2	0.6	0.4	0.5	0.8	0.8										
-	DG20	Tonsley Park	Total Matter	4.4	11.9	3.1	27.6	4.2	1.4	2.0						7.8	2.2	1.4	27.6	4.0
			Ash Content	1.8	5.7	2.4	24.0	3.4	0.7	1.0										
-	DG22	Mountain View	Total Matter	4.3	2.2	1.2	0.3	0.6	2.2	0.6						1.6	1.4	0.3	4.3	4.0
			Ash Content	1.2	1.8	0.9	0.1	0.5	0.9	0.1										
-	DG24	Hazeldene	Total Matter	5.1	4.5	0.6	0.5	1.3	0.4	2.6						2.1	1.2	0.4	5.1	4.0
			Ash Content	3.8	3.1	0.1	0.3	0.7	<0.1	0.8										
-	DG34	8 Kurrara Street	Total Matter	0.7	29.5	0.5	0.3	1.4	0.2	4.3						5.3	2.0	0.2	29.5	4.0
			Ash Content	0.3	20.7	0.2	0.1	1.0	<0.1	2.6										
-	DG62	Werris Creek South	Total Matter	7.7	0.8	0.1	0.5	0.3	0.3	0.8						1.5	0.1	0.1	7.7	4.0
			Ash Content	0.8	0.3	<0.1	0.2	0.1	<0.1	0.4										
EPL#30	DG92	Werris Creek Centre	Total Matter	1.0	0.4	0.1	2.7	0.3	0.6	0.5						0.8	0.5	0.1	2.7	4.0
			Ash Content	0.5	0.2	<0.1	0.7	0.1	0.1	0.1										
-	DG96	Talavera	Total Matter	0.2	0.5	NS	0.8	0.1	0.6	0.8						0.5	0.5	0.1	0.8	4.0
			Ash Content	<0.1	0.2	NS	0.2	<0.1	0.2	0.4										
EPL#28	DG98	Kyooma	Total Matter	0.8	0.2	0.1	0.1	0.1	0.3	0.2						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										
-	DG101	Westfall	Total Matter	2.5	0.9	1.0	0.5	0.7	0.4	1.3						1.0	0.9	0.4	2.5	4.0
			Ash Content	1.1	0.4	0.4	0.2	0.3	0.1	0.7										
-	DG103	West Street	Total Matter	0.9	0.9	0.3	0.1	0.7	0.2	0.7						0.5	0.6	0.1	0.9	4.0
			Ash Content	0.6	0.4	0.1	<0.1	0.5	<0.1	0.3										

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	<1%	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																									4.0
December 2015																									4.0
January 2016																									4.0
February 2016																									4.0
March 2016																									4.0
ANNUAL AVERAGE	**1.7**				**0.8**				**1.0**				**1.8**				**0.8**				**0.8**				**4.0**
Average Coal %	**10.0%**				**21.7%**				**17.9%**				**18.6%**				**20.0%**				**10.0%**				**-**
Average Coal g/m2	**0.17**				**0.18**				**0.18**				**0.33**				**0.16**				**0.08**				**-**
MINIMUM	**1.0**				**0.6**				**0.5**				**0.4**				**0.6**				**0.3**				**-**
MAXIMUM	**4.8**				**1.1**				**1.8**				**3.9**				**1.1**				**1.3**				**4.0**

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

Appendix 4 – Noise Monitoring Results

17 August 2015

Ref: 04035/5958

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

RE: AUGUST 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 Tuesday 4th of August, 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
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
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 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.

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, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the 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 4th August 2015 had the 5600 excavator in Strip 20 west at RL400m; the 3600 excavator in Strip 14 east at RL250m and a 1900 excavator in Strip 16 centre at RL335m until end of shift at 2:40am. The 3600 overburden truck fleet were running to the RL425 centre dump but were diverted to the RL405m west dump at 8:05pm to manage noise impacts as there was no in pit dumping available. The 5600 overburden truck fleet were also running to the RL405m west dump. The following operational changes were made to manage noise impacts including the 1900 excavator (and 3 trucks) was suspended at 6:50pm; a D11 and D10 dozer were suspended at 7:15pm; the 5600 excavator (and 4 trucks) were suspended at 10pm. The two excavators were restarted at 11:30pm as noise levels had dropped below 33dBA but the 1900 excavator was suspended again at 11:50pm and the 5600 excavator was suspended at 12:30pm. In total, the production time lost on Tuesday night was 3 hours for the 5600 excavator, 5 hours for the 1900 excavator, 9.5 hours for dozers, 21 hours for CAT 785 trucks and 7 hours for CAT 793XQ trucks. The Coal Processing and Train Load Out facility operated to end of shift at 9:40pm with no trains loaded.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 4 August 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	1:15 pm	31	35	n/a	3.3,276	Traffic (28), birds (25), wind (25), WCC inaudible (<20)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:34 pm	35	40*	n/a	3.2,279	Birds (32), traffic (29), cattle (28), WCC (22)
C R10 Meadholme/ R11 Glenara	1:53 pm	37	40*	n/a	2.7,264	Birds (34), traffic (32), WCC inaudible (29)
D R24 Hazeldene	2:12 pm	38	37	n/a	2.5,282	Birds (36), traffic (32), WCC (27)
E R12 Railway Cottage	3:57 pm	40	38	n/a	2.1,281	Traffic (40), WCC inaudible (<20)
F R96 Talavera	1:05 pm	34	38	n/a	3.2,278	Birds (32), traffic (28), WCC (26)
G R97	3:28 pm	30	35	n/a	2.6,288	WCC (28), traffic (25)
H R98 Kyooma	2:12 pm	40	40*	n/a	2.5,277	Birds (40), WCC (27), traffic (24)
I R57 Kurrara St	2:54 pm	42	35	n/a	2.3,290	Traffic (41), birds (33), train yard (28), WCC inaudible (<20)
J R57 Coronation Ave	2:35 pm	44	35	n/a	2.6,277	Birds (43), train yard (38), construction (33), traffic (31), WCC inaudible (<20)
K R21 Alco Park	4:29 pm	37	40*	n/a	1.2,269	Birds (36), traffic (28), train yard (26), WCC inaudible (<20)
L R103	4:08 pm	40	35	n/a	2.1,291	Construction (39), birds (31), traffic (27), WCC inaudible (<20)

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 4 August 2015 (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	7:13 pm	<20	37	35	Lapse,5.6,252	Traffic (37), WCC inaudible (<20)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:33 pm	<20	32	40*	Lapse,5.3,249	Traffic (31), wind (25), WCC inaudible (<20)
C R10 Meadholme/ R11 Glenara	7:52 pm	<20	30	40*	Lapse,1.6,171	Traffic (29), wind (24), WCC inaudible (<20)
D R24 Hazeldene	8:11 pm	29	38	37	+0.8,1.1,36	Traffic (38), WCC (24)
E R12 Railway Cottage	9:52 pm	30	44	38	+0.9,5.1,269	Traffic (44), WCC (25)
F R96 Talavera	6:50 pm	44	38	37	Lapse,5.3,252	WCC (37), traffic (32)
G R97	9:26 pm	39	35	35	+1.0,2.4,286	WCC (33), wind (28), traffic (27)
H R98 Kyooma	7:59 pm	39	36	40*	Lapse,0.8,111	WCC (34), traffic (32)
I R57 Kurrara St	9:02 pm	45	44	35	+0.6,1.6,340	WCC (37), traffic (37), train yard (35)
J R57 Coronation Ave	8:23 pm	33	39	35	+1.1,1.0,98	Traffic (36), train yard (34), WCC (30)
K R21 Alco Park	10:09 pm	33	36	40*	0.0,5.2,272	Traffic (35), WCC (30)
L R103	9:49 pm	38	37	35	+1.4,5.0,266	WCC (34), traffic (33), frogs (25)

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

The results in Table 3 show that the measured noise level exceeded the noise criterion by 2 dB(A) at the Kurrara Street monitoring location during the 15 minute period commencing at 9.02 pm.

It is noted that an exceedance of less than 2 dB (A) above a statutory noise limit specified in a licence condition is not considered to be a non-compliance as per the discussion in Section 11.1.3 of the NSW Industrial Noise Policy.

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 audible at a number of receiver locations. The noise was predominantly general mine hum with dozer engine and track noise audible at some locations.

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.

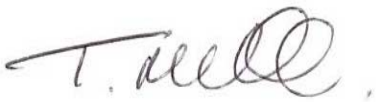
To avoid undue disturbance to residents the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than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

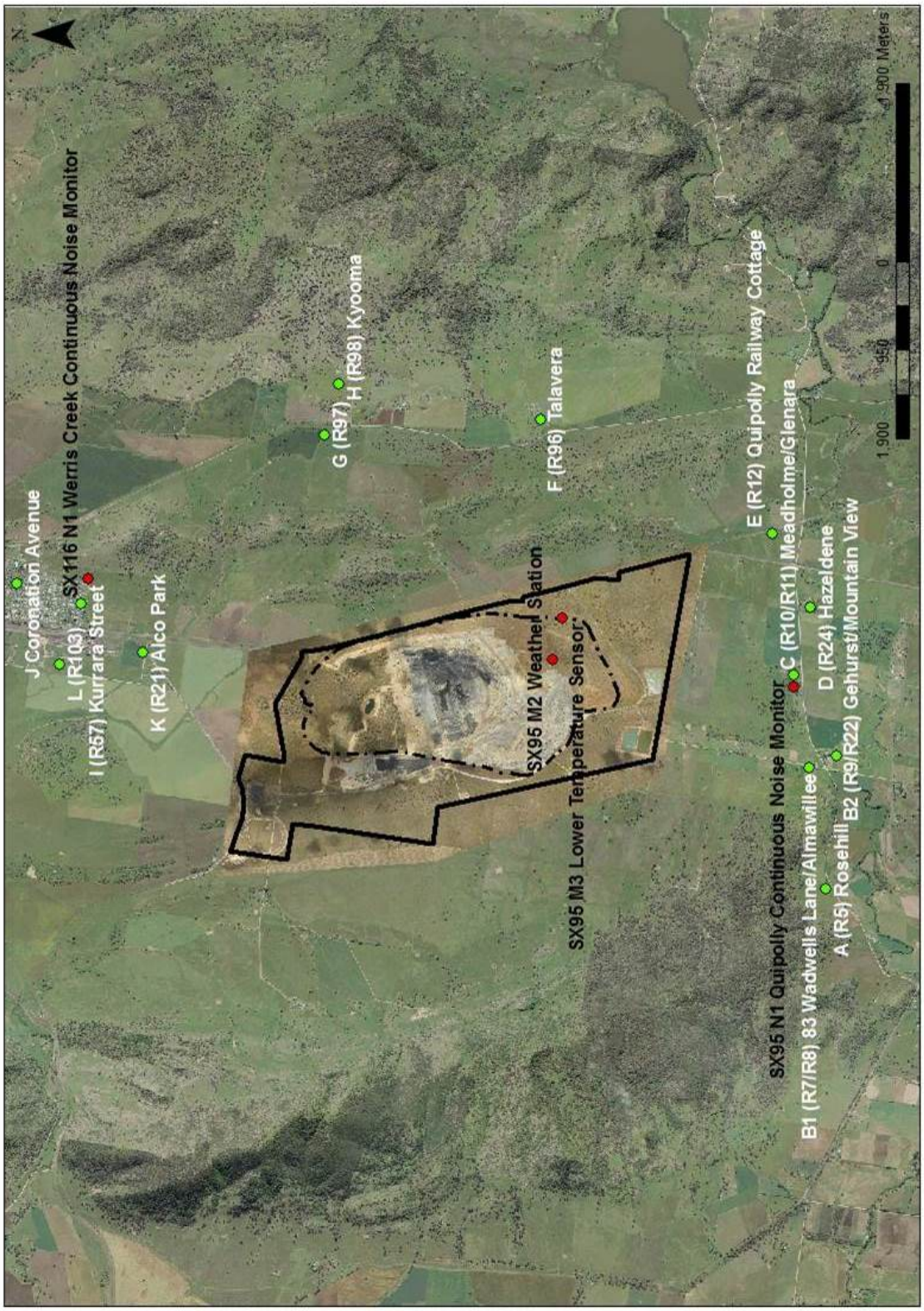


Tristan McCormick
Acoustical Consultant

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

5 November 2015

Ref: 04035/6141

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

RE: OCTOBER 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 Thursday 29th of October, 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 Thursday 29th October 2015 had the 5600 excavator in Strip 23 west at RL395m and one 1900 excavator in Strip 16 west at RL305m until end of shift at 2:40am. The other 1900 excavator and the 3600 excavator were in Strip 16 east at RL335m until end of shift at 2:40am. All overburden trucks were running to the RL445m dump until dark (7:30pm) when they were changed to the in pit dump at RL405m to manage noise impacts. One drill was operating in Strip 16 centre until end of shift at 2:40am, with the other drill undergoing routine servicing in the workshop for the duration of the shift. No production time was lost on Thursday night due to noise impacts.

The Coal Processing and Train Load Out facility operated to end of shift at 9:15pm 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 – 29 October 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	1:42 pm	37	35	n/a	4.1,113	Birds (35), traffic (31), wind (28), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	2:05 pm	42	40*	n/a	4.8,181	Birds (41), wind (32), traffic (30), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	2:24 pm	48	40*	n/a	6.8,147	Wind (47), birds (41), traffic (33), **WCC inaudible (<20)**
D R24 Hazeldene	2:45 pm	40	37	n/a	5.9,170	Traffic (37), birds (34), wind (33), **WCC inaudible (<20)**
E R12 Railway Cottage	3:51 pm	45	38	n/a	4.2,162	Traffic (45), birds (31), wind 28), **WCC inaudible (<20)**
F R96 Talavera	9:29 am	33	38	n/a	1.2,357	Birds & insects (32), **WCC (25)**
H R98 Kyooma	10:42 am	41	40*	n/a	2.1,172	Birds (41), **WCC (23)**
I R57 Kurrara St	11:28 am	41	35	n/a	2.4,168	Birds & insects (38), train yard (37), traffic (31), **WCC inaudible (<20)**
J R57 Coronation Ave	11:08 am	43	35	n/a	2.1,216	Birds & insects (42), traffic (34), train yard (31), **WCC inaudible (<20)**
K R21 Alco Park	12:54 pm	36	40*	n/a	2.4,200	Traffic (33), wind (32), birds (27), **WCC inaudible (<20)**
L R103	12:34 pm	35	35	n/a	2.0,259	Train yard (33), birds & insects (29), traffic (25), **WCC inaudible (<20)**

* Private Agreement in place – see Appendix II

Table 3 WCC Noise Monitoring Results – 29 October 2015 (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	7:52 pm	n/a	39	35	Lapse,4.7,138	Birds & insects (37), traffic (35), **WCC inaudible (<20)**
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	8:14 pm	n/a	35	40*	Lapse,4.9,127	Traffic (34), insects (27), **WCC inaudible (<20)**
C R10 Meadholme/ R11 Glenara	8:34 pm	n/a	38	40*	Lapse,4.3,124	Traffic (36), insects (33), **WCC inaudible (<20)**
D R24 Hazeldene	8:55 pm	n/a	41	37	Lapse,3.6,113	Traffic (41), insects (27), **WCC inaudible (<20)**
E R12 Railway Cottage	6:46 pm	n/a	41	38	Lapse,4.8,149	Traffic (39), birds & insects (37), **WCC inaudible (<20)**
F R96 Talavera	6:40 pm	n/a	36	37	Lapse,4.8,149	Birds & insects (36), traffic (24), **WCC inaudible (<20)**
H R98 Kyooma	7:46 pm	n/a	51	40*	Lapse,4.8,143	Insects (51), train (25), **WCC inaudible (<20)**
I R57 Kurrara St	8:28 pm	n/a	44	35	Lapse,3.8,119	Frogs & insects (44)m traffic (30), **WCC inaudible (<20)**
J R57 Coronation Ave	8:09 pm	n/a	32	35	Lapse,4.0,113	Train yard (29), insects (26), traffic (25), **WCC inaudible (<20)**
K R21 Alco Park	9:53 pm	39	50	40*	Lapse,2.6,116	Insects (50), traffic (32), train yard (27), **WCC (33)**
L R103	9:34 pm	n/a	40	35	Lapse,3.6,110	Insects (38), traffic (34), train yard (30), **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 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

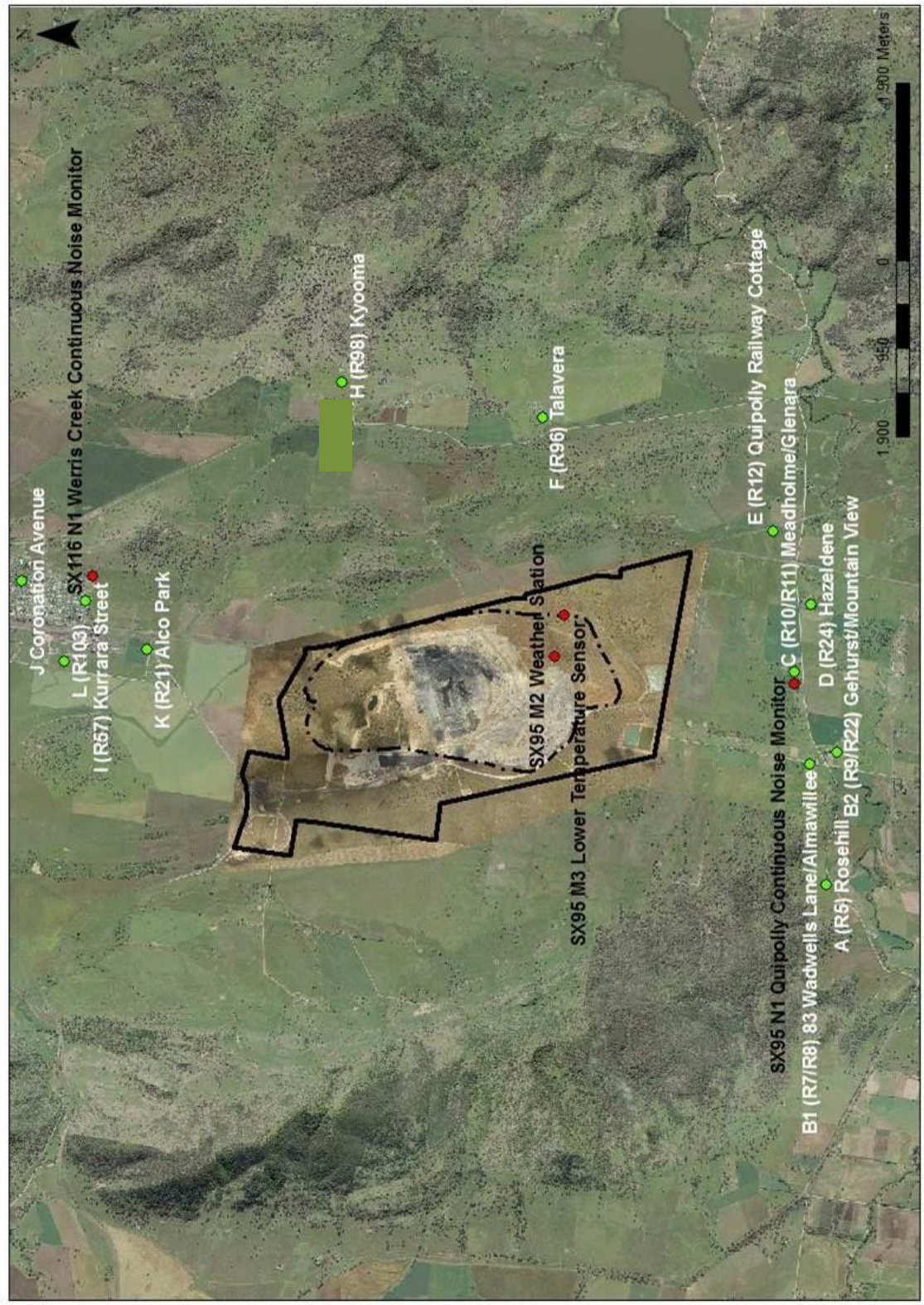
Author:

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

1 October 2015

Ref: 04035/6077

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

RE: SEPTEMBER 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 21st of September, 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 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. The time shown in the tables represents the start of the full monitoring period.

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 21st September 2015 had the 5600 excavator in Strip 20 west at RL395m and the 3600 excavator in Strip 16 east at RL350m until end of shift at 2:40am with the 1900 excavator in Strip 16 centre at RL330m until 10pm when suspended to manage noise impacts. The 5600 overburden truck fleet were running to the RL425m west dump until 8:30pm when they were changed to the in pit dump at RL380m to manage noise impacts with the 3600 and 1900 overburden truck fleets running to the RL270m in pit dump. Both drills were suspended to manage noise with the first shutdown at 7pm and the second shutdown at 8:30pm. In total, the production time lost on Monday night was 4.5 hours for the 1900 excavator and 11.5 hours for drills. The Coal Processing and Train Load Out facility operated to end of shift at 9:40pm with one train loaded arriving at 11:41pm and departing at 2:17am.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 21 September 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	12:46 pm	37	35	n/a	4.6,312	Wind (34), birds (31), tractor (30), traffic (26), WCC inaudible (<20)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	1:05 pm	40	40*	n/a	5.9,298	Birds (39), wind (31), traffic (25), WCC inaudible (<20)
C R10 Meadholme/ R11 Glenara	3:44 pm	39	40*	n/a	1.4,136	Traffic (36), birds (36), WCC inaudible (<20)
D R24 Hazeldene	1:25 pm	37	37	n/a	5.8,292	Birds (34), traffic (32), wind (28), WCC (25)
E R12 Railway Cottage	2:34 pm	48	38	n/a	1.1,149	Traffic (48), birds (35), WCC inaudible (<20)
F R96 Talavera	12:50 pm	39	38	n/a	5.0,307	Birds (37), wind (34), traffic (26), WCC (24)
H R98 Kyooma	4:22 pm	39	40*	n/a	1.4,145	Birds (39), WCC (28)
I R57 Kurrara St	2:19 pm	48	35	n/a	3.0,212	Train yard (45), birds (44), traffic (38), WCC inaudible (<20)
J R57 Coronation Ave	1:59 pm	46	35	n/a	3.5,249	Train yard (45), construction (36), birds (31), traffic (29), WCC inaudible (<20)
K R21 Alco Park	3:47 pm	41	40*	n/a	1.4,136	Traffic (39), birds (36), WCC (28)
L R103	3:27 pm	42	35	n/a	1.7,145	Construction (40), train yard (36), birds (29), traffic (28), WCC (25)

* Private Agreement in place – see Appendix II

Table 3
WCC Noise Monitoring Results – 21 September 2015 (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	7:07 pm	30	34	35	+8.5,1.3,323	Traffic (33), WCC (26)
B R7 83 Wadwells Lane, R8 Almawillee, R9Gedhurst, R22 Mountain View	7:30 pm	32	38	40*	+7.9,1.4,292	Traffic (33), train (32), birds (29), WCC (27)
C R10 Meadholme/ R11 Glenara	7:50 pm	37	36	40*	+7.1,1.4,304	Traffic (34), WCC (32)
D R24 Hazeldene	8:13 pm	37	41	37	+6.1,0.6,3	Traffic (41), WCC (30)
E R12 Railway Cottage	9:19 pm	36	44	38	+3.5,0.8,294	Traffic (44), WCC (32)
F R96 Talavera	7:31 pm	33	30	37	+7.2,2.1,298	WCC (29), traffic (23)
H R98 Kyooma	7:10 pm	<20	29	40*	+8.5,1.5,323	Train (28), frogs (22), WCC inaudible (<20)
I R57 Kurrara St	8:59 pm	29	29	35	+4.6,0.5,346	Traffic (27), WCC (25)
J R57 Coronation Ave	8:40 pm	<20	35	35	+6.3,0.7,3	Domestic noise (generator?) (34), traffic (28), WCC inaudible (<20)
K R21 Alco Park	10:25 pm	39	38	40*	+4.5,1.4,333	Traffic (36), WCC (33), train yard (28)
L R103	10:06 pm	34	35	35	+3.7,1.3,337	Train yard (32), traffic (30), WCC (28)

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 audible at a number of receiver locations. The noise was predominantly general mine hum with dozer engine and track noise audible at some locations. For the receiver locations situated to the north in the town of Werris Creek, dozer tracks were audible from the stockpile at the train loading facility as well as the mine itself.

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

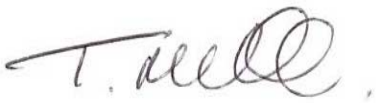
the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards the mine.

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:



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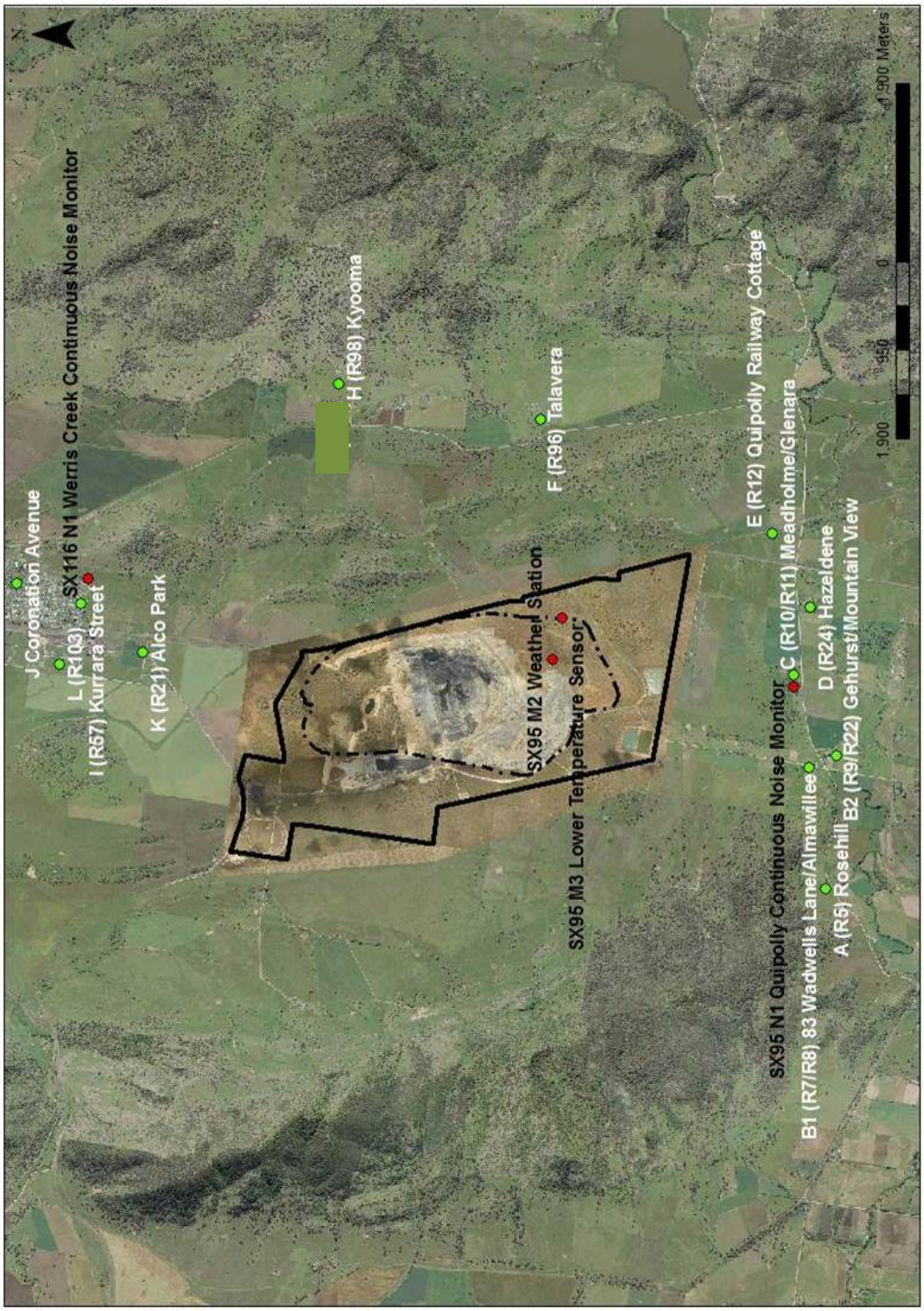
Review:

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

WERRIS CREEK COAL BLASTING RESULTS
AUGUST 2015

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
72	2015-82	3/08/2015	13:53	S18_B7-B10_RL400	0.5	OB	0.08	103.2	0.61	119.1	0.36	107.2	0.31	104.7	10.00	120.0	Not Monitored		50.00	-4.0	301	4.2	3.2	2.6	10.2	2A	Offsite	0	0	0
73	2015-83	7/08/2015	12:15	S16_B18-B21_RL320_TSB	0.7	TSB	0.12	98.8	0.48	100.6	0.38	99.5	0.27	98.9	10.00	120.0	Not Monitored		50.00	-4.0	185	2.7	10.1	10	10.4	0	Onsite	0	0	0
74	2015-84	13/08/2015	13:09	S21_B16-B18_RL395	0.7	OB	0.14	104.5	0.57	104.7	0.54	104.7	0.24	107.3	10.00	120.0	Not Monitored		50.00	-3.8	289	7.1	12.8	12.8	12.9	0	Road	1	0	0
75	2015-85	14/08/2015	13:03	S15_B13-B17_RL320	0.7	IB	0.08	100.4	0.40	100.0	0.27	97.8	0.17	95.1	10.00	120.0	Not Monitored		50.00	-4.5	20	1.3	17.7	13.3	16.4	0	Onsite	0	0	0
76	2015-86	19/08/2015	13:35	S22_B15-B18_RL410_1	0.8	OB	0.17	101.3	0.93	103.2	0.40	100.4	0.27	99.0	10.00	120.0	Not Monitored		50.00	-4.5	293	1.3	2.9	2.6	14.0	0	Onsite	0	0	0
77	2015-87	21/08/2015	15:53	S22_B19-B20_RL395	0.8	OB	0.10	103.2	0.55	97.2	0.48	97.3	0.16	93.4	10.00	120.0	Not Monitored		50.00	-3.3	276	2.2	13.2	13.1	13.2	1A	Onsite	0	0	0
78	2015-88	26/08/2015	13:03	S16_B13-B17_RL320	0.6	IB	0.09	97.7	0.40	98.1	0.35	95.1	0.28	92.7	10.00	120.0	Not Monitored		50.00	-3.8	330	2.3	17.2	12.9	10.2	0	OK	0	0	0
79	2015-89	28/08/2015	13:09	S22_B15-B18_RL410_2	0.8	OB	0.13	102.2	1.08	107.5	0.35	111.0	0.23	109.6	10.00	120.0	Not Monitored		50.00	-4.3	268	4.4	10.6	4.6	12.4	1A	Offsite	3	0	0
	TOTALS	**AUGUST 2015**	**# BLAST**	**8**	**TARGET**	**AVERAGE**	**0.11**	**101.4**	**0.63**	**103.8**	**0.39**	**101.6**	**0.24**	**100.1**	**5.00**	**115.0**														
	TOTALS	**AUGUST 2015**	**#>0.5mm**	**5**	**<1mm/s**	**HIGHEST**	**0.17**	**104.5**	**1.08**	**119.1**	**0.54**	**111.0**	**0.31**	**109.6**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**37**	**<115dBL**	**AVERAGE**	**0.16**	**99.1**	**0.86**	**100.7**	**0.42**	**99.7**	**0.27**	**98.8**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**2.7%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

WERRIS CREEK COAL BLASTING RESULTS
SEPTEMBER 2015

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
80	2015-90&91	1/09/2015	13:03	S16_B13-B18_RL320 + Rocks	0.4	IB	0.07	101.0	0.30	101.7	0.22	99.9	0.15	98.1	10.00	120.0	Not Monitored		50.00	-4.3	327	3.6	10.3	12.5	12.8	0	Onsite	0	0	0
81	2015-92	3/09/2015	12:58	S20_B16-B21_RL380	0.6	OB	0.15	108.2	0.58	109.4	0.62	105.1	0.30	108.1	10.00	120.0	Not Monitored		50.00	-3.2	327	5.5	11.0	13.3	13.4	2A	OK	0	0	0
82	2015-93&94	9/09/2015	13:14	S20_B17-B20_RI380 + S16_B5_RL320_Ewedge	0.6	OB & IB	0.16	103.8	0.53	104.6	0.43	105.6	0.26	102.9	10.00	120.0	1.85	115.4	50.00	-4.0	327	2.0	11.6	13.5	12.7	0	OK	0	0	0
83	2015-95	11/09/2015	12:59	S22_B16-B18_RL395	0.7	OB	0.15	100.1	0.43	102.9	0.27	107.9	0.16	104.4	10.00	120.0	Not Monitored		50.00	-3.7	186	0.8	3.1	2.9	11.1	0	OK	1	0	0
84	2015-96	15/09/2015	13:08	S15_B18-B21_RL305_TSB	0.4	TSB	0.07	98.6	0.30	97.4	0.18	101.8	0.15	101.4	10.00	120.0	Not Monitored		50.00	-3.7	335	5.5	10.3	13.7	11.5	0	Onsite	0	0	0
85	2015-97	17/09/2015	13:26	S23_B18-B208_RL395	0.7	OB	0.11	102.2	0.44	100	0.40	110.2	0.26	105.9	10.00	120.0	Not Monitored		50.00	-4.1	219	4.6	14.5	13.2	13.4	1A	Offsite	1	3	0
86	2015-98	21/09/2015	13:09	S18_B8-B10_RL400	0.6	OB	0.06	103.5	0.46	113.5	0.16	107.0	0.13	105.8	10.00	120.0	Not Monitored		50.00	-4.6	322	5.3	3.0	3.9	3.8	0	Offsite	0	0	0
87	2015-99&100	26/09/2015	10:44	S23_B15-B18_RL410 + S19_B17_RL350_PS	0.7	OB + PS	0.18	107.2	0.69	98.8	0.35	102.8	0.22	98.5	10.00	120.0	Not Monitored		50.00	-5.0	144	4.9	3.9	3.6	2.9	2B	Offsite	1	0	0
88	2015-101	29/09/2015	13:11	S24_B18-B19_RL395	0.8	OB	0.09	93.3	0.74	101.0	0.57	102.8	0.21	99.6	10.00	120.0	Not Monitored		50.00	-4.8	319	3.0	9.5	9.4	9.6	0	Onsite	0	0	0
89	2015-102&103	30/09/2015	13:09	S16_B4-B6_RL320 + S16_B8-B9_Efloor_PS_Proof	0.4	PS	0.20	97.1	0.89	90.0	0.37	87.8	0.21	85.6	10.00	120.0	3.71	110.9	50.00	-4.4	317	3.1	3.1	3.5	3.6	0	Onsite	0	0	0
	TOTALS	**SEPTEMBER 2015**	**# BLAST**	**10**	**TARGET**	**AVERAGE**	**0.12**	**101.5**	**0.54**	**101.9**	**0.36**	**103.1**	**0.21**	**101.0**	**5.00**	**115.0**														
	TOTALS	**SEPTEMBER 2015**	**#>0.5mm**	**5**	**<1mm/s**	**HIGHEST**	**0.20**	**108.2**	**0.89**	**113.5**	**0.62**	**110.2**	**0.30**	**108.1**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**47**	**<115dBL**	**AVERAGE**	**0.15**	**99.5**	**0.80**	**100.9**	**0.41**	**100.3**	**0.26**	**99.2**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**2.1%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

WERRIS CREEK COAL BLASTING RESULTS
OCTOBER 2015

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
90	2015-104	1/10/2015	13:10	S24_B15-B17_RL410	0.7	OB	0.11	98.9	0.43	101.5	0.36	102.1	0.25	97.8	10.00	120.0	Not Monitored		50.00	-5.0	273	5.3	3.4	10.9	11.0	0	Road	0	0	0
91	2015-105&106	8/10/2015	13:23	S16 B04-06 RL335 TSB + S22_B15_RL410_TRIM	0.8	OB+TSB	0.11	97.7	0.43	100.7	0.34	97.7	0.2	95.4	10.00	120.0	2.73	108.8	50.00	-4.8	142	2.3	9.8	9.8	9.8	2B	Onsite	0	0	0
92	2015-107	9/10/2015	10:52	S16_B08_Cseam	0.4	IB	0.04	91.4	0.21	92.1	0.1	96.7	0.06	94.8	10.00	120.0	1.19	109.9	50.00	-4.4	121	0.7	2.6	3.4	0	0	Onsite	0	0	0
93	2015-108	14/10/2015	13:08	S15_B07_UG-P2	0.8	UG	0.08	100.1	0.64	105.0	0.24	107.4	0.19	105.6	10.00	120.0	1.68	120.1	50.00	-3.9	350	0.7	2.2	2.7	3.5	1B	Road	0	0	0
94	2015-109&110	15/10/2015	12:43	S16_B1720BRL365_TSB + S16_B1821_RL290_PS	0.7	TSB + PS	0.29	105.9	1.03	103.2	0.57	107.2	0.33	105.3	10.00	120.0	Not Monitored		50.00	-4.8	172	0.9	10.4	10.9	9.8	1A	Onsite	0	0	0
95	2015-111	16/10/2015	13:09	S15_B07_UG_P2_2	0.6	UG	0.06	100.4	0.33	99.7	0.11	94.8	0.11	97.8	10.00	120.0	0.923	118.7	50.00	-4.0	357	3.1	8.9	4.1	3.2	0	Onsite	0	0	0
96	2015-112	20/10/2015	13:27	S19_B2122_RL380	0.7	TSB	0.08	96.6	0.38	100.8	0.44	100.8	0.22	99.8	10.00	120.0	Not Monitored		50.00	-5.0	308	3.6	11.2	11.2	12.3	0	Onsite	0	0	0
97	2015-113	21/10/2015	13:13	S15_B1819_RL305_TSB	0.6	TSB	0.17	99.6	1.06	100.2	0.25	95.3	0.2	92.7	10.00	120.0	Not Monitored		50.00	-5.0	323	5.4	8.5	8.4	9.2	0	Onsite	0	0	0
98	2015-114	28/10/2015	9:34	S16_B1821_RL305_TSB	0.5	TSB	0.13	96.1	0.71	98.9	0.44	97	0.23	94.9	10.00	120.0	Not Monitored		50.00	-4.0	210	1.9	8.7	10	10	0	Onsite	0	0	0
99	2015-115	30/10/2015	13:08	S15_B1316_Bseam	0.7	IB	0.15	93	0.93	100.2	0.48	98	0.2	96.3	10.00	120.0	Not Monitored		50.00	-4.7	224	2.5	11	10	10.7	1A	Onsite	0	0	0
	TOTALS	**OCTOBER 2015**	**# BLAST**	**10**	**TARGET**	**AVERAGE**	**0.12**	**98.0**	**0.62**	**100.2**	**0.33**	**99.7**	**0.20**	**98.0**	**5.00**	**115.0**														
	TOTALS	**OCTOBER 2015**	**#>0.5mm**	**5**	**<1mm/s**	**HIGHEST**	**0.29**	**105.9**	**1.06**	**105.0**	**0.57**	**107.4**	**0.33**	**105.6**	**10.00**	**120.0**														
	TOTALS	**ANNUAL**	**# BLAST**	**52**	**<115dBL**	**AVERAGE**	**0.15**	**99.3**	**0.78**	**100.8**	**0.40**	**100.2**	**0.25**	**99.0**	**5.00**	**115.0**														
	TOTALS	**MONTHLY LIMIT**	**#>0.5mm**	**15**	**% >115dB(L) or 5mm/s**		**0%**	**0%**	**0%**	**1.9%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**														

DNT = Did not trigger

Appendix 6 – Groundwater Monitoring Results

Wo # 11100

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

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	24/9	13:50	—		0.25	Bail	"Dry	—	"Just mud at bottom" ~68m						6 Monthly Hillview
	MW2	24/9	14:10	34.68		0.15	Tap.			862	8.2	19.0	Clear	Nil	Clear	6 Monthly Railway ...
	MW3	24/9.	10:30	18.83		0.98	Pump	260L		3270	6.8	20.5	Clear	Nil	Clear	6 Monthly (Always Purge) Constant EC.
	MW4	24/9	—	—						"Broken stick up."						
	MW4B	24/9	12:50 -	15.92		0.7	Bail.			1010	8.0	18.0	Clear	Nil	Clear	6 Monthly
	MW5	24/9	11:10	12.02		1.15	Bail			2140	7.6	18.2	Clear	Nil	Clear	6 Monthly
	MW5B	24/9	10:45	11.86		0.7										
	MW6	24/9	12:30	14.94		1.05	Bail			1920	7.4	17.8	Turbid	Nil	Brown	6 Monthly
	MW9	—						Broken stick up"								
	MW10	23/9	13:00	17.01		0.2.										Escott ln. - shed
	MW11	—								"Pump over Bore."						" " - irrigation
	MW14	23/9	13:10	18.84		0.95										Mine - Rail loop
	MW14B	23/9	13:20	18.59		0.75										" " "
	MW17B	25/9	11:20	14.17		0.65				(Windmill running: windy day.)						Wadwell ln. Windmill
	MW20	23/9	12:20	21.37		0.55										Tonsley Park
	MW24A	23/9	10:50	15.39		0.5										Marangol - pump shed.
	MW25A	—					Pump over Bore.									- Mine site
	MW25B	—					"Pump over Bore."									- Mine site.
	P1	—														
	P2	—														
	PUG	—														
	MW27	23/9	13:20	56.02		0.45										Cintra - Escott ln.
	MW29	23/9	11:10	25.93		—			(NB. Windmill running - tank full / overflowing!!)							Kyooma - Windmill
	MW31	—							(No longer monitored.)							Tuleema - Windmill

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	

Reportables / Analyses	Sample ID Information: Sample ID / Bore ID	Date	Time (24hr)	Bore Data: Standing Water Level □mbgl □mbtoc □m	Bore depth □mbgl □mbtoc □m	Stick up m	Sampling Data: Purge Type Pump / Bailer	Purge Volume L	Pump Set Depth □mbgl □mbtoc □m	Field Tests: EC - field uS/cm	pH - field pH units	Temp - field °C	Field Observations: Appearance	Odor	Colour	Comments
	MW8	25/9	9:25	19.04		0.2										Rosewath.
	MW12	25/9	11:55	13.20		0.5				(Rusty sludge on probe!)						Hazeldene.
	MW13	25/9	10:10	7.06		0.4										Wadwell In. well
	MW13B	25/9	10:25	5.41		0.3										Taylors In - upgraded.
	MW13D	25/9	10:35	5.25		0.2										Taylors In. - Windmill
	MW15	23/9	13:45	6.53		0.2				(Windmill running!!)						Paynes In - Windmill
	MW16	25/9	11:25	7.76		0.3										Maintainview - Pump
	MW17A	25/9	11:15	6.82		0.5										83 Wadwell In.
	MW18A	25/9	11:20	6.70		—										82 Wadwell In.
	MW19A	23/9	9:50	8.97		0.15				(Pump off - not running!)						Lintaria.
*	MW21A	25/9	11:45	10.75		0.3										Glenarva (Windmill)
	MW22A	25/9	11:30	8.92		0.55										308 paynes In. - House
	MW22B	25/9	11:35	—		0.45	"Dry"									" " " - Irrigation
	MW23A	25/9	11:00	4.14		0.2				(Pump running - sprinklers on)						Peggy easy - House yard
	MW23B	25/9	11:10	4.22		0.1										Peggy Easy - Irrigation
	MW28A	23/9	10:30	14.99		0.25										Woodlands Rd (Windmill Left)
	MW28B	23/9	—			—	Pump over base									Woodlands Rd (Pump RHS)

SPECIAL COMMENTS: M

25/9.

* Bills R. Solar - MW21B. SWL 11.23 0.6 stick up

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

Recorded / Analysed	Sample ID Information: Sample ID / Bore ID	Date	Time	Bore Data: Standing Water Level	Bore depth	Stick up	Sampling Data: Purge Type	Purge Volume	Pump Set Depth	Field Tests: EC - field	pH - field	Temp - field	Field Observations: Appearance	Odor	Colour	Comments
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW7	—														* Andersons well w windmill.
	MW7B	—														
	MW32	25/9	10:45	4.15		0.45										"Naranji" - Pump Shed - 3 Johns Lane
*	MW36A	24/9	13:30	23.54		0.95										Nth TLO
*	MW36B	24/9	13:35	23.39		0.95										Sth. "
	MW35															
	MW34	25/9	9:00	10.92		—				(He came out with us.)						Werris Creek - off Cpp rd.
	MW5D	24/9	11:25	14.20		0.68										Mine Site
	MW5C	24/9	11:35	11.04		0.93										Mine Site
	MW5E	24/9	11:45	14.62		0.76										Mine Site
	MW5F	24/9	11:55	17.21		1.20										Mine Site
	MW5G	24/9	12:05	15.52		0.85										Mine Site
*	Mine Windmill?	25/9	12:10	Dry		0.7				(Approx. 59 m Deep ???)						* Windmill - mine site LHS entrance.
*	MW37	25/9	12:20	4.97	51.5	0.45										* Lows Creek Rd (Now)
	MW38A	25/9	13:15	14.58		0.45						(Brecken Windmill)				* Lomax property
	MW38B	25/9	13:40	10.05		0.45						(Windmill - near shed)				* Yandilla "
*	MW38C	25/9	14:00	21.70		0.25				* Green Bin Front Farm.		(Submersible pump Solar				" "
	MW38E	25/9	14:10	10.23		0.5						(windmill)				

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1528394**	Page	: 1 of 13
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 Schedule B(3) and ALS QCS3 requirement
Order number	: 10820	Date Samples Received	: 14-Aug-2015 11:45
C-O-C number	: ----	Date Analysis Commenced	: 14-Aug-2015
Sampler	: BYRON PHILLIPS	Issue Date	: 21-Aug-2015 17:21
Site	: ----		
		No. of samples received	: 11
Quote number	: ----	No. of samples analysed	: 11

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
Helen Simpson	Inorganic Chemist	ACIRL Sampling
Raymond Commodore	Instrument Chemist	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.

- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- 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	SD4	VWD1	VWD2	BGD
			Client sampling date / time	13-Aug-2015 10:05	13-Aug-2015 12:10	13-Aug-2015 11:45	13-Aug-2015 10:45	13-Aug-2015 13:00
Compound	CAS Number	LOR	Unit	ES1528394-001	ES1528394-002	ES1528394-003	ES1528394-004	ES1528394-005
				Result	Result	Result	Result	Result
AC03: Field Tests								
ø Electrical Conductivity (Non Compensated)	----	1	µS/cm	656	412	1090	1020	485
ø pH	----	0.01	pH Unit	7.70	8.80	8.60	7.90	7.80
ø Temperature	----	0.1	°C	11.4	13.2	11.7	13.4	16.7
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.77	8.34	8.18	8.07	8.10
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	2.03	1.93	4.33	2.61	0.61
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	654	405	1080	1010	486
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	----	10	mg/L	325	354	583	570	638
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	6	118	<5	6	49
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	3	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	73	166	121	181	213
Total Alkalinity as CaCO3	----	1	mg/L	73	169	121	181	213
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	99	12	168	104	6
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	56	16	127	106	10
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	39	20	42	83	48
Magnesium	7439-95-4	1	mg/L	14	14	24	13	15
Sodium	7440-23-5	1	mg/L	58	46	142	97	19
Potassium	7440-09-7	1	mg/L	8	4	9	9	12
ED093F: SAR and Hardness Calculations								
^ Total Hardness as CaCO3	----	1	mg/L	155	108	204	261	182
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.07	0.32	0.05	0.06	0.98
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	0.003	0.004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB9	SD4	VWD1	VWD2	BGD
				Client sampling date / time	13-Aug-2015 10:05	13-Aug-2015 12:10	13-Aug-2015 11:45	13-Aug-2015 10:45	13-Aug-2015 13:00
Compound	CAS Number	LOR	Unit		ES1528394-001	ES1528394-002	ES1528394-003	ES1528394-004	ES1528394-005
					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		**0.176**	**0.087**	**0.075**	**0.148**	**0.161**
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	**0.002**	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	**0.002**	**0.002**
Copper	7440-50-8	0.001	mg/L		**0.006**	**0.003**	**0.004**	**0.004**	**0.007**
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		**0.014**	**0.016**	**0.019**	**0.024**	**0.067**
Nickel	7440-02-0	0.001	mg/L		**0.003**	**0.004**	**0.002**	**0.006**	**0.007**
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	**0.02**
Zinc	7440-66-6	0.005	mg/L		**0.060**	**0.049**	**0.039**	**0.060**	**0.042**
Iron	7439-89-6	0.05	mg/L		<0.05	**0.19**	<0.05	**0.09**	**0.55**
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		<0.1	**0.3**	**0.1**	<0.1	**0.1**
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.05**	**0.07**	**0.12**	**0.96**	**2.01**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.04**	<0.01	**0.04**	**0.31**	<0.01
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		**2.38**	<0.01	**2.46**	**6.98**	**0.01**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**2.42**	<0.01	**2.50**	**7.29**	**0.01**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.6**	**7.0**	**0.6**	**1.8**	**6.1**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**4.0**	**7.0**	**3.1**	**9.1**	**6.1**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.21**	**1.83**	<0.01	<0.01	**1.03**
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	**0.50**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB9	SD4	VWD1	VWD2	BGD
				Client sampling date / time	13-Aug-2015 10:05	13-Aug-2015 12:10	13-Aug-2015 11:45	13-Aug-2015 10:45	13-Aug-2015 13:00
Compound	CAS Number	LOR	Unit		ES1528394-001	ES1528394-002	ES1528394-003	ES1528394-004	ES1528394-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**5.27**	**----**	**----**	**----**	**----**
^ **Total Anions**	----	0.01	meq/L		**----**	**4.08**	**9.50**	**8.77**	**4.66**
^ **Total Cations**	----	0.01	meq/L		**5.82**	**4.25**	**10.5**	**9.66**	**4.76**
Ionic Balance	----	0.01	%		**4.95**	**----**	**----**	**----**	**----**
^ **Ionic Balance**	----	0.01	%		**----**	**2.08**	**4.89**	**4.83**	**1.07**
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**9**	**27**	<1	<1	**15**
EP020: Oil and Grease (O&G)									
^ **Oil & Grease**	----	5	mg/L		<5	**5**	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QCD	WCD	VWD3 (200MLD NTH) VWB3	VWD4 (200MLD STH) VWD4	SB5
			Client sampling date / time	13-Aug-2015 13:30	13-Aug-2015 09:10	13-Aug-2015 11:15	13-Aug-2015 11:30	13-Aug-2015 11:00
Compound	CAS Number	LOR	Unit	ES1528394-006	ES1528394-007	ES1528394-008	ES1528394-009	ES1528394-010
				Result	Result	Result	Result	Result
AC03: Field Tests								
ø Electrical Conductivity (Non Compensated)	----	1	µS/cm	1030	1400	1090	1060	658
ø pH	----	0.01	pH Unit	8.00	8.10	8.10	8.60	8.50
ø Temperature	----	0.1	°C	10.3	8.9	12.2	11.3	11.6
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.26	8.41	8.29	8.43	8.31
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	2.61	2.26	3.39	4.21	2.16
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1030	1360	1080	1050	655
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	----	10	mg/L	570	728	646	562	338
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	<5	23	9	<5	7
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	21	<1	6	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	275	373	186	129	101
Total Alkalinity as CaCO3	----	1	mg/L	275	394	186	136	102
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	106	132	143	115
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	123	131	115	119	44
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	60	83	70	48	45
Magnesium	7439-95-4	1	mg/L	34	63	16	16	13
Sodium	7440-23-5	1	mg/L	102	112	121	132	64
Potassium	7440-09-7	1	mg/L	2	3	10	10	5
ED093F: SAR and Hardness Calculations								
^ Total Hardness as CaCO3	----	1	mg/L	290	467	241	186	166
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	0.17	0.21	0.10	0.08
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.002	0.001	0.001

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	QCD	WCD	VWD3 (200MLD NTH) VWB3	VWD4 (200MLD STH) VWD4	SB5
				Client sampling date / time	13-Aug-2015 13:30	13-Aug-2015 09:10	13-Aug-2015 11:15	13-Aug-2015 11:30	13-Aug-2015 11:00
					ES1528394-006	ES1528394-007	ES1528394-008	ES1528394-009	ES1528394-010
					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		**0.150**	**0.101**	**0.224**	**0.264**	**0.102**
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		**0.005**	**0.004**	**0.009**	**0.011**	**0.003**
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	**0.002**	**0.001**	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.033**	**0.187**	**0.145**	**0.114**	**0.027**
Nickel	7440-02-0	0.001	mg/L		**0.002**	**0.004**	**0.005**	**0.003**	**0.002**
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		**0.180**	**0.051**	**0.161**	**0.269**	**0.044**
Iron	7439-89-6	0.05	mg/L		**0.08**	**0.10**	**0.14**	**0.08**	**0.07**
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		**0.5**	**0.7**	**0.1**	<0.1	**0.1**
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.03**	**0.03**	**0.39**	**0.06**	**0.06**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	**0.09**	**0.03**	**0.05**
EK058G: Nitrate as N by Discrete Analyser									
^ **Nitrate as N**	14797-55-8	0.01	mg/L		<0.01	<0.01	**6.20**	**2.97**	**0.97**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	**6.29**	**3.00**	**1.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.1**	**0.4**	**1.1**	**0.6**	**0.7**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**0.1**	**0.4**	**7.4**	**3.6**	**1.7**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.04**	**0.17**	**0.05**	**0.01**	**0.03**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.15**	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCD	WCD	VWD3 (200MLD NTH) VWB3	VWD4 (200MLD STH) VWD4	SB5
				Client sampling date / time	13-Aug-2015 13:30	13-Aug-2015 09:10	13-Aug-2015 11:15	13-Aug-2015 11:30	13-Aug-2015 11:00
Compound	CAS Number	LOR	Unit		ES1528394-006	ES1528394-007	ES1528394-008	ES1528394-009	ES1528394-010
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		----	----	----	----	----
^ Total Anions	----	0.01	meq/L		9.65	13.8	9.71	9.05	5.67
^ Total Cations	----	0.01	meq/L		10.3	14.3	10.3	9.71	6.23
Ionic Balance	----	0.01	%		----	----	----	----	----
^ Ionic Balance	----	0.01	%		3.14	1.77	3.09	3.50	4.65
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	<1	<1	<1	5
EP020: Oil and Grease (O&G)									
^ Oil & Grease	----	5	mg/L		<5	5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB8	----	----	----	----
			Client sampling date / time	13-Aug-2015 10:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1528394-011	--------	--------	--------	--------
				Result	Result	Result	Result	Result
AC03: Field Tests								
ø Electrical Conductivity (Non Compensated)	----	1	µS/cm	**1020**	----	----	----	----
ø pH	----	0.01	pH Unit	**8.10**	----	----	----	----
ø Temperature	----	0.1	°C	**11.5**	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.34**	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	**2.85**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1010**	----	----	----	----
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	----	10	mg/L	**574**	----	----	----	----
EA025: Suspended Solids								
^ 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	**4**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**179**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**183**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**107**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**109**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**66**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**21**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**104**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**4**	----	----	----	----
ED093F: SAR and Hardness Calculations								
^ Total Hardness as CaCO3	----	1	mg/L	**251**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.04**	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB8	----	----	----	----
				Client sampling date / time	13-Aug-2015 10:25	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1528394-011	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Beryllium	7440-41-7	0.001	mg/L		<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L		**0.115**	----	----	----	----
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		**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.006**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.002**	----	----	----	----
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		**0.052**	----	----	----	----
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		**0.07**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		**4.29**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**4.29**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**4.9**	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SB8**	----	----	----	----
				Client sampling date / time	13-Aug-2015 10:25	----	----	----	----
Compound	CAS Number	LOR	Unit		**ES1528394-011**	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**----**	----	----	----	----
^ **Total Anions**	----	0.01	meq/L		**8.96**	----	----	----	----
^ **Total Cations**	----	0.01	meq/L		**9.65**	----	----	----	----
Ionic Balance	----	0.01	%		**----**	----	----	----	----
^ **Ionic Balance**	----	0.01	%		**3.70**	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP020: Oil and Grease (O&G)									
^ **Oil & Grease**	----	5	mg/L		<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 - 13-Aug-2015 10:05:00	Clear
AC04: Appearance	SD4 - 13-Aug-2015 12:10:00	Turbid
AC04: Appearance	VWD1 - 13-Aug-2015 11:45:00	Clear
AC04: Appearance	VWD2 - 13-Aug-2015 10:45:00	Clear
AC04: Appearance	BGD - 13-Aug-2015 13:00:00	Turbid
AC04: Appearance	QCD - 13-Aug-2015 13:30:00	Clear
AC04: Appearance	WCD - 13-Aug-2015 09:10:00	Clear
AC04: Appearance	VWD3 (200MLD NTH) VWB3 - 13-Aug-2015 11:15:00	Clear
AC04: Appearance	VWD4 (200MLD STH) VWD4 - 13-Aug-2015 11:30:00	Clear
AC04: Appearance	SB5 - 13-Aug-2015 11:00:00	Clear
AC04: Appearance	SB8 - 13-Aug-2015 10:25:00	Clear
AC04: Odour	SB9 - 13-Aug-2015 10:05:00	Nil
AC04: Odour	SD4 - 13-Aug-2015 12:10:00	Nil
AC04: Odour	VWD1 - 13-Aug-2015 11:45:00	Nil
AC04: Odour	VWD2 - 13-Aug-2015 10:45:00	Nil
AC04: Odour	BGD - 13-Aug-2015 13:00:00	Nil
AC04: Odour	QCD - 13-Aug-2015 13:30:00	Nil
AC04: Odour	WCD - 13-Aug-2015 09:10:00	Nil
AC04: Odour	VWD3 (200MLD NTH) VWB3 - 13-Aug-2015 11:15:00	Nil
AC04: Odour	VWD4 (200MLD STH) VWD4 - 13-Aug-2015 11:30:00	Nil
AC04: Odour	SB5 - 13-Aug-2015 11:00:00	Nil
AC04: Odour	SB8 - 13-Aug-2015 10:25:00	Nil
AC04: Colour	SB9 - 13-Aug-2015 10:05:00	Clear
AC04: Colour	SD4 - 13-Aug-2015 12:10:00	Brown
AC04: Colour	VWD1 - 13-Aug-2015 11:45:00	Clear
AC04: Colour	VWD2 - 13-Aug-2015 10:45:00	Clear
AC04: Colour	BGD - 13-Aug-2015 13:00:00	Brown
AC04: Colour	QCD - 13-Aug-2015 13:30:00	Clear
AC04: Colour	WCD - 13-Aug-2015 09:10:00	Clear
AC04: Colour	VWD3 (200MLD NTH) VWB3 - 13-Aug-2015 11:15:00	Clear
AC04: Colour	VWD4 (200MLD STH) VWD4 - 13-Aug-2015 11:30:00	Clear
AC04: Colour	SB5 - 13-Aug-2015 11:00:00	Clear

Sub-Matrix: **WATER**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
AC04: Colour	SB8 - 13-Aug-2015 10:25:00	Clear

Appendix 8 – Discharge Monitoring Results