Werris Creek Coal Community Consultative Committee

Twenty Sixth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 28th February 2013

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting. The feedback from the site tour was positive with the CCC inspecting the rehabilitation, top dump, eastern lookout in pit, coal stockpiles and train load out facility and the coal crushing plant.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Jill Coleman (Community Representative); Geoff Dunn (Community Representative); Col Stewart (Liverpool Plains Shire Council - Councilor); Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services); Peter Easey (WCC Operations Manager) and Andrew Wright (WCC Environmental Officer and Minute Taker).

Apologies: Roslyn Marr (Community Representative).

2. Declaration of Pecuniary or Other Interests

Noel Taylor declared that his son works for Werris Creek Coal.
Gae Swain declared that her son works for Orica but not at the Werris Creek Coal site.

3. New Matters for Discussion under General Business

Noel Taylor raised a complaint made by a Quipolly resident regarding issues with Quipolly Creek water quality and water level. Lindsay Bridge wanted to discuss the perceived increase in dust emissions.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. Minutes of Previous Meeting

Minutes of the previous meeting on the 22nd November 2012 were accepted as true and accurate representation of business conducted on that day.

Moved: Col Stewart. Seconded: Lindsay Bridge. Motion carried.

6. Environmental Monitoring Report: November, December 2012 and January 2013

Meteorology – The wind was predominately south easterly over the period. Heavy rainfall was recorded over the period with a total of 358.6mm.
Air Quality – The November 2012 and January 2013 PM10 dust levels were generally above the annual average, however did not exceed the daily limit of 50 µg/m^3. Otherwise the PM10 and TSP monthly averages for November, December and January were all below the relevant annual Air Quality criteria. All monthly dust deposition gauge results were within the Air Quality criteria of 4.0g/m^2/month. The only anomalous result was for "Villamagna" which recorded an excessive 13.1g/m^2/month in November 2012 which wasn't representative of WCC. There were four dust complaints received during this period. All four complaints occurred during January 2013 with the prevailing weather conditions being very hot and dry due to an extended heat wave from central Australia affecting regional air quality as well as the smoke and ash from the Coonabarabran Fire.
Noise – There were no noise exceedances or noise complaints for the period.
Blasting – There were 22 blasts during the period and all were in compliance. There was one blast complaint during the period on the 22nd November 2012 with the complainant alleging that the blast smelt sulfurous however the investigation could not identify the source of the sulfurous odour or in fact whether it originated from the blast.
Groundwater – Groundwater levels have continued to fall due to below average rainfall over 2012. Mining continues not to impact on groundwater aquifers. It is anticipated that the heavy rainfall during period will result in the groundwater levels rising. There was one groundwater complaint during the period. A CCC member passed on a complaint from a Quipolly resident alleging that their bore water level had dropped and has become contaminated with "rotten egg" gas. The Operations Manager and Environmental Officer met with the complainant. WCC have subsequently taken creek and groundwater samples at the property as well as upstream and downstream to compare against ANZECC (2000) water quality guidelines for Livestock Watering and Irrigation.
Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.
Surface Water Discharges – There were five wet weather dirty water discharges during the period and all were within compliance.
Complaints – There were seven complaints received during the period. In total there were four complaints related to dust; one complaint related to blasting (odour), one complaint related to vegetation clearing and one complaint for groundwater impacts. There were seven different complainants during the period with four complaints from Werris Creek residents; two complaints from Quipolly residents and one from a government agency.

Motion moved to accept the Environmental Monitoring Report for November, December 2012 and January 2013.

Moved: Noel Taylor. Seconded: Jill Coleman. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Ron Van Katwyk updated the committee on the status of the two current projects related to the CEF. The new elevator for the Werris Creek Railway Museum had been ordered; Council had submitted the Development Application and was awaiting NSW Heritage Office approval with installation of the elevator expected during 2013. Council had submitted a Development Application for a new skate park to be located midway between the two hotels in Single Street, Werris Creek. Community feedback has been received on the skate park proposal and once the issues raised by ARTC are address, construction should commence in 2013.

b. Community Enhancement Fund (CEF) Annual Review

In accordance with the annual review requirements of the CEF, the CCC members reviewed the schedule of the projects to be funded by the CEF. Only one amendment was suggested by the CCC which was to have the proposed $30,000 scheduled for 2014 be unallocated at this stage. Previously the $30,000 was allocated to Playground Equipment in Bell Park (Quirindi) in 2014 however as the playground equipment has already been purchased and installed, these funds should be put towards another appropriate project when identified by Liverpool Shire Plains Council and agreed to by the CCC and Whitehaven Coal.

Motion moved to suggest to Liverpool Shire Plains Council that the proposed $30,000 scheduled for 2014 be unallocated until another appropriate project is identified.

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

c. Perceived Increase in Dust Emissions

Lindsay Bridge discussed what he believes is an emerging dust issue from WCC relating to the expansion of the mine. Andrew Wright acknowledged his concerns and said that while the mine was undergoing a period of transition with the relocation of the Mine Infrastructure Area and relocation of the access road to allow for the expansion of the western dump; the majority of key dust generating activities are unchanged because the level of production has not changed and are not affected by the other changes.

d. Quipolly Creek Water Quality Complaint

The committee discussed the complaint made by a Quipolly resident that was initially about alleged groundwater odour and aquifer decline, but recently expanded to Quipolly Creek water level decline and water quality/contamination issues. Andrew Wright outlined the response to date including testing the creek and groundwater at the property and found that the water quality complied with the ANZECC (2000) water quality guidelines for Livestock Watering and Irrigation. The committee then went on a tour of the licensed discharge points on the mine site including the drainage flowpath from the mine to Quipolly Creek, observing no water quality issues along the way. Half the committee stopped at the complainant's property and was shown algae on the stream surface that is alleged to have only recently occurred. WCC has committed to additional water quality testing to help identify the cause of the algae locally in the creek.

Meeting Closed 12:00pm.

Next Meeting scheduled for Thursday 30th May 2013.

Copy to:

Gae Swain	Independent Chairperson
Jill Coleman	Community Representative
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Roslyn Marr	Community Representative
Geoff Dunn	Community Representative

Ron Van Katwyk	LPSC	Peter Easey	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Stephen O'Donoghue	DoPI	Andrew Wright	Werris Creek Coal
Simon Lund	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

November and December 2012, January 2013

This Environmental Monitoring Report covers the period 1st November 2012 to 31st January 2013 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: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

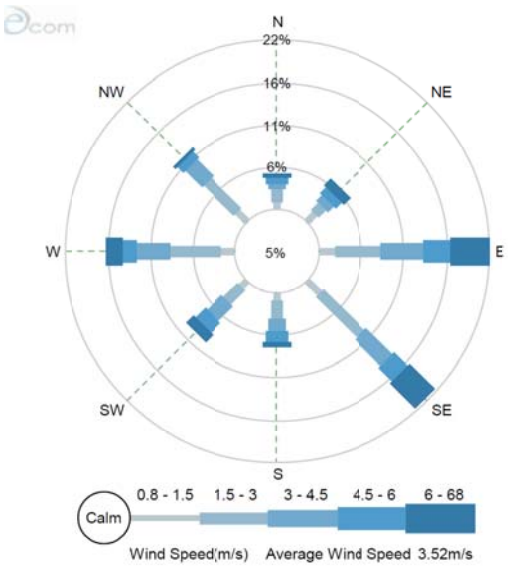
1.0 METEOROLOGY

1.1 WEATHER STATION

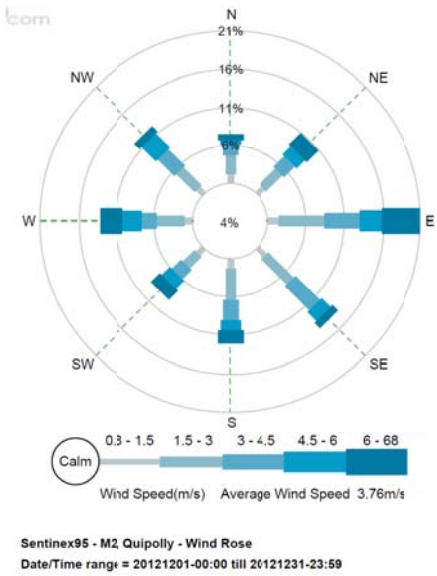
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and wind data is presented below in windroses.

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 2012	5.8	22.2	37.9	11.0	22.7	37.7	10.3	22.4	37.5	+0.4	+5.5	43.8	38.2	53.4	259.0
December 2012	6.8	23.9	38.9	11.4	24.3	38.2	13.1	23.3	35.6	-3.0	+5.1	141.8	84.4	65.2	400.8
January 2013	14.2	26.0	40.7	15.7	26.6	40.6	15.1	26.3	40.0	-0.1	+5.4	173.0	144.0	102.0	573.8

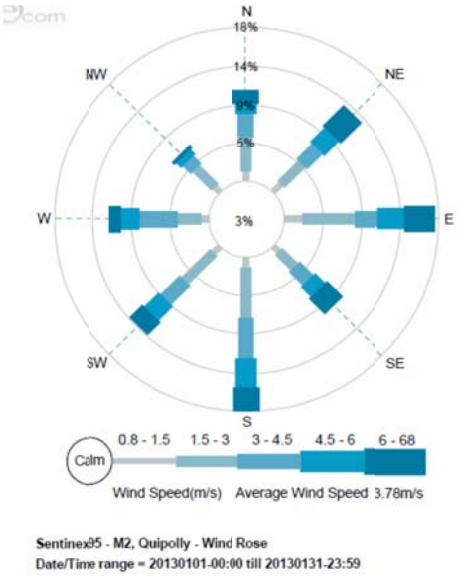
* Annual cumulative total since April 2012 to March 2013 from a composite data set based on the onsite Weather Station at WCC.



November 2012



December 2012



January 2012

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10)

WCC operates five High Volume Air Sampler (HVAS) monitors to measure particulate matter less than 10 micron (PM10) and total suspended particulate (TSP) matter at the 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. From January 2013, the PM10 HVAS at "Eurunderee" was relocated to "Escott" to continue monitoring dust levels representative to the west of WCC due to the power being disconnected to "Eurunderee".

PM2.5 – TEOM92 "Werris Creek"
PM10 – TEOM92 "Werris Creek"
PM10 – HVP20 "Tonsley Park"
PM10 – HVP4 "Eurunderee" or HVP1 "Escott"
PM10 – HVP20 "Glenara"
PM10 – HVP98 "Kyooma"
TSP – HVT98 "Kyooma"

2.1.1 Monitoring Data Results

The monthly 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	November 2012(µg/m^3)	December 2012 (µg/m^3)	January 2013 (µg/m^3)	2012-2013 Average (µg/m^3)	Annual Criteria (µg/m^3)
PM2.5 – TEOM92 "Werris Creek"	6.8	6.5	7.8	8.1	8
PM10 – TEOM92 "Werris Creek"	14.3	13.1	14.2	13.7	30
PM10 – HVP20 "Tonsley Park"	24.1	9.2	21.0	14.4	30
PM10 - HVP4/HVP1 "Eurunderee"/"Escott"	21.7	7.4	11.9	13.0	30
PM10 – HVP20 "Glenara"	18.5	13.8	16.2	13.7	30
PM10 – HVP98 "Kyooma"	15.3	7.4	10.3	13.0	30
TSP – HVT98 "Kyooma"	24.0	13.0	19.7	26.2	90

2.1.2 Discussion - Compliance / Non Compliance

The November 2012 and January 2013 PM10 dust levels were generally above the annual average, however did not exceed the daily limit of 50 µg/m^3. January 2013 experienced an extended heat wave from central Australia and the Coonabarabran Fire which affected air quality. Otherwise the PM10 and TSP monthly averages for November, December and January were all below the relevant annual Air Quality criteria. The PM2.5 annual average is only slightly above the annual criteria; however PM2.5 dust monitoring only commenced in September 2012 in Werris Creek and therefore requires more time for the annual average to reflect the 12 month period. For November, December and January, the PM2.5 dust levels measured were not elevated above the annual criteria of 8 µg/m^3.

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).

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 2012 (g/m^2/month)	December 2012 (g/m^2/month)	January 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	AQGHGMP Criteria (g/m^2/month)
"Cintra"	1.7	1.4	*3.3	1.5	4.0
"Railway View"	1.2	1.6	3.2	1.4	4.0
"Tonsley Park"	1.0	1.2	3.3	1.0	4.0
"Plain View"	0.7	1.0	2.0	1.8	4.0
"Marengo"	0.5	0.6	1.6	0.8	4.0
"Mountain View"	0.1	3.2	3.0	1.5	4.0
"Glenara"	0.7	*3.7	1.2	1.9	4.0
"Hazeldene"	0.6	*3.6	1.8	0.8	4.0
"Woodlands"	1.8	*2.5	2.7	1.6	4.0
"Talavera"	0.6	0.9	1.4	0.8	4.0
"Kyooma"	*0.7	1.0	1.9	1.1	4.0
"Greenslopes"	0.8	1.0	1.5	0.9	4.0
Werris Creek South	*0.7	0.5	0.9	0.6	4.0
Werris Creek Centre	*2.5	*1.1	1.2	0.8	4.0
"Westfall"	1.1	1.5	2.7	1.3	4.0
West Street	1.1	1.1	0.6	0.9	4.0
"Escott"	0.6	0.8	1.3	0.7	4.0
"Eurunderee"	0.8	1.2	1.6	0.9	4.0

Monitor Location	November 2012 (g/m^2/month)	December 2012 (g/m^2/month)	January 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	AQGHGMP Criteria (g/m^2/month)
8 Kurrara St	1.1	1.2	1.4	1.1	4.0
"Villamagna"	c13.1	1.1	2.2	1.1	4.0

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e. bird droppings and insects) and is excluded from the average; c - indicates sample is contaminated from a Non-Werris Creek Coal dust source and is not counted in the average

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results were within the Air Quality criteria of 4.0g/m^2/month. The only anomalous result was for "Villamagna" which recorded an excessive 13.1g/m^2/month in November 2012. Given that "Villamagna" is greater than 5km from WCC and the dust level was substantially higher than any of the dust deposition gauge results along the Paynes Road, Quipolly which are closer to the mine; the dust level measure is not representative of WCC contribution and was excluded from the average.

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 2012		December 2012		January 2013		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	1.0	15	1.8	10	1.2
DDW20	1.5	15	1.4	5	1.3	10	1.0
DDW13	0.8	15	1.7	60	1.5	10	1.0
Train Line							
DDE13	0.9	15	2.4	15	1.3	15	1.0
DDE20	2.4	5	1.4	20	1.0	10	1.3
DDE30	1.5	10	3.6	5	2.5	5	1.7

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fall out 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 four dust complaints received during this period. All four complaints occurred during January 2013 with the prevailing weather conditions being very hot and dry due to an extended heat wave from central Australia affecting regional air quality as well as the smoke and ash from the Coonabarabran Fire.

Three of the complaints were in relation to the perceived high dust levels that the complainants believed were due to WCC's activities. Under these dry and hot conditions, all dust sources generate higher than average dust emissions which includes WCC coal mine. During this period, WCC's principle dust control method of water carts used on average 2ML/day to suppress dust across the mine site. While the January 2013 air quality conditions are dustier than normal, real time monitoring in Werris Creek found dust levels to be below levels determined by the Department of Planning and Infrastructure and Environment Protection Authority as causing environmental or health impacts. While there is some daily variability between the Werris Creek and Tamworth PM10 dust levels, on average the Werris Creek PM10 levels are lower than that measured in Tamworth. Assuming that Tamworth PM10 levels are representative of regional dust levels and are not impacted by WCC mining operations; then the results indicate that Werris Creek is not being adversely impacted by WCC mining operations.

The other dust complaint was made by a Quipolly resident on the 9th January 2013 at 10am. The complaint coincided with a sudden increase in wind speed from 7m/s to over 13m/s at 10am with wind speed dropping back to 8m/s by 10:30am with the wind direction towards Quipolly. All five water carts were operating at the time of the complaint applying a total 2.4ML of water for dust suppression on the day of the complaint.

Specific action taken in relation to each of these complaints is outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 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 - "Tonsley Park" (private agreement) R20;
- 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.

Thursday 29th November 2012

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
B1	**West Quipolly** R7, R8*	Barely audible	37	37	37
B2	**West Quipolly** R9 & R22	25	37/36[1]	Inaudible	37/36[1]
C	**Central Quipolly** R10*,R11*	30	39	32	39
D	**"Hazeldene"** R24	30	37	28	37
E	**"Railway Cottage"** R12	Inaudible	38	30	38
F	**"Talavera"** R96	<25	38	Inaudible	37
G	R97	22	35	22	35
H	**"Kyooma"** R98*	25	36	<20	36
I	**Kurrara St, WC**	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**South St, WC** R20*, R21*	26	39	Inaudible#	37
L	**West St, WC** R103	26#	35	Inaudible	35
Rail Spur		Not Monitored			35
		Not Monitored			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/Wednesday 17th/18th December 2012

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	<25#	37
B2	**West Quipolly** R9 & R22	Inaudible	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly** R10*,R11*	30#	39	Inaudible#	39
D	**"Hazeldene"** R24	Inaudible	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible	38	<25#	38
F	**"Talavera"** R96	<20#	38	<30#	37
G	R97	<25	35	<25#	35
H	**"Kyooma"** R98*	32#	36	<30#	36
I	**Kurrara St, WC**	Inaudible#	35	<25#	35
J	**Coronation Ave, WC**	Inaudible	35	<30#	35
K	**South St, WC** R20*, R21*	Inaudible#	39	<25#	37
L	**West St, WC** R103	Inaudible#	35	Inaudible#	35
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Wednesday 16th January 2013

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	28#	35
B1	**West Quipolly** (R7, R8*)	Inaudible	37	35#	37
B2	**West Quipolly** (R9 & R22)	Inaudible	37/36[1]	37#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	<25	39	34#	39
D	**"Hazeldene"** R24	25	37	32#	37
E	**"Railway Cottage"** R12	Inaudible	38	28#	38
F	**"Talavera"** R96	20	38	30#	37
G	R97	17	35	32#	35
H	**"Kyooma"** R98*	19	36	32#	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
Rail Spur		Not Monitored			35
		Not Monitored			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, December 2012 and January 2013. There was an elevated noise level of 37dBA measured for Mountain View (R22 – Location B2) above the criteria of 36dBA but was measured under noise enhancing weather conditions (wind speed >3m/s) and therefore is not comparable to the noise criteria.

3.2 NOISE COMPLAINTS

There were no noise complaints during the period.

4.0 BLAST

Blast monitoring was undertaken at "Glenara", "Talavera", "Werris Creek" and "Tonsley Park" during the period. 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). During the period a total of 22 blasts were fired by the blasting contractor, Orica Mining Services.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

The summary tables of blasting results over the last three months are provided below; however see the blasting results database under **Appendix 5** for more detail.

November 2012	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.14	103.0	0.64	105.3	0.32	101.8	0.23	103.9
Monthly Maximum	0.22	106.0	0.93	115.0	0.62	111.0	0.43	107.0
Annual Average	0.22	105.5	0.90	101.7	0.39	100.2	0.23	105.3
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	6/9		7/9		6/9		8/9	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

December 2012	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.21	103.0	0.66	100.5	0.44	87.8	0.53	102.4
Monthly Maximum	0.33	104.0	0.87	103.0	0.61	97.5	0.66	106.3
Annual Average	0.22	105.1	0.87	101.5	0.39	98.6	0.27	104.9
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	4/6		4/6		3/6		5/6	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

January 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.16	101.0	0.97	104.3	0.55	99.7	0.39	109.4
Monthly Maximum	0.21	108.0	1.15	106.0	0.87	101.5	0.41	110.8
Annual Average	0.21	105.1	0.88	101.8	0.41	98.8	0.29	105.4
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	2/7		2/7		4/7		2/7	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

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 was one blast complaint during the period. The complainant alleged that the WCC blast on the 22nd November 2012 smelt sulfurous and knew that the mine had just blasted as they could see a dust cloud from the mine blowing towards Werris Creek. The investigation into complaint confirmed that there was a southerly breeze at the time of the blast, however the wind direction was not towards Werris Creek. The investigation could not identify the source of the sulfurous odour or in fact whether it originated from the blast as there is not any product or item in a blast that would give a sulfurous odour and that the complainants residence was 5km away from the blast. Specific actions taken in relation to this complaint 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 five surface water discharge events during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 35 groundwater bores and piezometers in the key aquifers surrounding the mine including Werris Basalt (near to WCC and further afield) and Quipolly Creek Alluvium. Bi-monthly groundwater level monitoring was completed on 16th and 21st November 2012 and 24th and 25th January 2013. No groundwater quality monitoring was undertaken during the period.

5.1.1 Monitoring Data Results

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

Site	Level November		Level January		Comments
Werrie Basalt – Near WCC Mine					
MW1	53.26	-1%	53.82	-1%	
MW2	25.68	-2%	26.14	-2%	
MW3	15.59	-1%	15.68	-1%	
MW4B	10.88	-2%	11.12	-2%	
MW5	8.75	-4%	8.76	0%	
MW5B	8.30	-4%	8.32	0%	
MW6	12.23	-1%	12.41	-1%	
P1	30.51	-3%	31.95	-2%	
Werrie Basalt					
MW8	14.27	0%	15.05	-5%	
MW9	15.43	-3%	15.54	-1%	
MW10	17.96	1%	17.60	2%	
MW14	16.75	-2%	17.05	-2%	
MW14B	16.52	-2%	16.82	-2%	
MW17B	9.98	-4%	11.89	-16%	Windmill in use at the time of measurement
MW19A	5.85	-1%	6.07	-4%	
MW20	19.19	-1%	19.41	-1%	
MW27	40.52	-3%	40.75	-1%	
Quipolly Alluvium					
MW12	8.55	-5%	8.61	-1%	
MW13	4.74	-4%	4.98	-5%	
MW13B	3.28	-2%	3.49	-6%	
MW13D	4.86	9%	5.06	-4%	
MW15	4.26	-5%	4.47	-5%	
MW16	4.81	-7%	5.05	-5%	
MW17A	3.87	-6%	4.15	-7%	
MW18A	3.55	-5%	3.90	-10%	
MW21A	6.70	-4%	7.09	-6%	
MW22A	4.79	-5%	5.18	-8%	
MW22B	5.02	-8%	5.30	-5%	
MW23A	3.70	5%	3.85	-4%	
MW23B	4.21	13%	4.37	-4%	
MW28A	10.07	-8%	11.20	-6%	

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is 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 low rainfall for much of 2012 had resulted in groundwater levels to decline. Current groundwater levels are just below long term average levels since monitoring commenced in 2005 indicating that mining is not impacting on the groundwater aquifers. The January 2012 levels were measured the day before the heavy rainfall over the Australia Day long weekend and do not reflect the subsequent anticipated rise in groundwater levels.

5.2 SURFACE WATER

Surface water monitoring is undertaken at key dirty and void water dams to monitor for potential contamination issues due to mining while the water is still onsite. Quarterly surface water monitoring was undertaken on 29th November 2012.

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
ONSITE					
SB2	9.08	589	33	<5	pH increased 0.33, EC increased 36, TSS increased 24, O&G no change.
SB9	8.36	418	53	<5	pH no change, EC increased 95, TSS increased 46, O&G no change.
SB10	8.31	486	22	<5	pH increased 0.29, EC increased 186, TSS decreased 20, O&G no change.
OFFSITE					
QCU	8.03	467	18	<5	pH increased 0.04, EC decreased 5, TSS decreased 38, O&G no change.
QCD	7.98	815	<5	<5	pH decreased 0.13, EC decreased 42, TSS decreased 25, O&G no change.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.35	1260	36	<5	pH decreased 0.12, EC decreased 20, TSS decreased 1, 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

5.2.2 Discussion - Compliance / Non Compliance

All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were five wet weather 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
24/12/2012	**SB2**	7.99	368	110	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	63.0
24/12/2012	**SB9**	7.20	166	1530	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	63.0
29/01/2013	**SB2**	7.40	199	298	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	148.6
29/01/2013	**SB9**	6.88	169	198	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	148.6
29/01/2013	**SB10**	7.32	202	508	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	148.6
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; NT – Not Tested

5.3.2 Discussion - Compliance / Non Compliance

Although the Total Suspended Solids (sediment) levels were greater than 50mg/L; all dirty water discharge results were in compliance with WCC's Environmental Protection Licence 12290 because the rainfall exceeded 39.2mm and there were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the dirty water discharge events. The high Total Suspended Solids reflects the recent disturbance associated with the western dump extension and construction of the northern Mine Infrastructure Area.

5.3 WATER COMPLAINTS

There was one groundwater complaint during the period. A CCC member passed on a complaint from a Quipolly resident alleging that their bore water level had dropped and has become contaminated with "rotten egg" gas. The Operations Manager and Environmental Officer met with the complainant. WCC have subsequently taken creek and groundwater samples at the property as well as upstream and downstream to compare against ANZECC (2000) water quality guidelines for Livestock Watering and Irrigation. Specific actions taken in relation to this complaint are outlined in **Section 6.**

6.0 COMPLAINTS SUMMARY

There were seven complaints received during the period with the details summarised below. In total there were four complaints related to dust; one complaint related to blasting (odour), one complaint related to clearing and one complaint for groundwater impacts. There were seven different complainants during the period with four complaints from Werris Creek residents and two complaints from Quipolly residents, and one from WIRES.

#	Date	Complainant	Complaint	Investigation	Action Taken
264	22/11/2012 12:32pm	AH Werris Creek	Complainant alleges that the WCC blast smelt sulfurous and could see a dust cloud from the mine towards Werris Creek.	The pre-blast weather check confirmed winds not towards Werris Creek. The blast results were in compliance. Upon investigation there was no obvious reason to confirm the cause of the odour or whether it was sourced from the blast.	A written response provided to the complainant. The next blast to the former magazine area will have the DO NOT BLAST arc around Werris Creek will be increased.
265	28/11/2012 1:09pm	DoP/Wires	The complaint from WIRES was in relation to impacts of clearing on protected fauna during nesting season.	WCC undertook clearing on 20th November in accordance with Biodiversity and Offset Management Plan. Approximately 20 habitat trees were assessed with no fauna identified. After clearing, no threatened fauna were identified however a number of nestlings were found and were taken to WIRES to be cared for.	Ecologists to issue a Clearing Report. A written report provided to DoP.
266	09/01/2013 10:08am	Q Quipolly	A lot of dust from the mine blowing towards Quipolly.	The complaint coincided with a sudden increase in wind speed from 7m/s to over 13m/s at 10am with wind speed dropping back to average at 10:30am. All five water carts were operating applying 2.4ML of water on the 9/1 for dust suppression.	EO met with complainant on day of complaint. A written response provided to the complainant.
267	14/01/2013 11:41am	AI Werris Creek	Last fortnight dust has been bad, especially 9/1 & 10/1 with coal dust on house floor.	Prevailing weather conditions have been hot and dry including two non-mining events affecting air quality. However, Werris Creek dust levels (whether from WCC or other/ambient dust sources) have not exceeded the accepted criteria for air quality impacts and that on average the Werris Creek PM10 levels are lower than that measured in Tamworth indicating that Werris Creek is not being adversely impacted by WCC mining operations.	A written response provided to the complainant. ALS to analyse dust sample and test drinking water quality.
268	24/01/2013 8:01am	I Werris Creek	Black dust has coated roof and swimming pool over the last fortnight. Blast dust looks like coal dust.	Prevailing weather conditions have been hot and dry including two non-mining events affecting air quality. However, Werris Creek dust levels (whether from WCC or other/ambient dust sources) have not exceeded the accepted criteria for air quality impacts and that on average the Werris Creek PM10 levels are lower than that measured in Tamworth indicating that Werris Creek is not being adversely impacted by WCC mining operations.	A written response provided to the complainant. ALS test drinking water quality.
269	29/01/2013 2:15pm	AJ Werris Creek	Black dust on pegs has stained clothes on clothes line.	Prevailing weather conditions have been hot and dry including two non-mining events affecting air quality. However, Werris Creek dust levels (whether from WCC or other/ambient dust sources) have not exceeded the accepted criteria for air quality impacts and that on average the Werris Creek PM10 levels are lower than that measured in Tamworth indicating that Werris Creek is not being adversely impacted by WCC mining operations.	A written response provided to the complainant. ALS test drinking water quality.
270	31/01/2013 11:35am	AK Quipolly	Alleged that the bore water supply is contaminated. Groundwater level has declined and don't accept that it is to do with dry conditions.	Across 2012, Quipolly Alluvium aquifer upstream of "Naranji" has fallen on average by 0.6m across the 15 bores monitored, equating to between 5 and 15% decrease. Water quality monitoring of Quipolly Creek and Quipolly Alluvium has not identified any changes in water chemistry or contamination of the creek or aquifer. Rainfall had only reached 64% of the Quirindi Long Term Average (259mm out of 403mm for April to November) demonstrating how dry it was prior to December.	ALS to test bore water quality and commence monitoring bimonthly water levels. A written response provided to the 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.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2012-2013

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 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
02-Apr-12				22	6.2		19	7.5	19.0	29	12.2	28.6	18	8.2	17.6	18	8.2	17.6	66	22.0	66.4	50	30	90
08-Apr-12				12	**15.9**	15.9	16	**15.3**	17.6	23.2	**22.6**	25.9	20	**15.1**	18.8	20	**15.1**	18.8	53	**55.3**	59.6	50	30	90
14-Apr-12				6	17.2		8	17.4	14.2	12	24.8	21.3	8	16.0	15.3	8	16.0	15.3	22	59.6	47.0	50	30	90
20-Apr-12				23	23.0		19	19.0	15.3	26	28.6	22.6	14	20.0	15.1	14	20.0	15.1	80	79.9	55.3	50	30	90
26-Apr-12				12			13		14.9	17		21.5	13		14.7	13		14.7	54		55.0	50	30	90
02-May-12				11	11.4		13	12.6	14.5	8	8.4	19.4	14	11.8	14.6	14	11.8	14.6	27.5	27.5	50.4	50	30	90
08-May-12				26	**15.3**	15.6	20	**17.9**	15.3	49	**19.9**	23.6	18	**14.2**	15.0	18	**14.2**	15.0	114	**51.3**	59.5	50	30	90
14-May-12				15	12.4		27	17.1	16.7	12	12.8	22.2	15	14.0	15.0	15	14.0	15.0	33	33.0	56.2	50	30	90
20-May-12				12	25.8		17	26.7	16.8	13	48.8	21.1	12	17.7	14.6	12	17.7	14.6	28	114.0	53.0	50	30	90
26-May-12				4			5		15.6	4		19.4	3		13.5	3		13.5	6		48.3	50	30	90
01-Jun-12				19			12		15.2	8		18.4	4		12.6	4		12.6	20		45.7	50	30	90
07-Jun-12				12	3.7		7	4.8	14.5	3	3.3	17.1	3	3.2	11.8	3	3.2	11.8	7	5.5	42.5	50	30	90
13-Jun-12				11	**12.1**	14.4	9	**9.4**	14.1	5	**10.8**	16.2	6	**7.0**	11.4	6	**7.0**	11.4	16	**24.5**	40.5	50	30	90
19-Jun-12				10	11.8		9	9.1	13.7	13	6.6	16.0	8	5.2	11.2	8	5.2	11.2	31	18.3	39.8	50	30	90
25-Jun-12				17	18.7		15	15.4	13.8	31	31.2	17.0	17	17.4	11.6	17	17.4	11.6	67	66.6	41.6	50	30	90
01-Jul-12				10			9		13.5	4		16.2	5		11.2	5		11.2	7		39.5	50	30	90
07-Jul-12				8	6.3		8	6.3	13.2	5	3.0	15.5	7	4.8	10.9	14	5.2	11.4	5	4.8	37.5	50	30	90
13-Jul-12				8	**8.6**	13.0	8	**8.5**	12.9	5	**4.5**	14.9	5	**6.6**	10.6	6	**8.4**	11.0	5	**6.1**	35.6	50	30	90
19-Jul-12				11	8.3		11	8.3	12.8	6	4.5	14.4	5	5.2	10.3	9	7.9	10.9	8	5.2	34.2	50	30	90
25-Jul-12				6	10.7		6	10.7	12.5	3	5.8	13.9	10	10.4	10.3	8	14.2	10.8	5	8.2	32.7	50	30	90
31-Jul-12				17			18		12.8	11		13.7	15		10.5	16		11.0	15		31.9	50	30	90
06-Aug-12				10	7.1		10	7.1	12.6	6	5.3	13.4	7	4.8	10.4	9	8.6	10.9	13	10.7	31.0	50	30	90
12-Aug-12				9	**10.4**	12.5	10	**10.9**	12.5	10	**8.6**	13.2	9	**9.6**	10.3	11	**12.0**	10.9	15	**13.9**	30.3	50	30	90
18-Aug-12				7	9.0		7	9.8	12.3	5	10.1	12.9	5	9.0	10.1	11	10.8	10.9	11	14.6	29.5	50	30	90
24-Aug-12				9	17.0		10	17.8	12.2	11	10.6	12.8	12	15.0	10.2	14	16.3	11.0	16	16.3	29.0	50	30	90
30-Aug-12							17		12.4	20		13.1	15		10.4	19		11.3	30		29.0	50	30	90
05-Sep-12		3.1			7.3		23	10.8	12.8	19	10.8	13.3	30	6.9	11.1	29	9.1	12.0	30	17.3	29.1	50	30	90
11-Sep-12		**8.9**	8.9		**15.3**	13.0	29	**20.5**	13.4	23	**18.0**	13.6	26	**18.8**	11.6	28	**20.5**	12.6	36	**28.5**	29.3	50	30	90
17-Sep-12		8.1			14.6		22	21.9	13.6	17	19.1	13.8	16	16.4	11.8	17	19.2	12.7	29	30.0	29.3	50	30	90
23-Sep-12		16.4			26.5		11	29.2	13.6	11	23.1	13.7	7	29.8	11.6	9	29.2	12.6	17	35.8	28.9	50	30	90
29-Sep-12							14		13.6	8		13.5	15		11.7	13		12.6	16		28.5	50	30	90
05-Oct-12		2.3			4.6		17	7.3	13.7	12	5.6	13.5	19	11.2	11.9	20	9.7	12.9	21	14.4	28.2	50	30	90
11-Oct-12		**10.7**	9.8		**18.1**	13.7	7	**14.6**	13.5	6	**11.6**	13.2	11	**15.7**	11.9	10	**15.8**	12.8	14	**23.2**	27.8	50	30	90
17-Oct-12		10.1			17.7		22	14.4	13.8	23	9.1	13.5	18	15.3	12.1	25	13.2	13.1	47	17.8	28.4	50	30	90
23-Oct-12		29.1			41.4		12	22.0	13.7	9	22.6	13.4	15	19.2	12.2	11	24.9	13.1	18	46.9	28.1	50	30	90
29-Oct-12							27		14.1	19		13.5	16		12.3	15		13.1	28		28.1	50	30	90
04-Nov-12		0.0			2.7		23	8.9	14.3	19	5.7	13.7	23	8.7	12.6	25	7.7	13.4	27	10.4	28.0	50	30	90
10-Nov-12		**6.8**	8.8		**14.3**	13.8	9	**24.1**	14.2	6	**15.3**	13.4	9	**21.7**	12.5	8	**18.5**	13.3	10	**24.0**	27.6	50	30	90
16-Nov-12		6.6			14.2		25	25.1	14.5	13	18.6	13.4	27	23.3	12.9	20	20.3	13.4	24	26.9	27.5	50	30	90
22-Nov-12		20.5			33.8		36	36.0	15.0	21	20.5	13.6	33	33.0	13.4	26	25.6	13.7	32	31.7	27.6	50	30	90
28-Nov-12							11		14.9	13		13.6	14		13.4	20		13.9	15		27.3	50	30	90
04-Dec-12		0.8			2.3		5	4.7	14.7		3.1	13.6	8	5.5	13.3	10	3.2	13.8		8.6	27.3	50	30	90
10-Dec-12		**6.5**	8.2		**13.1**	13.7	15	**9.2**	14.7	3	**7.4**	13.3	6	**8.9**	13.1	3	**13.8**	13.5	10	**13.0**	26.8	50	30	90
16-Dec-12		5.5			13.5		9	9.2	14.5	9	6.9	13.2	9	8.4	13.0	26	9.9	13.8	19	12.4	26.7	50	30	90
22-Dec-12		17.9			28.3		7	14.9	14.4	5	12.6	13.0	8	13.8	12.9	10	26.3	13.7	9	18.7	26.2	50	30	90
28-Dec-12							20		14.5	5		12.9	7		12.8	9		13.6	10		25.9	50	30	90
03-Jan-13		0.0			0.1		13	13.3	14.5	10	4.5	12.8	12	6.7	12.7	16	9.0	13.7	16	9.6	25.7	50	30	90
09-Jan-13		**7.8**	8.1		**14.2**	13.7	30	**21.0**	14.8	23	**10.3**	13.0	22	**11.9**	12.9	34	**16.2**	14.1	41	**19.7**	26.0	50	30	90
15-Jan-13		6.8			13.9			19.9	14.8	6	7.8	12.9	11	11.3	12.9	12	12.3	14.1	17	15.8	25.8	50	30	90
21-Jan-13		23.0			36.1			29.8	14.8	8	22.6	12.8	7	22.3	12.8	10	34.2	14.0	14	41.4	25.6	50	30	90
27-Jan-13							6		14.6	4		12.6	4		12.6	5		13.8	10		25.3	50	30	90
02-Feb-13									14.6			12.6			12.6			13.8			25.3	50	30	90
08-Feb-13									14.6			12.6			12.6			13.8			25.3	50	30	90
14-Feb-13									14.6			12.6			12.6			13.8			25.3	50	30	90
20-Feb-13									14.6			12.6			12.6			13.8			25.3	50	30	90
26-Feb-13									14.6			12.6			12.6			13.8			25.3	50	30	90
04-Mar-13									14.6			12.6			12.6			13.8			25.3	50	30	90
10-Mar-13									14.6			12.6			12.6			13.8			25.3	50	30	90
16-Mar-13									14.6			12.6			12.6			13.8			25.3	50	30	90
22-Mar-13									14.6			12.6			12.6			13.8			25.3	50	30	90
28-Mar-13									14.6			12.6			12.6			13.8			25.3	50	30	90
Min		**0.0**			**0.1**					**3.0**			**3.2**			**3.2**			**4.8**					
Max		**29.1**			**41.4**		**36.0**			**48.8**			**33.0**			**34.2**			**114.0**					
Capture							**80%**			**82%**			**84%**			**84%**			**82%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2012-2013

MONTH (g/m2/month)				April 2012	May 2012	June 2012	July 2012	August 2012	September 2012	October 2012	November 2012	December 2012	January 2013	February 2013	March 2013	ANNUAL AVERAGE	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG2	Cintra	Total Matter	2.5	1.2	1.0	1.5	0.4	1.3	2.3	1.7	1.4	*3.3			1.5	0.4	2.5	4.0
			Ash Content	1.4	0.8	0.8	1.0	0.3	0.7	1.2	1.0	0.7	*1.6						
-	DG5	Railway View	Total Matter	1.1	1.0	0.5	0.7	2.5	1.0	1.2	1.2	1.6	3.2			1.4	0.5	3.2	4.0
			Ash Content	0.6	0.7	0.5	0.5	1.5	0.7	0.8	1.0	1.4	2.7						
EPL #1	DG20	Tonsley Park	Total Matter	0.6	0.4	0.3	0.5	0.3	*1.2	1.0	1.0	1.2	3.3			1.0	0.3	3.3	4.0
			Ash Content	0.3	0.4	0.3	0.4	0.2	*0.5	0.5	0.6	0.8	2.5						
-	DG15	Plain View	Total Matter	1.0	2.1	3.5	*1.8	5.0	0.6	0.7	0.7	1.0	2.0			1.8	0.6	5.0	4.0
			Ash Content	0.6	1.2	2.5	*0.6	2.8	0.5	0.5	0.4	0.8	1.5						
-	DG9	Marengo	Total Matter	*0.7	1.3	0.8	0.2	0.6	0.7	*0.7	0.5	0.6	1.6			0.8	0.2	1.6	4.0
			Ash Content	*0.3	0.7	0.5	0.2	0.3	0.5	0.3	0.3	0.5	1.4						
-	DG22	Mountain View	Total Matter	3.5	0.5	0.5	1.2	0.5	0.6	*0.3	0.1	3.2	3.0			1.5	0.1	3.5	4.0
			Ash Content	2.6	0.5	0.4	1.0	0.3	0.5	0.1	0.1	1.6	1.5						
EPL#29	DG11	Glenara	Total Matter	1.5	2.1	*2.6	c425	2.4	4.5	1.2	0.7	*3.7	1.2			1.9	0.7	4.5	4.0
			Ash Content	0.8	0.9	*0.9	c391	1.2	4.0	0.8	0.5	*1.6	0.9						
-	DG24	Hazeldene	Total Matter					0.5	0.5	0.7	0.6	*3.6	1.8			0.8	0.5	1.8	4.0
			Ash Content					0.3	0.5	0.5	0.5	*1.6	1.4						
-	DG17	Woodlands	Total Matter					0.3	0.5	2.8	1.8	*2.5	2.7			1.6	0.3	2.8	4.0
			Ash Content					0.3	0.5	1.5	1.0	*0.9	1.8						
-	DG96	Talavera	Total Matter					0.2	0.6	0.8	0.6	0.9	1.4			0.8	0.2	1.4	4.0
			Ash Content					0.2	0.4	0.6	0.4	0.5	0.3						
EPL#28	DG98	Kyooma	Total Matter					*0.3	0.4	*1.1	*0.7	1.0	1.9			1.1	0.4	1.9	4.0
			Ash Content					*0.1	0.3	*0.5	*0.3	0.6	1.2						
-	DG14	Greenslopes	Total Matter					*0.3	0.5	0.6	0.8	1.0	1.5			0.9	0.5	1.5	4.0
			Ash Content					*0.1	0.4	0.5	0.4	0.5	1.2						
-	DG62	Werris Creek South	Total Matter					*0.7	0.5	0.3	*0.7	0.5	0.9			0.6	0.3	0.9	4.0
			Ash Content					*0.3	0.3	0.3	*0.3	0.3	0.7						
EPL#30	DG92	Werris Creek Centre	Total Matter					*0.6	0.5	0.7	*2.5	*1.1	1.2			0.8	0.5	1.2	4.0
			Ash Content					*0.2	0.3	0.4	*0.5	*0.5	0.9						
-	DG101	Westfall	Total Matter					*0.6	0.6	0.8	1.1	1.5	2.7			1.3	0.6	2.7	4.0
			Ash Content					*0.2	0.4	0.4	0.6	0.8	2.2						
-	DG103	West Street	Total Matter					1.0	0.5	1.1	1.1	1.1	0.6			0.9	0.5	1.1	4.0
			Ash Content					0.5	0.5	0.7	0.6	0.7	0.6						
-	DG1	Escott	Total Matter					*0.5	0.3	0.5	0.6	0.8	1.3			0.7	0.3	1.3	4.0
			Ash Content					*0.2	0.3	0.3	0.3	0.4	1.0						
-	DG3	Eurunderee	Total Matter					*0.6	0.4	0.4	0.8	1.2	1.6			0.9	0.4	1.6	4.0
			Ash Content					*0.2	0.3	0.3	0.4	0.7	1.4						
-	DG34	8 Kurrara Street	Total Matter					0.5	1.2	*1.9	1.1	1.2	1.4			1.1	0.5	1.4	4.0
			Ash Content					0.3	0.5	0.7	0.6	0.6	1.0						
-	DG106	Villamagna	Total Matter						0.4	0.6	c13.1	1.1	2.2			1.1	0.4	2.2	4.0
			Ash Content						0.3	0.3	c11.4	0.7	1.9						

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

c - indicates sample is contaminated from a Non-Werris Creek Coal dust source and is not counted in the average

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e bird droppings and insects) and is excluded from the average

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2012-2013

	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 2012	0.8	25%	50%	25%	0.3	25%	50%	25%	0.3	30%	40%	30%	0.7	25%	50%	25%	1.0	10%	60%	30%	0.5	25%	50%	25%	4.0
May 2012	1.1	30%	40%	30%	0.7	35%	25%	40%	0.6	20%	50%	30%	0.6	40%	40%	20%	0.4	10%	60%	30%	0.7	25%	50%	25%	4.0
June 2012	1.0	35%	45%	20%	0.8	45%	35%	20%	0.9	35%	55%	10%	0.5	45%	40%	15%	1.9	20%	60%	20%	1.3	15%	65%	20%	4.0
July 2012	1.2	40%	30%	30%	0.8	40%	30%	30%	1.2	40%	30%	30%	0.7	40%	30%	30%	2.4	10%	60%	30%	1.5	25%	50%	25%	4.0
August 2012	0.6	30%	30%	40%	0.6	30%	30%	30%	0.5	30%	50%	20%	0.5	30%	50%	20%	0.7	20%	50%	30%	2.7	15%	20%	60%	4.0
September 2012	1.7	20%	20%	60%	1.2	20%	50%	30%	1.3	15%	55%	30%	0.9	20%	50%	30%	0.7	20%	60%	20%	0.6	10%	60%	30%	4.0
October 2012	1.5	15%	50%	35%	1.4	15%	50%	35%	0.9	20%	40%	40%	1.0	25%	50%	25%	0.6	20%	40%	40%	1.6	10%	50%	40%	4.0
November 2012	1.2	10%	60%	10%	1.5	15%	50%	10%	0.8	15%	40%	25%	0.9	15%	15%	40%	2.4	5%	50%	25%	1.5	10%	35%	25%	4.0
December 2012	1.0	15%	60%	25%	1.4	5%	65%	30%	1.7	60%	25%	15%	2.4	15%	65%	20%	1.4	20%	60%	20%	3.6	5%	85%	10%	4.0
January 2013	1.8	10%	50%	30%	1.3	10%	70%	20%	1.5	10%	60%	30%	1.3	15%	65%	20%	1.0	10%	60%	30%	2.5	5%	70%	10%	4.0
February 2013																									4.0
March 2013																									4.0
ANNUAL AVERAGE	**1.2**				**1.0**				**1.0**				**1.0**				**1.3**				**1.7**				**4.0**
Average Coal %	**23.0%**				**24.0%**				**27.5%**				**27.0%**				**14.5%**				**14.5%**				**-**
Average Coal g/m2	**0.27**				**0.24**				**0.27**				**0.26**				**0.18**				**0.24**				**-**
MINIMUM	**0.6**				**0.3**				**0.3**				**0.5**				**0.4**				**0.5**				**-**
MAXIMUM	**1.8**				**1.5**				**1.7**				**2.4**				**2.4**				**3.6**				**4.0**

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

Appendix 4 – Noise Monitoring Results

6 December 2012

Ref: 04035/4611

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

RE: NOVEMBER 2012 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 November, 2012 as required by the draft 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 **Appendix 1**.

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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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. Mine noise from WCC is shown in the tables in bold type. 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.

WCC Operations

WCC operations on 29th November 2012 had the 3600 and PC4000 excavators in Strip 15 east at RL390m and two 1900 excavators in Strip 12 east at RL320m. The 3600 and PC4000 truck fleets were running to the RL430m east dump during both day and night shifts, and the two 1900 truck fleets were running to the RL360m in pit dump both day and night shift. Scraper operations were limited to day shift only stripping soil for the new Mine Infrastructure Area. The crushing plant operated to 3:30am with no trains loaded during the monitoring period.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period.

Table 2
WCC Noise Monitoring Results – 29 November 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2.25 pm	36	35	n/a	3.0/169	Birds & insects (36), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	12.50 pm	40	37	n/a	2.0/229	Birds & insects (39), traffic (32), WCC barely audible
B2 R9Gedhurst/ R22 Mountain View	1.20 pm	49	37/36*	n/a	2.5/181	Birds & insects (49), WCC (25)
C R10 Meadholme/ R11 Glenara	2.46 pm	38	39	n/a	0.8/125	Birds & insects (37), WCC (30)
D R24 Hazeldene	3.07 pm	40	37	n/a	2.9/176	Traffic (39), birds & insects (30), WCC (30)
E R12 Railway Cottage	4.52 pm	44	38	n/a	1.9/109	Traffic (43), birds & insects (38), WCC inaudible
F R96 Talavera	2.39 pm	41	38	n/a	2.8/153	Birds & insects (39), traffic (37), WCC (<25)
G R97	4.03 pm	35	35	n/a	2.6/180	Birds & insects (33), traffic (26), plane (25) WCC (22)
H R98 Kyooma	3.44 pm	36	36	n/a	1.2/245	Birds & insects (36), WCC (25)
I R57 Kurrara St	4.40 pm	48	35	n/a	1.9/109	Traffic (46), birds & insects (44), WCC inaudible
J R57 Coronation Ave	5.43 pm	58	35	n/a	1.3/88	Traffic (58), train (40), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	4.33 pm	38	39	n/a	2.5/169	Birds & insects (34), traffic (34), train (30), WCC (26)
L R103	4.15 pm	37	35	n/a	3.1/180	Train (34), birds & insects (33), WCC (26)

* Gedhurst noise criteria is 37dB(A) Leq while Mountain View noise criteria is 36 dB(A) Leq

Table 3
WCC Noise Monitoring Results – 29 November 2012 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8.16 pm	n/a	45	35	+5.1	1.5/264	Bird & insects (43), dogs (41), traffic (22), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	10.50 pm	45	47	37	+0.5	2.5/15	Birds & insects (46), WCC (37), traffic (34)
B2 R9Gedhurst/ R22 Mountain View	7.10 pm	n/a	52	37/36*	+3.3	0.7/50	Birds (52), traffic (35), WCC inaudible
C R10 Meadholme/ R11 Glenara	10.26 pm	41	36	39	+0.6	4.6/351	Insects (34), WCC (32)
D R24 Hazeldene	8.38 pm	40	51	37	+5.0	1.2/294	Birds & insects (51), traffic (35), WCC (28)
E R12 Railway Cottage	10.27 pm	39	40	38	+0.6	5.2/350	Insects (38), traffic (34), WCC (30)
F R96 Talavera	7.10 pm	n/a	37	37	+3.3	0.7/50	Insects (37), WCC inaudible
G R97	8.37 pm	30	45	35	+4.5	0.8/287	Insects (45), WCC (22)
H R98 Kyooma	8.18 pm	<25	39	36	+5.1	1.5/264	Birds & insects (39), WCC (<20)
I R57 Kurrara St	9.19 pm	n/a	50	35	+6.4	1.8/338	Frogs & insects (50), traffic (32), trains (31), WCC inaudible
J R57 Coronation Ave	9.00 pm	n/a	40	35	+4.9	1.9/300	Trains (37), insects (36), traffic (32), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	10.03 pm	n/a	49	37	+4.6	3.6/358	Insects (49), traffic (35), train (33), WCC inaudible
L R103	9.44 pm	n/a	53	35	+7.6	0.8/342	Insects (52), train (45), WCC inaudible

1. L1 (1 min) from mine noise only

* Gedhurst noise criteria is 37dB(A) Leq while Mountain View noise criteria is 36 dB(A) Leq

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 (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**.

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

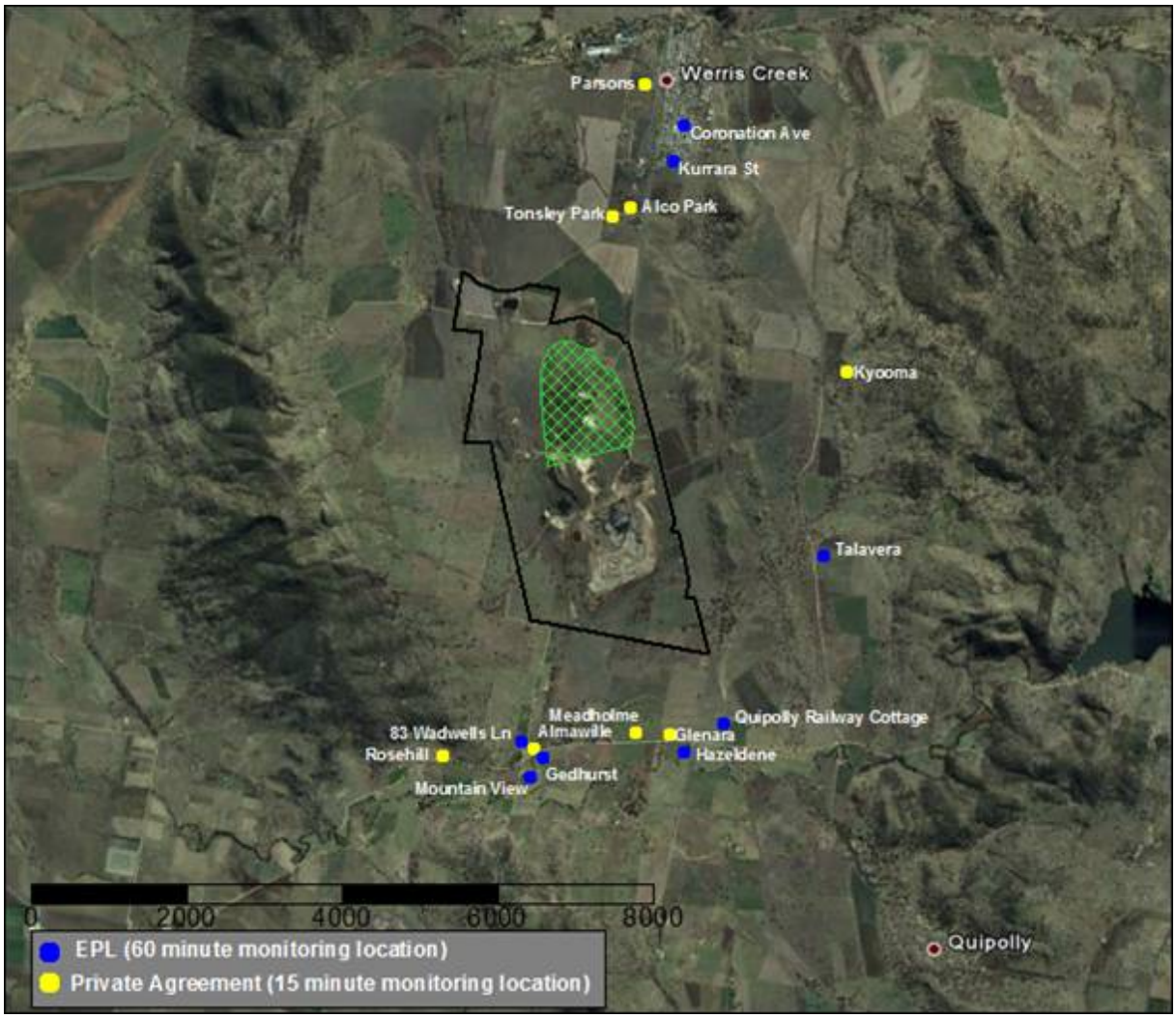
Author:

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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12

*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.

2 January 2013

Ref: 04035/4631

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

RE: DECEMBER 2012 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 17th December, 2012 as required by the draft 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 **Appendix 1**.

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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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. Mine noise from WCC is shown in the tables in bold type. 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.

WCC Operations

WCC operations on 17th December 2012 had the 3600 and PC4000 excavators in Strip 13 at RL370m and one 1900 excavator in Strip 11 centre at RL300m and the other 1900 in Strip 12 centre at RL340m. The 3600 and PC4000 truck fleets were running to the RL445m dump during both day and night shifts, and the two 1900 truck fleets were either coaling up to the ROM Pad at RL380m or the western dump at RL390m both day and night shift. Scraper operations were moving overburden from Strip 14 to the LOM Visual Bund at RL410m. The crushing plant operated to 3:30am with one train loaded commencing at 11:25pm and finished at 1:44am.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period.

Table 2
WCC Noise Monitoring Results – 17 December 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	4:35 pm	36	35	n/a	6.4 / 143	Birds & insects (36), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	3:29 pm	41	37	n/a	4.2 / 150	Birds & wind (40), tractor (33), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	2:23 pm	42	37/36*	n/a	2 / 155	Birds & wind (42), WCC inaudible
C R10 Meadholme/ R11 Glenara	5:02 pm	38	39	n/a	8.1 / 133	Birds & insects (37), WCC (30)
D R24 Hazeldene	1:18 pm	38	37	n/a	3 / 154	Traffic (37), birds & insects (31), WCC inaudible
E R12 Railway Cottage	4:05 pm	44	38	n/a	3 / 167	Traffic (43), birds & insects (38), WCC inaudible
F R96 Talavera	12:02 pm	42	38	n/a	4.7 / 148	Wind (39), insects (35), traffic (33), WCC (<20)
G R97	1:26 pm	37	35	n/a	3 / 154	Wind (36), traffic (31), WCC (<25)
H R98 Kyooma	1:08 pm	42	36	n/a	3.8 / 170	Wind (39), birds (36), WCC (32)
I R57 Kurrara St	2:12 pm	55	35	n/a	4.2 / 137	Traffic (52), birds (52), WCC inaudible
J R57 Coronation Ave	1:50 pm	47	35	n/a	2.7 / 144	Traffic (46), wind (40), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	3:18 pm	43	39	n/a	4.5 / 153	Traffic (40), wind (40), WCC inaudible
L R103	3:37 pm	45	35	n/a	3.7 / 139	Dogs (43), train (39), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 17/18 December 2012 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8:37 pm	n/a	37	35	-0.5	6.6 / 130	Pump (35), dogs (31), traffic (25), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	8:59 pm	n/a	38	37	0.1	5 / 108	Birds & insects (38), traffic (26), WCC (<25)
B2 R9Gedhurst/ R22 Mountain View	11:16 pm	n/a	32	37/36*	0.5	3.7 / 128	Insects (32), WCC inaudible
C R10 Meadholme/ R11 Glenara	10:08 pm	n/a	33	39	1.2	4.6 / 120	Insects (32), traffic (28), WCC inaudible
D R24 Hazeldene	12:21 am	31	51	37	1.0	3.7 / 129	Insects (30), traffic (23), WCC inaudible
E R12 Railway Cottage	10:56 pm	<30	40	38	0.9	3.7 / 124	Train (57), traffic (36), WCC (<25)
F R96 Talavera	7:38 pm	<35	41	37	-0.1	4.3 / 134	Traffic (40), train (33), WCC (<30)
G R97	9:10 pm	<30	40	35	0.5	3.8 / 109	Insects (39), wind (32), WCC (<25)
H R98 Kyooma	8:50 pm	<35	37	36	-0.5	5 / 108	Birds & insects (36), wind (31), WCC (<30)
I R57 Kurrara St	9:44 pm	<30	50	35	0.9	3.9 / 128	Frogs (45), traffic (44), trains (44), WCC (<25)
J R57 Coronation Ave	9:24 pm	<35	40	35	0.3	4.5 / 112	Wind (37), trains (33), insects (30), WCC (<30)
K R20 Tonsley Park/ R21 Alco Park	8:11 pm	<30	46	37	-0.5	4.9 / 136	Insects (45), wind (38), traffic (30), WCC (25)
L R103	7:48 pm	n/a	42	35	-0.2	4.3 / 134	Train (40), wind (36), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

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 (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**.

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

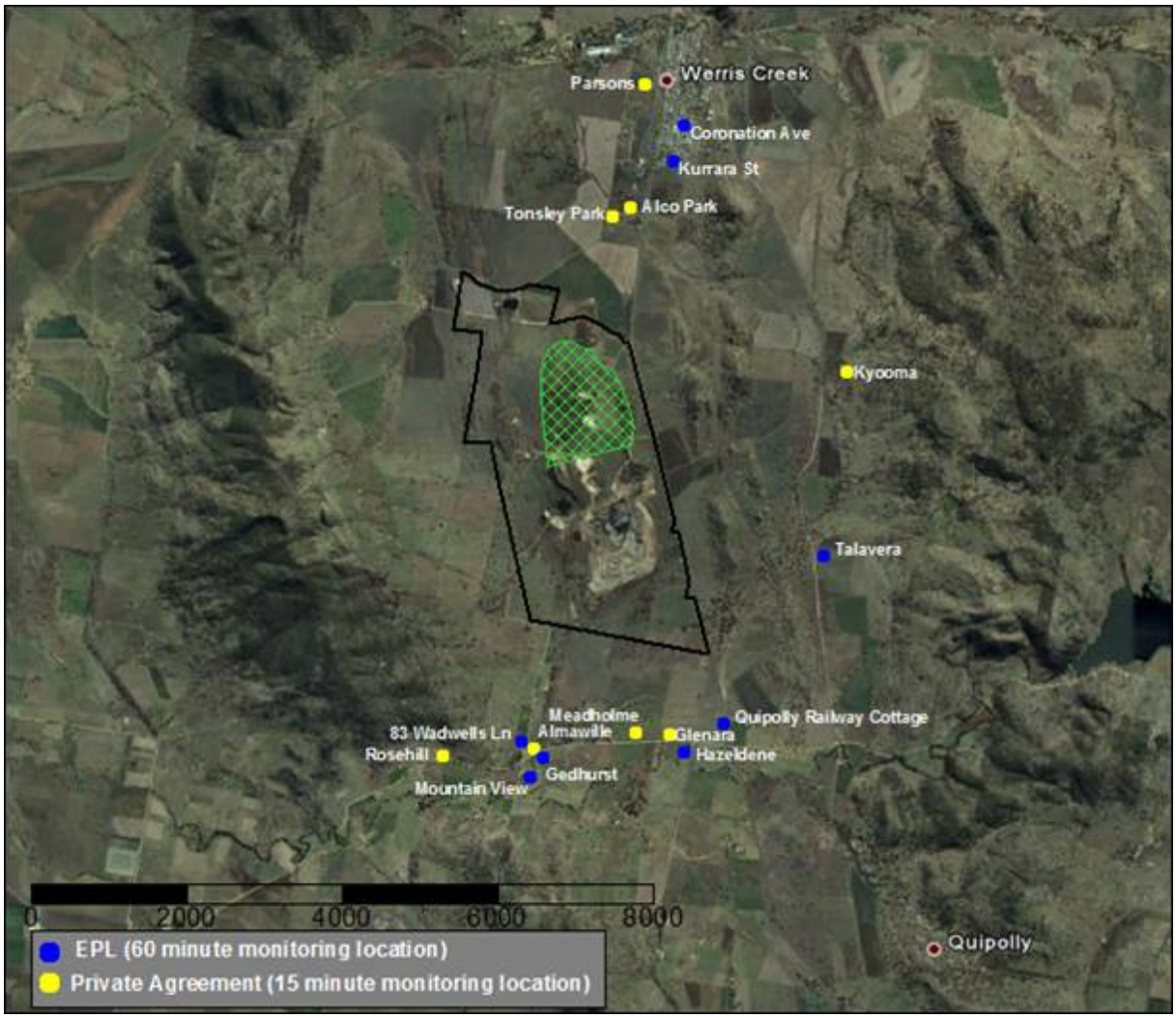
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12

*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 January 2013

Ref: 04035/4643

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

RE: JANUARY 2013 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 16th January, 2013 as required by the draft 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 **Appendix 1**.

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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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]	R20*	Tonsley Park	Mine Owned
		R21*	Alco Park	
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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. Mine noise from WCC is shown in the tables in bold type. 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 stations. The lower temperature probe at the weather station was not operational on the 16th January so temperature inversion strength was interpreted from the 10m probe at the weather station and a temperature probe at Quipolly, a vertical separation of 96.3m.

WCC Operations

WCC operations on 16th January 2013 had the 3600 and a 1900 excavator in Strip 12 east at RL320m and PC4000 and a 1900 excavator in Strip 13 west at RL390m. All overburden truck fleets were running to the RL430m western dump on day shift and to the RL390m western dump on night shift. Coal truck fleets ran from in pit to the ROM Pad at RL380m. Scraper operations were moving overburden from Strip 15 to the LOM Visual Bund at RL410m on the eastern side of the mine on day shift only. The crushing plant operated to 3:30am with one train loaded commencing at 3:29am and finished at 5:44am.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period.

Table 2
WCC Noise Monitoring Results – 16 January 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2:43 pm	55	35	n/a	1.9/254	Birds & insects (55), traffic (32), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:40 pm	48	37	n/a	1.9/272	Birds & insects (47), traffic (41), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:39 pm	42	37/36*	n/a	1.9/272	Birds & insects (42), traffic (30), WCC inaudible
C R10 Meadholme/ R11 Glenara	3:07 pm	45	39	n/a	1.5/299	Birds & insects (45), WCC (<25)
D R24 Hazeldene	3:25 pm	36	37	n/a	0.7/123	Birds & insects (34), traffic (30), WCC (25)
E R12 Railway Cottage	5:00 pm	39	38	n/a	2.4/47	Traffic (38), birds & insects (32), WCC inaudible
F R96 Talavera	2:45 pm	40	38	n/a	1.3/294	Birds & insects (40), WCC (20)
G R97	4:10 pm	34	35	n/a	1.9/127	Birds & insects (34), WCC (17)
H R98 Kyooma	3:50 pm	32	36	n/a	1.0/150	Birds & insects (32), WCC (19)
I R57 Kurrara St	4:48 pm	46	35	n/a	2.1/120	Traffic (42), train (41), birds & insects (40), WCC inaudible
J R57 Coronation Ave	4:30 pm	46	35	n/a	0.3/74	Traffic (43), birds & insects (43), WCC inaudible
L R103	4:35 pm	36	35	n/a	0.3/74	Train (36), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 16 January 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	9:10 pm	37	47	35	+2.8	2.6/85	Birds & insects (47), traffic (32), WCC (28)
B1 R7 83 Wadwells Lane/R8 Almawillee	10:55 pm	43	42	37	+4.2	2.7/87	Insects (41), WCC (35)
B2 R9Gedhurst/ R22 Mountain View	8:07 pm	44	44	37/36*	+2.6	3.2/69	Birds & insects (43), WCC (37)
C R10 Meadholme/ R11 Glenara	9:30 pm	43	39	39	+3.3	2.3/85	Insects (37), WCC (34)
D R24 Hazeldene	9:48 am	40	51	37	+3.6	2.6/90	Insects (51), traffic (38), WCC (32)
E R12 Railway Cottage	10:50 pm	35	46	38	+4.2	2.7/87	Traffic (45), insects (35), WCC (28)
F R96 Talavera	7:40 pm	35	33	37	+0.6	3.4/63	Birds & insects (31), WCC (30)
G R97	9:02 pm	37	39	35	+3.2	2.7/84	Insects (38), WCC (32)
H R98 Kyooma	8:44 pm	39	36	36	+3.3	2.6/85	Insects (34), WCC (32)
I R57 Kurrara St	9:43 pm	n/a	46	35	+3.6	2.6/90	Frogs (42), insects (40), traffic (39), trains (39), WCC inaudible
J R57 Coronation Ave	9:22 pm	n/a	44	35	+3.3	2.6/85	Traffic (42), trains (40), insects (33), WCC inaudible
L R103	7:43 pm	n/a	40	35	+0.9	3.7/59	Train (40), birds (30), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results shown in Table 3 indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC exceeded the criterion of 36 dB(A) Leq at the Mountain View (Gedhurst) monitoring location during the evening/night monitoring period.

WCC environmental licence conditions indicate that compliance with noise emission criteria is not applicable under atmospheric conditions where winds speeds are higher than 3m/s and/or there is a temperature inversion of greater than +3° C/100m. Data from the mine operated weather station indicated that the elevated noise level was measured whilst the wind was at 3.2m/s and, therefore, under non-compliant atmospheric conditions.

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 (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**.

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

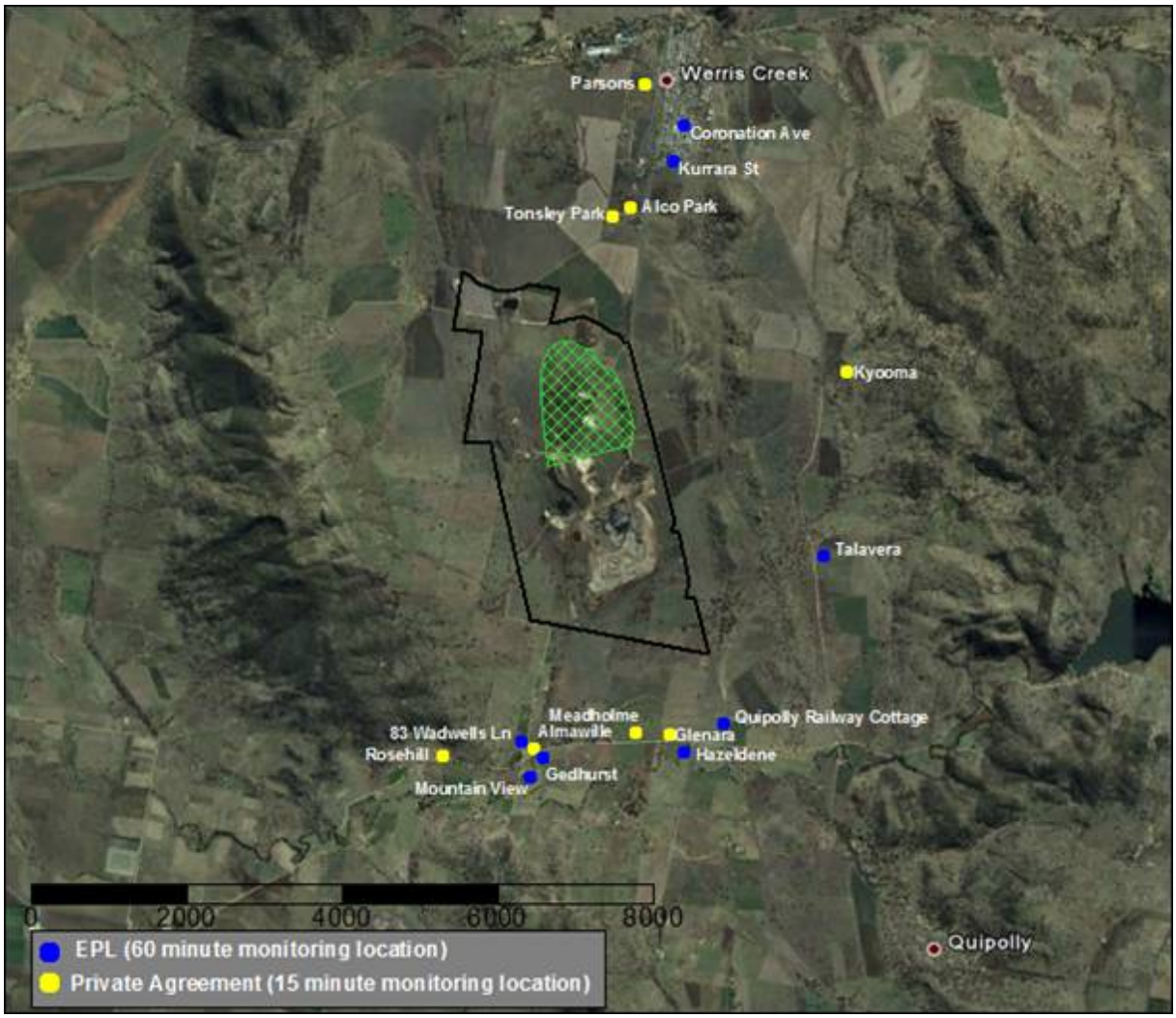
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12

*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
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS NOVEMBER 2012									
					Glenala R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					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)
2012-61	2/11/2012	12:08	S14_8-10_370	OB	<0.08	<109.0	0.51	103.0	<0.08	<109.0	0.11	101.0	10.00	120.0
2012-62	5/11/2012	12:11	S14_3-5_375	OB	<0.08	<109.0	0.93	100.0	0.26	99.0	0.16	102.0	10.00	120.0
2012-63	9/11/2012	12:17	S14_11-14_370	OB	0.11	102.0	0.67	105.0	<0.08	<109.0	0.23	102.0	10.00	120.0
2012-64	13/11/2012	12:13	S11_17-18_302	IB	<0.08	<109.0	0.13	115.0	<0.08	<109.0	<0.08	<109.0	10.00	120.0
2012-65	14/11/2012	12:26	S13_15-18_370	OB	0.13	106.0	<0.08	<109.0	0.29	99.5	0.28	104.0	10.00	120.0
2012-66	14/11/2012	12:26	S14_12_385	OB	0.13	106.0	<0.08	<109.0	0.29	99.5	0.28	104.0	10.00	120.0
2012-67	19/11/2012	10:17	S13_14-16_370	OB	0.08	103.0	0.68	102.0	0.20	102.0	0.13	107.0	10.00	120.0
2012-68	22/11/2012	12:13	S13_17-21_370	OB	0.14	99.0	0.71	100.2	0.26	99.5	0.23	105.0	10.00	120.0
2012-69	30/11/2012	12:28	S11_12-17_Fcoal east + Gcoal PS pt1	TSB	0.22	102.0	0.83	111.9	0.62	111.0	0.43	106.0	10.00	120.0
TOTALS	**NOVEMBER**	**# BLAST**	**9**	**AVERAGE**	**0.14**	**103.0**	**0.64**	**105.3**	**0.32**	**101.8**	**0.23**	**103.9**	**5.00**	**115.0**
TOTALS	**NOVEMBER**	**# BLAST**	**9**	**HIGHEST**	**0.22**	**106.0**	**0.93**	**115.0**	**0.62**	**111.0**	**0.43**	**107.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**55**	**AVERAGE**	**0.22**	**105.5**	**0.90**	**101.7**	**0.39**	**100.2**	**0.23**	**105.3**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**55**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS DECEMBER 2012									
					Glenala R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					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)
2012-70	5/12/2012	9:06	S12_11_Decoal	IB	<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	10.00	120.0
2012-71	7/12/2012	12:17	S11_12-17_Fcoal west + S11 G coal PS pt2	IB	0.33	103.0	0.87	99.5	0.61	97.5	0.44	102.0	10.00	120.0
2012-72	12/12/2012	12:35	S12_18_Ccoal pt1	IB	0.13	104.0	0.66	103.0	0.35	82.9	0.66	102.1	10.00	120.0
2012-73	12/12/2012	12:35	S14_19-21_370	OB	0.13	104.0	0.66	103.0	0.35	82.9	0.66	102.1	10.00	120.0
2012-74	14/12/2012	12:21	S14_7_Decoal UG collapse	TSB	<0.08	<109.0	0.43	96.3	<0.08	<109.0	0.57	106.3	10.00	120.0
2012-75	21/12/2012	12:35	S12_5-7_310 TSB26	TSB	0.24	101.0	<0.08	<109.0	<0.08	<109.0	0.32	99.5	10.00	120.0
TOTALS	**DECEMBER**	**# BLAST**	**6**	**AVERAGE**	**0.21**	**103.0**	**0.66**	**100.5**	**0.44**	**87.8**	**0.53**	**102.4**	**5.00**	**115.0**
TOTALS	**DECEMBER**	**# BLAST**	**6**	**HIGHEST**	**0.33**	**104.0**	**0.87**	**103.0**	**0.61**	**97.5**	**0.66**	**106.3**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**61**	**AVERAGE**	**0.22**	**105.1**	**0.87**	**101.5**	**0.39**	**98.6**	**0.27**	**104.9**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**61**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS JANUARY 2013									
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					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)
	7/01/2013	15:10	S14_22-23_385		<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	10.00	120.0
	8/01/2013	12:33			<0.25	<110.0	1.15	102.6	0.87	101.5	0.41	110.8	10.00	120.0
	11/01/2013		s12_9_11_fcoal		<0.08	<109.0	<0.08	<109.0	0.29	101.5	<0.08	<109.0	10.00	120.0
	17/01/2013		S11_12-17_280 pt2		0.21	108.0	0.79	106.0	0.63	101.5	0.37	108.0	10.00	120.0
	21/01/2013		S12_15-17_Ccoal		<0.08	<109.0	<0.08	<109.0	0.40	94.4	<0.08	<109.0	10.00	120.0
	24/01/2013	13:09	S15_6_385 DEcoal UG collapse		<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	10.00	120.0
	30/01/2013		S12_13-14_Ccoal pt1		0.10	94.0	<0.08	<109.0	<0.08	<109.0	<0.08	<109.0	10.00	120.0
TOTALS	**JANUARY**	**# BLAST**	**7**	**AVERAGE**	**0.16**	**101.0**	**0.97**	**104.3**	**0.55**	**99.7**	**0.39**	**109.4**	**5.00**	**115.0**
TOTALS	**JANUARY**	**# BLAST**	**7**	**HIGHEST**	**0.21**	**108.0**	**1.15**	**106.0**	**0.87**	**101.5**	**0.41**	**110.8**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**68**	**AVERAGE**	**0.21**	**105.1**	**0.88**	**101.8**	**0.41**	**98.8**	**0.29**	**105.4**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**68**	**0%**	**0%**	**0%**	**0%**	**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:

ADDRESS/OFFICE:

ACIRL LABORATORY:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

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

SAMPLER NAME:

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	16/11/12	10:30	14.27		0.2										Reservoir.
	MW12	16/11/12	13:20	6.55		0.5										Hazel dene - in the shed.
	MW13	16/11/12	10:45	4.74		0.4										Wadell lane.
	MW13B	16/11/12	11:00	3.28		0.3										Taylors lane - opp. Haysted.
	MW13D	16/11/12	11:15	4.86		0.2										Taylors lane - Windmill
	MW15	16/11/12	12:00	4.26		0.5										Paynes lane - Windmill.
	MW16	16/11/12	12:50	4.81		0.3										* Mountainview - Red Shed.
	MW17A	16/11/12	12:15	3.87		0.5										*83 Wadell lane - in shed.
	MW18A	16/11/12	12:40	3.55		—										[redacted] *82 wadell - lane.
	MW19A	16/11/12	10:40	5.85		0.15										* Lintana - pump.
	MW21A	21/11/12	13:10	6.70		0.3										* Glenaren
	MW22A	16/11/12	13:00	4.59		0.55										*308 Paynes lane - House
	MW22B	16/11/12	13:10	5.02		0.45										*308 Paynes lane - Irrigation.
	MW23A	16/11/12	11:25	3.70		0.2										Pegg Easy - Horse yard.
	MW23B	16/11/12	11:50	4.21		0.1										Pegg Easy - Irrigation Paddock
	MW28A	16/11/12	13:40	10.07		0.25										* Windmill - LHS (Woodlawn)
	MW28B	16/11/12	13:45	—		0.8	TAP - Pump over bore			no S.W.L.						* House RHS (Woodlawn) Paddock

SPECIAL COMMENTS: M

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WO - 5411

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

ADDRESS/OFFICE:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

SAMPLER NAME: B Phillips / C Elborne.

SITE: WERRIS CREEK MINE AND SURROUNDS

QUOTATION No:

ACIRL LABORATORY:

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

Bottles (6 Monthly ONLY)- 1L Natural,Nutrients,TPH

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments			
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour				
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C							
	MW1	24/1/13	10:10	53.82		0.25										6 Monthly		Hillview	
	MW2	24/1/13	10:20	26.14		0.15										6 Monthly		Railway view	
	MW3	25/1/13	11:00	15.68		0.95										6 Monthly		Euroundarie	
	MW4	25/1/13	11:50	0.40		—										6 Monthly		(Stick-up Broken)	
	MW4B	25/1/13	11:40	11.12		0.7										6 Monthly		Mine.	
	MW5	25/1/13	11:20	8.76		1.15										6 Monthly		Mine.	
	MW5B	25/1/13	11:30	8.32		0.7												Mine.	
	MW6	24/1/13	10:40	12.41												6 Monthly		1111 W/k Rd.	
	MW9	25/1/13	10:40	15.54															
	MW10	24/1/13	9:45	17.60		0.2												Escot lane	
	MW11	—						"Pipe over bore - no access to dip"											
	MW14	25/1/13	10:30	17.05		0.95												mine - load out	
	MW14B	25/1/13	10:20	16.82		0.75												Mine- " "	
	MW17B	24/1/13	12:30	11.89				(Windmill running)										Wadell In. - Windmill	
-	MW20	24/1/13	9:00	19.41		0.55												* Tansley Park. - Shed.	
	MW24A	24/1/13	14:10	13.49		0.45												* Maratgo.	
-	MW25A	24/1/13		—				"No access pump over bore"											
-	MW25B	24/1/13		—															
	P1	25/1/13	10:50	31.95		0.9												Mine.	
	P2	—						"Now under overburden."										Mine.	
	PUG							"Andrew to monitor"											
	MW27	24/1/13	9:55	40.75		0.45												Cintra - Escot In.	
	MW29	24/1/13	14:20	16.50		0.35						(Windmill pumping.)						Xyanna - Windmill	
	MW31	24/1/13	14:00		Dry													Tulavera * Windmill no fan	

SPECIAL COMMENTS: M

Sheet: of

Paracon VHF 25

WO # 5066

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:	Bottles (6 Monthly ONLY)- 1L Natural,Nutrients,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							
	MW1	21/11/12	12:35	53.26		-										6 Monthly	Hillview		
	MW2	21/11/12	12:20	25.68		0.15										6 Monthly	Railwayview.		
	MW3	21/11/12	11:10	15.59		0.95										6 Monthly	Eumdaree		
	MW4	21/11/12	12:05	"Dry"		—				"Dry or blockage ~8m down."						6 Monthly	mine - front	* stick up broken.	
	MW4B	21/11/12	11:55	10.88		0.7										6 Monthly	mine. - front		
	MW5	21/11/12	11:25	8.75		1.15										6 Monthly			
	MW5B	21/11/12	11:40	8.30		0.7													
	MW6	21/11/12	12:45	12.23												6 Monthly	1111 W/C Rd.		
	MW9	21/11/12	10:30	15.43		1.05										Mine - rail outload			
	MW10	21/11/12	9:30	17.96		0.2										Escot. lane.			
	MW11	"		—						"No point to dip - Pump over bore."						Escot lane Gap.			
	MW14	21/11/12	10:20	16.75		0.95										Mine - rail outload			
	MW14B	21/11/12	10:10	16.52		0.75										Mine. - ✓ ✓			
	MW17B	16/11/12	12:25	9.98												"Windmill down roadside.			
	MW20	21/11/12	9:15	19.19		0.55										"Tonsley Park - shed.			
	MW24A	21/11/12	13:30	13.12		0.15										Marengo. - In kennels			
	MW25A	21/11/12		—						"No access" pump over bore.									
	MW25B	21/11/12		—															
	P1	21/11/12	10:50	31.47		0.9										Mine.			
	P2	—								"Now under overburden"						—			
	PUG	—								"Andrew Wright monitoring"									
	MW27	21/11/12	9:45	40.52		0.45										Cintra - Escot lane			
	MW29	16/11/12	1420	16.89		0.35										Kyaoma - Windmill LHS front paddock			
	MW31	16/11/12	14:00	Dry						(about 8.5m down.)						Talawena * Windmill no fans.			

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: B Phillips	WO - 5411
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	24/1/13	13:20	15.05		0.2										* Roseneath.
	MW12	24/1/13	13:10	8.61		0.5										* Hazeldene
	MW13	24/1/13	11:50	4.98		0.4										Wadell In. - Well
	MW13B	24/1/13	11:40	3.49		0.3										Taylors Lane - opp. Haysled.
	MW13D	24/1/13	11:30	5.06		0.2										Taylors lane - Windmill
	MW15	24/1/13	12:00	4.47		0.5										Paynes lane - Windmill
	MW16	24/1/13	12:40	5.05		0.3										Montain View. - Shed.
	MW17A	24/1/13	12:10	4.15		0.5										85 Wadell In.
	MW18A	24/1/13	12:20	3.94		—										82 wadell In.
	MW19A	24/1/13	13:30	6.07		0.15										Liatona - pump.
	MW21A	24/1/13	11:00	7.09		0.3										* Glenara
	MW22A	24/1/13	13:00	5.18		0.55										308 Paynes - House
	MW22B	24/1/13	12:50	5.30		0.45										308 Paynes - Irrigation.
-	MW23A	24/1/13	11:10	3.85		0.2										* Peg Easy - Horse yard
-	MW23B	24/1/13	11:20	4.37		0.1										* Peg Easy - Irrigation
	MW28A	24/1/13	13:45	11.20		0.25										* Woodlands - Windmill LHS
	MW28B	24/1/13	—	—		0.8				Pump over bore			no SWL.			* Woodlands — RHS Paddock

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1228368**	Page	: 1 of 7
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 5136		
C-O-C number	: ----	Date Samples Received	: 30-NOV-2012
Sampler	: C.E	Issue Date	: 06-DEC-2012
Site	: ----		
		No. of samples received	: 13
Quote number	: ----	No. of samples analysed	: 13

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
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic 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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **EK067G: LOR raised for Total P analysis on sample ID:VWD2 due to sample amtrix.**
- **EK071G: It has been noted that Reactive P is greater than Total P on sample ID (SD4), however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB2	SB6	SB9	SB10	SD4
				Client sampling date / time	29-NOV-2012 13:00	29-NOV-2012 12:45	29-NOV-2012 12:15	29-NOV-2012 12:00	29-NOV-2012 13:50
Compound	CAS Number	LOR	Unit		ES1228368-001	ES1228368-002	ES1228368-003	ES1228368-004	ES1228368-005
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		575	582	406	466	319
pH	----	0.01	pH Unit		9.58	8.15	8.79	8.75	8.98
Temperature	----	0.1	°C		29.2	32.4	30.4	31.1	30.2
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		9.08	7.97	8.36	8.31	8.84
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		589	617	418	486	328
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		33	53	20	22	6
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.09	0.01	0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	1.70	0.08	0.03	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	1.79	0.09	0.04	0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.5	1.6	0.7	0.4	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.5	3.4	0.8	0.4	0.9
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.04	0.07	0.02	0.02	0.54
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	0.59
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: SD5	VWD2	BGD	QCU	QCD
				Client sampling date / time: 29-NOV-2012 13:40	29-NOV-2012 12:30	29-NOV-2012 09:50	29-NOV-2012 10:10	29-NOV-2012 10:20
				ES1228368-006	ES1228368-007	ES1228368-008	ES1228368-009	ES1228368-010
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	355	1060	148	448	768
pH	----	0.01	pH Unit	9.53	7.93	8.03	8.11	7.87
Temperature	----	0.1	°C	33.4	26.0	28.8	25.3	24.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.89	8.05	7.42	8.03	7.98
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	362	1120	151	467	815
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	109	6	77	18	<5
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.06	0.05	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	8.55	0.06	0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	8.61	0.11	0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.3	2.4	1.4	0.4	0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.3	11.0	1.5	0.4	0.2
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.18	<0.05	0.87	0.14	0.21
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.79	0.05	0.15
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	WCD	200MLD-NORTH	200MLD-SOUTH	----	----
				Client sampling date / time	29-NOV-2012 09:10	29-NOV-2012 13:15	29-NOV-2012 13:30	----	----
Compound	CAS Number	LOR	Unit		ES1228368-011	ES1228368-012	ES1228368-013	----	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		1170	1040	851	----	----
pH	----	0.01	pH Unit		8.43	8.47	9.12	----	----
Temperature	----	0.1	°C		26.4	29.2	28.1	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.35	8.24	8.75	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1260	1120	894	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		36	218	17	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.06	0.04	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	9.07	1.89	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	9.13	1.93	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	1.9	0.8	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.3	11.0	2.7	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.24	0.06	0.08	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.23	<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	SB2 - 29-NOV-2012 13:00	Clear
AC04: Appearance	SB6 - 29-NOV-2012 12:45	Clear
AC04: Appearance	SB9 - 29-NOV-2012 12:15	Clear
AC04: Appearance	SB10 - 29-NOV-2012 12:00	Clear
AC04: Appearance	SD4 - 29-NOV-2012 13:50	Clear
AC04: Appearance	SD5 - 29-NOV-2012 13:40	Clear
AC04: Appearance	VWD2 - 29-NOV-2012 12:30	Clear
AC04: Appearance	BGD - 29-NOV-2012 09:50	Turbid
AC04: Appearance	QCU - 29-NOV-2012 10:10	Clear
AC04: Appearance	QCD - 29-NOV-2012 10:20	Clear
AC04: Appearance	WCD - 29-NOV-2012 09:10	Clear
AC04: Appearance	200MLD-NORTH - 29-NOV-2012 13:15	Clear
AC04: Appearance	200MLD-SOUTH - 29-NOV-2012 13:30	Clear
AC04: Odour	SB2 - 29-NOV-2012 13:00	Nil
AC04: Odour	SB6 - 29-NOV-2012 12:45	Nil
AC04: Odour	SB9 - 29-NOV-2012 12:15	Nil
AC04: Odour	SB10 - 29-NOV-2012 12:00	Nil
AC04: Odour	SD4 - 29-NOV-2012 13:50	Nil
AC04: Odour	SD5 - 29-NOV-2012 13:40	Nil
AC04: Odour	VWD2 - 29-NOV-2012 12:30	Nil
AC04: Odour	BGD - 29-NOV-2012 09:50	Nil
AC04: Odour	QCU - 29-NOV-2012 10:10	Nil
AC04: Odour	QCD - 29-NOV-2012 10:20	Nil
AC04: Odour	WCD - 29-NOV-2012 09:10	Nil
AC04: Odour	200MLD-NORTH - 29-NOV-2012 13:15	Nil
AC04: Odour	200MLD-SOUTH - 29-NOV-2012 13:30	Nil
AC04: Colour	SB2 - 29-NOV-2012 13:00	Clear
AC04: Colour	SB6 - 29-NOV-2012 12:45	Grey
AC04: Colour	SB9 - 29-NOV-2012 12:15	Clear
AC04: Colour	SB10 - 29-NOV-2012 12:00	Grey
AC04: Colour	SD4 - 29-NOV-2012 13:50	Clear
AC04: Colour	SD5 - 29-NOV-2012 13:40	Slight Brown
AC04: Colour	VWD2 - 29-NOV-2012 12:30	Clear
AC04: Colour	BGD - 29-NOV-2012 09:50	Brown
AC04: Colour	QCU - 29-NOV-2012 10:10	Clear
AC04: Colour	QCD - 29-NOV-2012 10:20	Clear
AC04: Colour	WCD - 29-NOV-2012 09:10	Clear
AC04: Colour	200MLD-NORTH - 29-NOV-2012 13:15	Slightly Brown
AC04: Colour	200MLD-SOUTH - 29-NOV-2012 13:30	Clear

Sub-Matrix: **WATER**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1230428**	Page	: 1 of 3
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK DISCHARGE SAMPLES	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 5258		
C-O-C number	: ----	Date Samples Received	: 28-DEC-2012
Sampler	: BP	Issue Date	: 07-JAN-2013
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/417/12	No. of samples analysed	: 4

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

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
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic 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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **EK059G: Spike failed for NOx due to matrix interferences (confirmed by re-analysis).**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SB2	SB9	QCD	QCU	----
				Client sampling date / time	24-DEC-2012 09:50	24-DEC-2012 09:50	24-DEC-2012 09:50	24-DEC-2012 10:10	----
Compound	CAS Number	LOR	Unit		ES1230428-001	ES1230428-002	ES1230428-003	ES1230428-004	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		332	154	820	457	----
pH	----	0.01	pH Unit		7.62	7.95	7.64	7.69	----
Temperature	----	0.1	°C		----	----	24.9	24.5	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.99	7.20	8.55	8.36	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		368	166	926	507	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		110	1530	6	102	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.29	0.03	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		5.03	0.61	0.02	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		5.32	0.64	0.02	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		5.1	1.5	0.5	2.2	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		10.4	2.1	0.5	2.2	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.35	0.30	0.14	0.34	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.21	0.01	0.14	<0.01	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1302025**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK DISCHARGE SAMPLES	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 5424		
C-O-C number	: ----	Date Samples Received	: 30-JAN-2013
Sampler	: BP+AW	Issue Date	: 05-FEB-2013
Site	: ----		
		No. of samples received	: 7
Quote number	: SY/417/12	No. of samples analysed	: 7

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

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
Kim Phan	Sample Receipt Clerk	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.

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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.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB9	SB10	QCU	QCD
				Client sampling date / time: 29-JAN-2013 09:15	29-JAN-2013 09:30	29-JAN-2013 09:45	29-JAN-2013 12:20	29-JAN-2013 12:30
				ES1302025-001	ES1302025-002	ES1302025-003	ES1302025-004	ES1302025-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	----	----	----	103	118
pH	----	0.01	pH Unit	----	----	----	7.47	7.68
Temperature	----	0.1	°C	----	----	----	25.4	24.0
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.40	6.88	7.32	6.94	7.02
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	199	169	202	97	112
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	298	198	508	64	182
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.02	0.09	0.02	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	1.17	0.86	0.64	0.50	0.42
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	1.19	0.95	0.66	0.52	0.44
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.0	2.0	1.5	1.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.4	2.0	2.7	2.0	1.8
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.53	0.30	0.46	0.64	0.60
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.50	0.01	0.07	0.51	0.44
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	WCU	WCD	----	----	----
				Client sampling date / time	29-JAN-2013 09:50	29-JAN-2013 10:10	----	----	----
Compound	CAS Number	LOR	Unit		ES1302025-006	ES1302025-007	----	----	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		436	215	----	----	----
pH	----	0.01	pH Unit		8.11	8.19	----	----	----
Temperature	----	0.1	°C		22.9	22.7	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.78	7.34	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		452	210	----	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		<5	202	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.04	0.09	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		2.37	2.64	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		2.41	2.73	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.9	1.9	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.3	4.6	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.21	0.74	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.19	0.62	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	----	----	----

Werris Creek Coal Community Consultative Committee

Twenty Seventh Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 30th June 2013

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting. The feedback from the site tour was positive with the CCC inspecting the rehabilitation, overburden emplacement, eastern lookout in pit, new mine infrastructure area and train load out facility.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Col Stewart (Liverpool Plains Shire Council - Councilor); Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services); Peter Easey (WCC Operations Manager) and Andrew Wright (WCC Environmental Officer and Minute Taker).

Apologies: Geoff Dunn (Community Representative); Jill Coleman (Community Representative) and Roslyn Marr (Community Representative).

2. Declaration of Pecuniary or Other Interests

Noel Taylor declared that his son works for Werris Creek Coal.

3. New Matters for Discussion under General Business

Community Enhancement Fund update and request from Liverpool Plains Shire Council that funds are directed to a fire early warning system at the Werris Creek Railway Museum. Lindsay Bridge wanted to discuss dust issues.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. Minutes of Previous Meeting

Minutes of the previous meeting on the 28th February 2013 were accepted as true and accurate representation of business conducted on that day.

Moved: Noel Taylor. Seconded: Col Stewart. Motion carried.

6. Environmental Monitoring Report: February, March and April 2013

Meteorology – February and March were wet months while April was very dry with moderate southerly winds across the three months.

Air Quality – All PM10 and PM2.5 dust results were below or consistent with the annual average for each site and well below the annual average and daily maximum criteria indicating good air quality. Dust gauges at 8 Kurrara St and "Cintra" were the only locations to record a monthly result above 4.0g/m^2/month. The elevated February and April results for 8 Kurrara St were likely to have been contaminated with dust from another source other than mining as the two other Werris Creek dust gauges both recorded results less than 1g/m^2/month for the same period. The elevated April result for "Cintra" is likely to be due to mining operations as the MIA (Mine Infrastructure Area) Dam construction site was less than 1km from the "Cintra" dust gauge assisted by the southerly winds. The Quirindi rail line dust deposition levels are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month). There were two dust complaints received during this period from Werris Creek residents on the 3rd and 28th April 2013 related to seeing dust clouds in the mornings over the top of the WCC mine site. A review of weather conditions identified that temperature inversions and low wind speeds were present on both mornings that resulted in dust emissions being trapped underneath the inversion layer. The inversion does not allow the dust to disperse but concentrates the dust and combined with the low light conditions, makes the dust cloud visible when under normal weather conditions it would not be present. The real time PM10 dust levels in Werris Creek were less than 30µg/m^3 good air quality threshold; demonstrating that this is a localized event not impacting on Werris Creek township.

Noise – There were no noise exceedances during February, March and April 2013. The last recorded noise exceedance was over two years ago in October 2010. There were three noise complaints during the period; two related to open cut operations and one related to train noise. The noise complaints related to open cut mining operations were actively monitored in real time by the Noise Control Operator managing noise levels and suspending activities as required. Investigation into the complaints found that on each occasion the mine was in compliance. The train noise complaint was about activities in the Werris Creek rail yard and is unrelated to WCC operations.

Blasting – During the period a total of 22 blasts were fired. 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 eleven blast complaints during the period from three separate blast events. The blast on 8th April 2013 resulted in two complaints and the blast on 11th April 2013 resulted in three complaints, all from Werris Creek residents due to shots being fired in the G Coal Interburden. While the blast results were in compliance, the G Coal Interburden blast was fired in one shot the full 45m thickness. The blasting contractor could not identify what had caused the complaints so Whitehaven Coal engaged an independent blasting expert to review G Coal Interburden blast designs and identify the cause of complaints. The blast on 8th February 2013 resulted in six complaints from Werris Creek residents. While the blast results were in compliance, an investigation identified improvements to be made to the blasting process.

Groundwater – The groundwater quality indicates a freshening of aquifers due to heavy rain events from Christmas to the end of February 2013. The majority of groundwater bore water levels increased also as a result of the heavy rain events.

Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

Surface Water Discharges – There were five wet weather dirty water discharges during the period. Although the Total Suspended Solids (sediment) levels were greater than 50mg/L; all dirty water discharge results were in compliance with WCC's Environmental Protection Licence 12290 because the 5 day rainfall total exceeded 39.2mm and 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 eleven complaints related to blasting; three complaints relating to noise and two complaints related to dust. There were thirteen different complainants during the period with fourteen complaints from Werris Creek residents and two complaints from Quipolly residents.

Motion moved to accept the Environmental Monitoring Report for February, March and April 2013.

Moved: Col Stewart. Seconded: Lindsay Bridge. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Werris Creek Skate Park has been constructed and the official opening was on 6th June 2013. The installation of new lift at Werris Creek Rail Museum is planned for the coming months.

A letter from Liverpool Plains Shire Council dated 28th May 2013 requested Whitehaven Coal and the WCC CCC to approve the $30,000 of unallocated funds for a fire early warning system at the Werris Creek Railway Museum in 2013. The fire early warning system is required to allow the public access to the second storey of the museum when the lift is operational. Whitehaven Coal management has agreed to the request pending the WCC CCC approval.

Motion moved to approve funding from the CEF for a fire early warning system $30,000 in 2013.

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

b. Perceived Increase in Dust Emissions

Lindsay Bridge raised concerns from various community members regarding the increase in dust in the area generally believed to be as a result of WCC. Lindsay Bridge was going to see if a meeting between a concerned resident (Glenn Wilson) and WCC could be arranged.

Meeting Closed 12:00pm.

Next Meeting scheduled for Thursday 29th August 2013.

Copy to:

Gae Swain	Independent Chairperson
Jill Coleman	Community Representative
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Roslyn Marr	Community Representative
Geoff Dunn	Community Representative

Ron Van Katwyk	LPSC	Peter Easey	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Stephen O'Donoghue	DoPI	Andrew Wright	Werris Creek Coal
Simon Lund	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

February, March and April 2013

This Environmental Monitoring Report covers the period 1st February 2013 to 30th April 2013 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: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

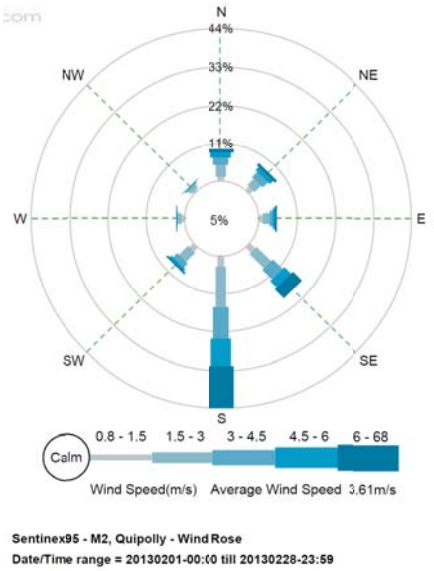
1.0 METEOROLOGY

1.1 WEATHER STATION

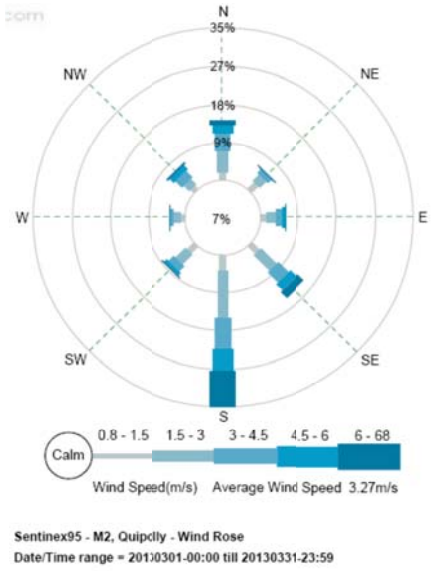
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and wind data is presented below in windroses. February and March were wet months while April was very dry with moderate southerly winds across the three months.

Month	Quipolly Temp (°C)			Werris Creek Temp (°C)			WCC Temp (°C) 10m			Lapse Rate (°C/100m)		Rainfall (mm)			
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Quip	WC	Annual*
February 2013	10.0	21.4	31.9	12.1	22.1	31.7	12.4	21.8	31.9	-0.3	+5.4	148.2	99.0	83.0	722.0
March 2013	6.3	20.2	30.6	10.7	21.2	30.7	12.0	21.3	30.3	+0.8	+6.4	63.8	89.6	45.4	785.8
April 2013	0.7	15.0	27.6	5.1	17.5	27.3	8.1	17.9	26.5	+2.5	+9.4	0.8	0.4	1.8	0.8

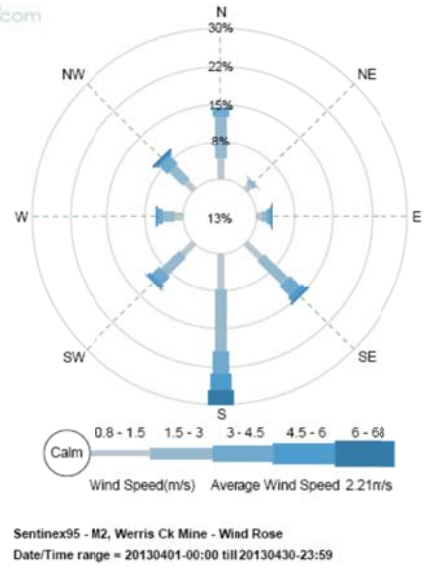
* Annual cumulative total since April 2012 to March 2013 from a composite data set based on the onsite Weather Station at WCC.



February 2013



March 2013



April 2013

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10)

WCC operates five High Volume Air Sampler (HVAS) monitors to measure particulate matter less than 10 micron (PM10) and total suspended particulate (TSP) matter at the 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.

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.

Monitor Location	February 2013(µg/m^3)	March 2013 (µg/m^3)	2012-2013 Average (µg/m^3)	April 2013 (µg/m^3)	Criteria (µg/m^3)	
					Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	4.7	5.4	7.3	6.2	8	25
PM10 – TEOM92 "Werris Creek"	8.3	10.3	13.0	12.3	30	50
PM10 – HVP20 "Tonsley Park"	8.7	9.0	13.8	14.6	30	50
PM10 - HVP4/HVP1 "Eurunderee"/"Escott"	6.0	9.4	12.0	8.7	30	50
PM10 – HVP20 "Glenara"	12.2	8.0	13.3	17.8	30	50
PM10 – HVP98 "Kyooma"	5.7	7.4	11.7	7.2	30	50
TSP – HVT98 "Kyooma"	11.0	17.4	23.6	12.5	90	-

2.1.2 Discussion - Compliance / Non Compliance

All PM10 and PM2.5 dust results were below or consistent with the annual average for each site and well below the annual average criteria indicating good air quality. There were no exceedances of the daily maximum criteria recorded for 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).

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 2013 (g/m^2/month)	March 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	April 2013 (g/m^2/month)	Annual Criteria (g/m^2/month)
"Cintra"	1.9	1.1	1.5	**4.1**	4.0
"Railway View"	0.6	0.3	1.4	0.7	4.0
"Tonsley Park"	0.9	0.4	1.0	1.2	4.0
"Plain View"	1.5	1.2	1.8	2.6	4.0
"Marengo"	1.0	0.2	0.8	*1.4	4.0
"Mountain View"	1.2	0.4	1.5	0.7	4.0
"Glenara"	0.3	0.5	1.9	0.2	4.0
"Hazeldene"	0.8	0.4	0.8	0.8	4.0
"Woodlands"	0.6	*0.5	1.6	0.8	4.0
"Talavera"	0.7	*0.4	0.8	0.7	4.0
"Kyooma"	0.3	*0.4	1.1	0.2	4.0
"Greenslopes"	0.6	*0.4	0.9	0.4	4.0
Werris Creek South	0.6	*0.3	0.6	0.3	4.0
Werris Creek Centre	0.5	*0.2	0.8	0.5	4.0
"Westfall"	1.1	0.3	1.3	1.2	4.0
West Street	*3.2	*0.5	0.9	0.8	4.0
"Escott"	1.6	0.5	0.7	*2.4	4.0
"Eurunderee"	0.2	0.6	0.9	1.1	4.0
8 Kurrara St	c11.9	0.4	1.1	c13.7	4.0
"Villamagna"	0.7	0.4	1.1	0.8	4.0

* - sample contaminated with excessive organic matter (>50%) from non-mining source (i.e. bird droppings and insects) and is excluded from the average; c - indicates sample is contaminated from a Non-Werris Creek Coal dust source and is not counted in the average

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge annual averages were below the annual criteria of 4.0g/m^2/month. Dust gauges at 8 Kurrara St and "Cintra" were the only locations to record a monthly result above 4.0g/m^2/month. The elevated February and April results for 8 Kurrara St were likely to have been contaminated with dust from another

source other than mining as the two other Werris Creek dust gauges both recorded results less than 1g/m^2/month for the same period. The elevated April result for "Cintra" is likely to be due to mining operations as the MIA (Mine Infrastructure Area) Dam construction site was less than 1km from the "Cintra" dust gauge assisted by the southerly winds. WCC owns the "Cintra" property and therefore the annual criteria does not apply. A number of samples were contaminated with organic matter (>50%) which is not representative of mining dust emissions.

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 2013		March 2013		April 2013		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%	0.3	10%	0.8	15%	1.1
DDW20	0.6	15%	0.2	15%	0.5	15%	0.9
DDW13	1.0	20%	0.7	15%	No Sample	-	1.0
Train Line							
DDE13	0.5	15%	No Sample	-	1.0	15%	0.9
DDE20	0.4	10%	0.4	5%	0.9	15%	1.1
DDE30	1.0	10%	0.2	5%	0.7	5%	1.5

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fall out 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. No sample was collected from DDE13 for March and DDW13 for April as the dust gauge bottle was found broken.

2.4 AIR QUALITY COMPLAINTS

There were two dust complaints received during this period from Werris Creek residents. Both dust complaints from the 3rd and 28th April 2013 were related to seeing dust clouds in the mornings over the top of the WCC mine site. A review of weather conditions identified that temperature inversions and low wind speeds were present on both mornings that resulted in dust emissions being trapped underneath the inversion layer. The inversion does not allow the dust to disperse but concentrates the dust and combined with the low light conditions, makes the dust cloud visible when under normal weather conditions it would not be present. The real time PM10 dust levels in Werris Creek were less than 30µg/m^3 good air quality threshold; demonstrating that this is a localized event not impacting on Werris Creek township. Specific actions taken in relation to each of these complaints are outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 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 - “Tonsley Park” (private agreement) R20;
- 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.

Wednesday 6th February 2013

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	34	37
B2	**West Quipolly** R9 & R22	Inaudible#	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible	39	Inaudible#	39
D	**“Hazeldene”** R24	Inaudible #	37	Inaudible#	37
E	**“Railway Cottage”** R12	Inaudible#	38	Barely audible	38
F	**“Talavera”** R96	Inaudible	38	Inaudible#	37
G	R97	Inaudible #	35	20#	35
H	**“Kyooma”** R98*	Barely audible#	36	23#	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
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Wednesday 27th March 2013

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
B1	**West Quipolly** R7, R8*	Inaudible	37	25	37
B2	**West Quipolly** R9 & R22	22	37/36[1]	25	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible	39	32	39
D	**“Hazeldene”** R24	Inaudible	37	25	37
E	**“Railway Cottage”** R12	Inaudible	38	20#	38
F	**“Talavera”** R96	15	38	30	37
G	R97	20	35	17	35
H	**“Kyooma”** R98*	20	36	15	36
I	**Kurrara St, WC**	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	32	35
K	**South St, WC** R20*, R21*	Inaudible	39	32	37
L	**West St, WC** R103	Inaudible	35	Inaudible	35
Rail Spur		Not Monitored			35
		Not Monitored			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 23rd April 2013

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
B1	**West Quipolly** (R7, R8*)	Inaudible	37	32	37
B2	**West Quipolly** (R9 & R22)	20	37/36[1]	25	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Barely audible	39	Inaudible	39
D	**"Hazeldene"** R24	Barely audible	37	Inaudible	37
E	**"Railway Cottage"** R12	Inaudible#	38	20	38
F	**"Talavera"** R96	25	38	26	37
G	R97	15#	35	34	35
H	**"Kyooma"** R98*	26	36	34	36
I	**Kurrara St, WC**	Inaudible#	35	32	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible	35
K	**South St, WC** (R20*, R21*)	Inaudible	39	32	37
L	**West St, WC** (R103)	Inaudible	35	32	35
Rail Spur		Not Monitored			35
		Not Monitored			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 February, March and April 2013. The last recorded noise exceedance was over two years ago in October 2010.

3.2 NOISE COMPLAINTS

There were three noise complaints during the period; two related to open cut operations and one related to train noise. The noise complaints related to open cut mining operations were actively monitored in real time by the Noise Control Operator managing noise levels and suspending activities as required. Investigation into the complaints found that on each occasion the mine was in compliance. The train noise complaint was about activities in the Werris Creek rail yard and is unrelated to WCC operations. Specific actions taken in relation to each of these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at "Glenara", "Talavera", "Werris Creek" and "Tonsley Park" during the period. 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). During the period a total of 22 blasts were fired by the blasting contractor, Orica Mining Services.

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 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.25	<109.8	1.40	105.8	0.44	101.8	<0.25	<109.8
Monthly Maximum	<0.25	<109.8	1.83	106.6	0.58	103.0	<0.25	<109.8
Annual Average	0.21	104.5	0.93	102.2	0.41	99.1	0.29	105.4
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	0/7		4/7		3/7		0/7	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

March 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.25	<109.8	0.64	102.3	0.45	106.8	0.52	104.2
Monthly Maximum	<0.25	<109.8	0.98	113.9	0.69	109*.3	0.55	107.5
Annual Average	0.21	104.5	0.91	102.2	0.42	99.8	0.31	105.3

March 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	0/7		7/7		3/7		2/7	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

April 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.26	102.4	0.89	102.6	0.66	103.9	<0.25	<109.8
Monthly Maximum	0.38	109.7	1.45	108.9	1.19	108.3	<0.25	<109.8
Annual Average	0.26	102.4	0.89	102.6	0.66	103.9	<0.25	<109.8
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	2/8		6/8		4/8		0/8	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria; Yellow – 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. One blast on the 8th April exceeded the Werris Creek target of 1mm/s and also resulted in 2 complaints. In total there were five G Coal interburden blast related complaints with an independent blasting consultant working with Orica to review the design of these blasts.

4.2 BLAST COMPLAINTS

There were eleven blast complaints during the period from three separate blast events. The blast on 8th February 2013 resulted in six complaints from Werris Creek residents. While the blast results were in compliance, an investigation identified improvements to be made to the blasting process. The blast on 8th April 2013 resulted in two complaints from Werris Creek residents. While the blast results were in compliance, the Werris Creek monitor recorded a blast vibration greater than 1mm/s because instead of splitting the shot into two horizons, the G Coal Interburden blast was fired in one shot the full 45m thickness. The blast on 11th February 2013 resulted in three complaints from Werris Creek residents. While the blast results were in compliance, the blasting contractor could not identify what had caused the complaints so Whitehaven Coal engaged an independent blasting expert to review G Coal Interburden blast designs and identify improvements. 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 two surface water discharge events during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 35 groundwater bores and piezometers in the key aquifers surrounding the mine including Werris Basalt (near to WCC and further afield) and Quipolly Creek Alluvium. Bi-monthly groundwater level monitoring and groundwater quality monitoring was completed on 25th and 26th March 2013.

5.1.1 Monitoring Data Results

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

Site	Level		pH		EC		Comments
Werrie Basalt – Near WCC Mine							
MW1	54.10	-1%	7.22	-4%	1220	-4%	"Hillview" likely to be affected by mine advancement
MW2	25.42	3%	7.62	-4%	848	-4%	
MW3	15.13	4%	7.15	-3%	245	-1280%	False EC reading due to fresh water in bore. Retest
MW4B	10.39	7%	7.77	-2%	1020	0%	
MW5	7.69	14%	7.64	-1%	2390	1%	
MW5B	7.28	14%					
MW6	12.47	0%	7.43	-4%	1870	-3%	
MW27	41.43	-3%					"Cintra" likely to be affected by mine advancement
Werrie Basalt							
MW8	14.1	7%					
MW9	15.47	0%					
MW10	17.21	2%					
MW14	16.71	2%					
MW14B	16.47	2%					
MW17B	9.53	5%					
MW19A	6.89	-12%					Retest found level 6.03m. OK
MW20	19.39	0%					
Quipolly Alluvium							
MW7	4.20	2%					
MW7B	4.25	3%					
MW12	7.03	22%					
MW13	4.40	13%					
MW13B	3.11	12%					
MW13D	4.37	16%					
MW15	3.92	14%					
MW16	4.37	16%					
MW17A	3.49	19%					
MW18A	3.30	19%					
MW21A	6.32	12%					
MW22A	4.46	16%					
MW22B	4.63	14%					
MW23A	3.47	11%					
MW23B	4.04	8%					
MW28A	8.97	11%					
MW32	3.67	8%					

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is 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 groundwater quality indicates a freshening of aquifers due to heavy rain events from Christmas to the end of February 2013. The majority of groundwater bore water levels increased also as a result of the heavy rain events.

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 12th March 2013.

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	7.64	399	24	<5	pH decreased 1.44, EC decreased 190, TSS decreased 9, O&G no change.
SB9	7.53	236	327	<5	pH decreased 0.83, EC decreased 182, TSS increased 274, O&G no change.
SB10	7.64	195	168	<5	pH decreased 0.67, EC decreased 291, TSS increased 146, O&G no change.
OFFSITE					
QCU	7.39	467	<5	<5	pH decreased 0.64, EC no change, TSS decreased 13, O&G no change.
QCD	7.77	768	16	<5	pH decreased 0.21, EC decreased 47, TSS increased 11, O&G no change.
WCU	8.06	868	8	<5	Previously dry.
WCD	8.31	1030	24	<5	pH decreased 0.04, EC decreased 230, TSS decreased 12, 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

All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were two wet weather 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
25/02/2013	**SB2**	7.97	281	62	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	116.4
25/02/2013	**SB9**	7.28	158	82	<5	Compliant – TSS OK because Rainfall >39.2mm	Wet Weather	116.4
Criteria		**8.5**	**N/A**	**50**	**10**			

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water; Yellow – indicates results outside criteria due to 5 day rain >39.2mm.

5.3.2 Discussion - Compliance / Non Compliance

Although the Total Suspended Solids (sediment) levels were greater than 50mg/L; all dirty water discharge results were in compliance with WCC's Environmental Protection Licence 12290 because the 5 day rainfall total exceeded 39.2mm and 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 no noise complaints during the period.

6.0 COMPLAINTS SUMMARY

There were sixteen complaints received during the period with the details summarised below. There were eleven complaints related to blasting; three complaints relating to noise and two complaints related to dust. There were thirteen different complainants during the period with fourteen complaints from Werris Creek residents and two complaints from Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
271 to 276	08/02/2013 1:17pm	Various Werris Creek	The complainants allege that the blast on 08/02/13 shook their homes and rattled objects inside.	WCC shot #9-2013 (S16_2-4_385) performed as expected and all community monitoring location in compliance. Investigation did not identify a reason for the blast causing the complaints but did identify actions to improve processes and procedures around blast design.	A written response provided to the complainants. Property investigation by structural engineer organised for one complaint of alleged property damage.
277	21/02/2013 11:09am	C Werris Creek	Complainant stated that the mine noise was high (loud) at 11pm on 20/02/13.	Noise levels and audio from Werris Creek noise monitor demonstrate that rail noise is major component of elevated noise levels. WCC mine noise very infrequently audible and in compliance.	A written response provided to the complainant.
278	27/02/2013 11:50pm	L Quipolly	Complainant stated that the mine noise was “ridiculous” at midnight on 27/02/13 and questioned why the mine noise was louder than it had been for some time.	Noise levels and audio from Quipolly noise monitor demonstrate that there were no elevated noise levels and mining noise was in compliance with the criteria. OCE not required to change mining operations.	A written response provided to the complainant.
279	03/04/2013 10:51am	Y Werris Creek	Big dust cloud sitting over the top of the coal mine on Wednesday 3rd April 2013 morning.	Inversion present trapping dust emissions. Werris Creek real time PM10 dust levels <30µg/m3 and in compliance.	Written response provided to complainant.
280-281	08/04/2013 Various	Various Werris Creek	Blast caused significant ground movement and shaking houses.	WCC shot #23-2013 (S11_6-10_Gcoal) was fired at 12:12pm on Monday 8th April 2013 was in compliance. Blast in bottom of pit previously caused complaints.	Written response provided to complainant. Visited complainant during next blast event.
282-284	11/04/2013 Various	Various Werris Creek	Blast caused significant ground movement and shaking houses.	WCC shot #24-2013 (S11_12-17_Gcoal) was fired at 1:17pm on Thursday 11th April 2013 was in compliance. Blast in bottom of pit previously caused complaints. Orica could not identify cause of complaints.	Written response provided to complainant. Independent blast consultant engaged to review Orica blast designs for G Coal interburden.
285	19/04/2013 11:39am	EPA/Anonymous Werris Creek	Noise from coal train shunting on Thursday 18th April 2013 between 20:00 hrs and 03:00 hrs.	Wind direction not towards Werris Creek so TLO noise would not be propagated or enhanced.	Written response provided to EPA.
286	28/04/2013 9:15am	Z Quipolly	Mine has been dusty since day break.	Inversion present trapping dust emissions. Werris Creek real time PM10 dust levels <15µg/m3 and in compliance.	Written response provided to EPA.

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.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2012-2013

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 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
02-Apr-12				22	6.2		19	7.5	19.0	29	12.2	28.6	18	8.2	17.6	18	8.2	17.6	66	22.0	66.4	50	30	90
08-Apr-12				12	**15.9**	15.9	16	**15.3**	17.6	23.2	**22.6**	25.9	20	**15.1**	18.8	20	**15.1**	18.8	53	**55.3**	59.6	50	30	90
14-Apr-12				6	17.2		8	17.4	14.2	12	24.8	21.3	8	16.0	15.3	8	16.0	15.3	22	59.6	47.0	50	30	90
20-Apr-12				23	23.0		19	19.0	15.3	26	28.6	22.6	14	20.0	15.1	14	20.0	15.1	80	79.9	55.3	50	30	90
26-Apr-12				12			13		14.9	17		21.5	13		14.7	13		14.7	54		55.0	50	30	90
02-May-12				11	11.4		13	12.6	14.5	8	8.4	19.4	14	11.8	14.6	14	11.8	14.6	27.5	27.5	50.4	50	30	90
08-May-12				26	**15.3**	15.6	20	**17.9**	15.3	49	**19.9**	23.6	18	**14.2**	15.0	18	**14.2**	15.0	114	**51.3**	59.5	50	30	90
14-May-12				15	12.4		27	17.1	16.7	12	12.8	22.2	15	14.0	15.0	15	14.0	15.0	33	33.0	56.2	50	30	90
20-May-12				12	25.8		17	26.7	16.8	13	48.8	21.1	12	17.7	14.6	12	17.7	14.6	28	114.0	53.0	50	30	90
26-May-12				4			5		15.6	4		19.4	3		13.5	3		13.5	6		48.3	50	30	90
01-Jun-12				19			12		15.2	8		18.4	4		12.6	4		12.6	20		45.7	50	30	90
07-Jun-12				12	3.7		7	4.8	14.5	3	3.3	17.1	3	3.2	11.8	3	3.2	11.8	7	5.5	42.5	50	30	90
13-Jun-12				11	**12.1**	14.4	9	**9.4**	14.1	5	**10.8**	16.2	6	**7.0**	11.4	6	**7.0**	11.4	16	**24.5**	40.5	50	30	90
19-Jun-12				10	11.8		9	9.1	13.7	13	6.6	16.0	8	5.2	11.2	8	5.2	11.2	31	18.3	39.8	50	30	90
25-Jun-12				17	18.7		15	15.4	13.8	31	31.2	17.0	17	17.4	11.6	17	17.4	11.6	67	66.6	41.6	50	30	90
01-Jul-12				10			9		13.5	4		16.2	5		11.2	5		11.2	7		39.5	50	30	90
07-Jul-12				8	6.3		8	6.3	13.2	5	3.0	15.5	7	4.8	10.9	14	5.2	11.4	5	4.8	37.5	50	30	90
13-Jul-12				8	**8.6**	13.0	8	**8.5**	12.9	5	**4.5**	14.9	5	**6.6**	10.6	6	**8.4**	11.0	5	**6.1**	35.6	50	30	90
19-Jul-12				11	8.3		11	8.3	12.8	6	4.5	14.4	5	5.2	10.3	9	7.9	10.9	8	5.2	34.2	50	30	90
25-Jul-12				6	10.7		6	10.7	12.5	3	5.8	13.9	10	10.4	10.3	8	14.2	10.8	5	8.2	32.7	50	30	90
31-Jul-12				17			18		12.8	11		13.7	15		10.5	16		11.0	15		31.9	50	30	90
06-Aug-12				10	7.1		10	7.1	12.6	6	5.3	13.4	7	4.8	10.4	9	8.6	10.9	13	10.7	31.0	50	30	90
12-Aug-12				9	**10.4**	12.5	10	**10.9**	12.5	10	**8.6**	13.2	9	**9.6**	10.3	11	**12.0**	10.9	15	**13.9**	30.3	50	30	90
18-Aug-12				7	9.0		7	9.8	12.3	5	10.1	12.9	5	9.0	10.1	11	10.8	10.9	11	14.6	29.5	50	30	90
24-Aug-12				9	17.0		10	17.8	12.2	11	10.6	12.8	12	15.0	10.2	14	16.3	11.0	16	16.3	29.0	50	30	90
30-Aug-12							17		12.4	20		13.1	15		10.4	19		11.3	30		29.0	50	30	90
05-Sep-12		3.1			7.3		23	10.8	12.8	19	10.8	13.3	30	6.9	11.1	29	9.1	12.0	30	17.3	29.1	50	30	90
11-Sep-12		**8.9**	8.9		**15.3**	13.0	29	**20.5**	13.4	23	**18.0**	13.6	26	**18.8**	11.6	28	**20.5**	12.6	36	**28.5**	29.3	50	30	90
17-Sep-12		8.1			14.6		22	21.9	13.6	17	19.1	13.8	16	16.4	11.8	17	19.2	12.7	29	30.0	29.3	50	30	90
23-Sep-12		16.4			26.5		11	29.2	13.6	11	23.1	13.7	7	29.8	11.6	9	29.2	12.6	17	35.8	28.9	50	30	90
29-Sep-12							14		13.6	8		13.5	15		11.7	13		12.6	16		28.5	50	30	90
05-Oct-12		2.3			4.6		17	7.3	13.7	12	5.6	13.5	19	11.2	11.9	20	9.7	12.9	21	14.4	28.2	50	30	90
11-Oct-12		**10.7**	9.8		**18.1**	13.7	7	**14.6**	13.5	6	**11.6**	13.2	11	**15.7**	11.9	10	**15.8**	12.8	14	**23.2**	27.8	50	30	90
17-Oct-12		10.1			17.7		22	14.4	13.8	23	9.1	13.5	18	15.3	12.1	25	13.2	13.1	47	17.8	28.4	50	30	90
23-Oct-12		29.1			41.4		12	22.0	13.7	9	22.6	13.4	15	19.2	12.2	11	24.9	13.1	18	46.9	28.1	50	30	90
29-Oct-12							27		14.1	19		13.5	16		12.3	15		13.1	28		28.1	50	30	90
04-Nov-12		0.0			2.7		23	8.9	14.3	19	5.7	13.7	23	8.7	12.6	25	7.7	13.4	27	10.4	28.0	50	30	90
10-Nov-12		**6.8**	8.8		**14.3**	13.8	9	**24.1**	14.2	6	**15.3**	13.4	9	**21.7**	12.5	8	**18.5**	13.3	10	**24.0**	27.6	50	30	90
16-Nov-12		6.6			14.2		25	25.1	14.5	13	18.6	13.4	27	23.3	12.9	20	20.3	13.4	24	26.9	27.5	50	30	90
22-Nov-12		20.5			33.8		36	36.0	15.0	21	20.5	13.6	33	33.0	13.4	26	25.6	13.7	32	31.7	27.6	50	30	90
28-Nov-12							11		14.9	13		13.6	14		13.4	20		13.9	15		27.3	50	30	90
04-Dec-12		0.8			2.3		5	4.7	14.7		3.1	13.6	8	5.5	13.3	10	3.2	13.8		8.6	27.3	50	30	90
10-Dec-12		**6.5**	8.2		**13.1**	13.7	15	**9.2**	14.7	3	**7.4**	13.3	6	**8.9**	13.1	3	**13.8**	13.5	10	**13.0**	26.8	50	30	90
16-Dec-12		5.5			13.5		9	9.2	14.5	9	6.9	13.2	9	8.4	13.0	26	9.9	13.8	19	12.4	26.7	50	30	90
22-Dec-12		17.9			28.3		7	14.9	14.4	5	12.6	13.0	8	13.8	12.9	10	26.3	13.7	9	18.7	26.2	50	30	90
28-Dec-12							20		14.5	5		12.9	7		12.8	9		13.6	10		25.9	50	30	90
03-Jan-13		0.0			0.1		13	13.3	14.5	10	4.5	12.8	12	6.7	12.7	16	9.0	13.7	16	9.6	25.7	50	30	90
09-Jan-13		**7.8**	8.1		**14.2**	13.7	30	**21.0**	14.8	23	**10.3**	13.0	22	**11.9**	12.9	34	**16.2**	14.1	41	**19.7**	26.0	50	30	90
15-Jan-13		6.8			13.9			19.9	14.8	6	7.8	12.9	11	11.3	12.9	12	12.3	14.1	17	15.8	25.8	50	30	90
21-Jan-13		23.0			36.1			29.8	14.8	8	22.6	12.8	7	22.3	12.8	10	34.2	14.0	14	41.4	25.6	50	30	90
27-Jan-13							6		14.6	4		12.6	4		12.6	5		13.8	10		25.3	50	30	90
02-Feb-13		2.1			3.6		5	4.8	14.4	3	3.1	12.4	4	3.9	12.4	3	3.2	13.6	6	6.0	24.9	50	30	90
08-Feb-13		**4.7**	7.6		**8.3**	13.2	14	**8.7**	14.4	13	**5.7**	12.4	9	**6.0**	12.4	34	**12.2**	14.0	21	**11.0**	24.8	50	30	90
14-Feb-13		4.4			8.1		12	7.2	14.3	5	4.5	12.2	7	6.0	12.3	9	8.6	13.9	8	9.9	24.5	50	30	90
20-Feb-13		8.4			15.2		7	13.9	14.2	5	12.7	12.1	6	8.7	12.2	10	34.3	13.8	10	21.2	24.2	50	30	90
26-Feb-13							5		14.0	2		11.9			12.2	4		13.6	6		23.9	50	30	90
04-Mar-13							5		13.9	6		11.8	6		12.0	7		13.5	11		23.7	50	30	90
10-Mar-13		1.5			2.7		12	5.1	13.8	6	2.4	11.7	7	5.7	12.0	12	3.7	13.5	13	5.5	23.5	50	30	90
16-Mar-13		**5.4**	7.3		**10.3**	13.0	14	**9.1**	13.8	18	**7.1**	11.8	14	**9.3**	12.0	8	**9.5**	13.4	45	**16.9**	23.8	50	30	90
22-Mar-13		4.5			9.2		9	9.4	13.8	5	5.6	11.7	11	8.9	12.0	9	8.8	13.3	12	12.7	23.6	50	30	90
28-Mar-13		16.9			25.9		10	13.7	13.7	6	17.7	11.6	9	13.5	11.9	17	17.2	13.4	15	44.8	23.5	50	30	90
Min		**0.0**			**0.1**		**4.7**			**2.4**			**3.2**			**3.2**			**4.8**					
Max		**29.1**			**41.4**		**36.0**			**48.8**			**33.0**			**34.3**			**114.0**					
Capture							**97%**			**98%**			**98%**			**100%**			**98%**					

Werris Creek Coal
HVAS TEOM Dust Monitoring
2013-2014

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 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
03-Apr-13		1.8			4.0		18	8.8	17.9	8	3.5	7.9	11	4.8	11.4	12	12.3	12.4	14	7.1	14.4	50	30	90
09-Apr-13		6.2			12.3		16	14.6	16.8	3.5	7.2	5.7	4.8	8.7	8.1	12.3	17.8	12.4	7	12.5	10.8	50	30	90
15-Apr-13		5.9			11.3		16	15.9	16.5	13	6.1	8.2	14	8.2	9.9	31	14.3	18.4	20	11.4	13.8	50	30	90
21-Apr-13		12.7			25.7		9	17.9	14.6	4	13.1	7.2	5	13.5	8.7	16	30.5	17.8	8	20.0	12.5	50	30	90
27-Apr-13									14.6			7.2			8.7			17.8			12.5	50	30	90
03-May-13									14.6			7.2			8.7			17.8			12.5	50	30	90
09-May-13									14.6			7.2			8.7			17.8			12.5	50	30	90
15-May-13									14.6			7.2			8.7			17.8			12.5	50	30	90
21-May-13									14.6			7.2			8.7			17.8			12.5	50	30	90
27-May-13									14.6			7.2			8.7			17.8			12.5	50	30	90
02-Jun-13									14.6			7.2			8.7			17.8			12.5	50	30	90
08-Jun-13									14.6			7.2			8.7			17.8			12.5	50	30	90
14-Jun-13									14.6			7.2			8.7			17.8			12.5	50	30	90
20-Jun-13									14.6			7.2			8.7			17.8			12.5	50	30	90
26-Jun-13									14.6			7.2			8.7			17.8			12.5	50	30	90
02-Jul-13									14.6			7.2			8.7			17.8			12.5	50	30	90
08-Jul-13									14.6			7.2			8.7			17.8			12.5	50	30	90
14-Jul-13									14.6			7.2			8.7			17.8			12.5	50	30	90
20-Jul-13									14.6			7.2			8.7			17.8			12.5	50	30	90
26-Jul-13									14.6			7.2			8.7			17.8			12.5	50	30	90
01-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
07-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
13-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
19-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
25-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
31-Aug-13									14.6			7.2			8.7			17.8			12.5	50	30	90
06-Sep-13									14.6			7.2			8.7			17.8			12.5	50	30	90
12-Sep-13									14.6			7.2			8.7			17.8			12.5	50	30	90
18-Sep-13									14.6			7.2			8.7			17.8			12.5	50	30	90
24-Sep-13									14.6			7.2			8.7			17.8			12.5	50	30	90
30-Sep-13									14.6			7.2			8.7			17.8			12.5	50	30	90
06-Oct-13									14.6			7.2			8.7			17.8			12.5	50	30	90
12-Oct-13									14.6			7.2			8.7			17.8			12.5	50	30	90
18-Oct-13									14.6			7.2			8.7			17.8			12.5	50	30	90
24-Oct-13									14.6			7.2			8.7			17.8			12.5	50	30	90
30-Oct-13									14.6			7.2			8.7			17.8			12.5	50	30	90
05-Nov-13									14.6			7.2			8.7			17.8			12.5	50	30	90
11-Nov-13									14.6			7.2			8.7			17.8			12.5	50	30	90
17-Nov-13									14.6			7.2			8.7			17.8			12.5	50	30	90
23-Nov-13									14.6			7.2			8.7			17.8			12.5	50	30	90
29-Nov-13									14.6			7.2			8.7			17.8			12.5	50	30	90
05-Dec-13									14.6			7.2			8.7			17.8			12.5	50	30	90
11-Dec-13									14.6			7.2			8.7			17.8			12.5	50	30	90
17-Dec-13									14.6			7.2			8.7			17.8			12.5	50	30	90
23-Dec-13									14.6			7.2			8.7			17.8			12.5	50	30	90
29-Dec-13									14.6			7.2			8.7			17.8			12.5	50	30	90
04-Jan-14									14.6			7.2			8.7			17.8			12.5	50	30	90
10-Jan-14									14.6			7.2			8.7			17.8			12.5	50	30	90
16-Jan-14									14.6			7.2			8.7			17.8			12.5	50	30	90
22-Jan-14									14.6			7.2			8.7			17.8			12.5	50	30	90
28-Jan-14									14.6			7.2			8.7			17.8			12.5	50	30	90
03-Feb-14									14.6			7.2			8.7			17.8			12.5	50	30	90
09-Feb-14									14.6			7.2			8.7			17.8			12.5	50	30	90
15-Feb-14									14.6			7.2			8.7			17.8			12.5	50	30	90
21-Feb-14									14.6			7.2			8.7			17.8			12.5	50	30	90
27-Feb-14									14.6			7.2			8.7			17.8			12.5	50	30	90
05-Mar-14									14.6			7.2			8.7			17.8			12.5	50	30	90
11-Mar-14									14.6			7.2			8.7			17.8			12.5	50	30	90
17-Mar-14									14.6			7.2			8.7			17.8			12.5	50	30	90
23-Mar-14									14.6			7.2			8.7			17.8			12.5	50	30	90
29-Mar-14									14.6			7.2			8.7			17.8			12.5	50	30	90
Min								8.8			3.5			4.8			12.3			7.1				
Median								15.9			6.1			8.2			14.3			11.4				
Max								17.9			13.1			13.5			30.5			20.0				
Capture								7%			7%			7%			7%			7%				

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2012-2013

MONTH (g/m2/month)				April 2012	May 2012	June 2012	July 2012	August 2012	September 2012	October 2012	November 2012	December 2012	January 2013	February 2013	March 2013	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG2	Cintra	Total Matter	2.5	1.2	1.0	1.5	0.4	1.3	2.3	1.7	1.4	3.3	1.9	1.1	1.6	1.5	0.4	3.3	4.0
			Ash Content	1.4	0.8	0.8	1.0	0.3	0.7	1.2	1.0	0.7	1.6	1.2	0.7					
-	DG5	Railway View	Total Matter	1.1	1.0	0.5	0.7	2.5	1.0	1.2	1.2	1.6	3.2	0.6	0.3	1.2	1.2	0.3	3.2	4.0
			Ash Content	0.6	0.7	0.5	0.5	1.5	0.7	0.8	1.0	1.4	2.7	0.6	0.2					
EPL #1	DG20	Tonsley Park	Total Matter	0.6	0.4	0.3	0.5	0.3	1.2	1.0	1.0	1.2	3.3	0.9	0.4	0.9	0.9	0.3	3.3	4.0
			Ash Content	0.3	0.4	0.3	0.4	0.2	0.5	0.5	0.6	0.8	2.5	0.5	0.2					
-	DG15	Plain View	Total Matter	1.0	2.1	3.5	1.8	5.0	0.6	0.7	0.7	1.0	2.0	1.5	1.2	1.8	1.8	0.6	5.0	4.0
			Ash Content	0.6	1.2	2.5	0.6	2.8	0.5	0.5	0.4	0.8	1.5	1.0	0.7					
-	DG9	Marengo	Total Matter	0.7	1.3	0.8	0.2	0.6	0.7	0.7	0.5	0.6	1.6	1.0	0.2	0.7	0.8	0.2	1.6	4.0
			Ash Content	0.3	0.7	0.5	0.2	0.3	0.5	0.3	0.3	0.5	1.4	0.6	0.2					
-	DG22	Mountain View	Total Matter	3.5	0.5	0.5	1.2	0.5	0.6	0.3	0.1	3.2	3.0	1.2	0.4	1.3	1.3	0.1	3.5	4.0
			Ash Content	2.6	0.5	0.4	1.0	0.3	0.5	0.1	0.1	1.6	1.5	0.8	0.3					
EPL#29	DG11	Glenara	Total Matter	1.5	2.1	2.6	425.0	2.4	4.5	1.2	0.7	3.7	1.2	0.3	0.5	37.1	1.6	0.3	425.0	4.0
			Ash Content	0.8	0.9	0.9	391.0	1.2	4.0	0.8	0.5	1.6	0.9	0.3	0.4					
-	DG24	Hazeldene	Total Matter	NS	NS	NS	NS	0.5	0.5	0.7	0.6	3.6	1.8	0.8	0.4	1.1	0.8	0.4	3.6	4.0
			Ash Content	NS	NS	NS	NS	0.3	0.5	0.5	0.5	1.6	1.4	0.6	0.2					
-	DG17	Woodlands	Total Matter	NS	NS	NS	NS	0.3	0.5	2.8	1.8	2.5	2.7	0.6	0.5	1.5	1.5	0.3	2.8	4.0
			Ash Content	NS	NS	NS	NS	0.3	0.5	1.5	1.0	0.9	1.8	0.6	0.2					
-	DG96	Talavera	Total Matter	NS	NS	NS	NS	0.2	0.6	0.8	0.6	0.9	1.4	0.7	0.4	0.7	0.7	0.2	1.4	4.0
			Ash Content	NS	NS	NS	NS	0.2	0.4	0.6	0.4	0.5	0.3	0.6	0.2					
EPL#28	DG98	Kyooma	Total Matter	NS	NS	NS	NS	0.3	0.4	1.1	0.7	1.0	1.9	0.3	0.4	0.8	0.7	0.3	1.9	4.0
			Ash Content	NS	NS	NS	NS	0.1	0.3	0.5	0.3	0.6	1.2	0.3	0.1					
-	DG14	Greenslopes	Total Matter	NS	NS	NS	NS	0.3	0.5	0.6	0.8	1.0	1.5	0.6	0.4	0.7	0.8	0.3	1.5	4.0
			Ash Content	NS	NS	NS	NS	0.1	0.4	0.5	0.4	0.5	1.2	0.6	0.1					
-	DG62	Werris Creek South	Total Matter	NS	NS	NS	NS	0.7	0.5	0.3	0.7	0.5	0.9	0.6	0.3	0.6	0.6	0.3	0.9	4.0
			Ash Content	NS	NS	NS	NS	0.3	0.3	0.3	0.3	0.3	0.7	0.6	0.1					
EPL#30	DG92	Werris Creek Centre	Total Matter	NS	NS	NS	NS	0.6	0.5	0.7	2.5	1.1	1.2	0.5	0.2	0.9	0.6	0.2	2.5	4.0
			Ash Content	NS	NS	NS	NS	0.2	0.3	0.4	0.5	0.5	0.9	0.5	0.1					
-	DG101	Westfall	Total Matter	NS	NS	NS	NS	0.6	0.6	0.8	1.1	1.5	2.7	1.1	0.3	1.1	1.2	0.3	2.7	4.0
			Ash Content	NS	NS	NS	NS	0.2	0.4	0.4	0.6	0.8	2.2	0.9	0.2					
-	DG103	West Street	Total Matter	NS	NS	NS	NS	1.0	0.5	1.1	1.1	1.1	0.6	3.2	0.5	1.1	0.9	0.5	3.2	4.0
			Ash Content	NS	NS	NS	NS	0.5	0.5	0.7	0.6	0.7	0.6	1.5	0.2					
-	DG1	Escott	Total Matter	NS	NS	NS	NS	0.5	0.3	0.5	0.6	0.8	1.3	1.6	0.5	0.8	0.8	0.3	1.6	4.0
			Ash Content	NS	NS	NS	NS	0.2	0.3	0.3	0.3	0.4	1.0	1.4	0.4					
-	DG3	Eurunderee	Total Matter	NS	NS	NS	NS	0.6	0.4	0.4	0.8	1.2	1.6	0.2	0.6	0.7	0.7	0.2	1.6	4.0
			Ash Content	NS	NS	NS	NS	0.2	0.3	0.3	0.4	0.7	1.4	0.2	0.3					
-	DG34	8 Kurrara Street	Total Matter	NS	NS	NS	NS	0.5	1.2	1.9	1.1	1.2	1.4	11.9	0.4	2.5	1.0	0.4	11.9	4.0
			Ash Content	NS	NS	NS	NS	0.3	0.5	0.7	0.6	0.6	1.0	8.7	0.2					
-	DG106	Villamagna	Total Matter	NS	NS	NS	NS	NS	0.4	0.6	13.1	1.1	2.2	0.7	0.4	2.6	0.9	0.4	13.1	4.0
			Ash Content	NS	NS	NS	NS	NS	0.3	0.3	11.4	0.7	1.9	0.7	0.2					

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

RED - indicates sample is contaminated from a Non-Werris Creek Coal dust source and is not counted in the average

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

Deposited Dust - Werris Creek Coal Mine 2013-2014

MONTH (g/m2/month)				April 2012	May 2012	June 2012	July 2012	August 2012	September 2012	October 2012	November 2012	December 2012	January 2013	February 2013	March 2013	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG2	Cintra	Total Matter	4.1												4.1	4.1	4.1	4.1	4.0
			Ash Content	3.0																
-	DG5	Railway View	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.5																
EPL #1	DG20	Tonsley Park	Total Matter	1.2												1.2	1.2	1.2	1.2	4.0
			Ash Content	0.7																
-	DG15	Plain View	Total Matter	2.6												2.6	2.6	2.6	2.6	4.0
			Ash Content	1.3																
-	DG9	Marengo	Total Matter	1.4												1.4	#DIV/0!	1.4	1.4	4.0
			Ash Content	0.6																
-	DG22	Mountain View	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.5																
EPL#29	DG11	Glenara	Total Matter	0.2												0.2	0.2	0.2	0.2	4.0
			Ash Content	0.1																
-	DG24	Hazeldene	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.4																
-	DG17	Woodlands	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.5																
-	DG96	Talavera	Total Matter	0.7												0.7	0.7	0.7	0.7	4.0
			Ash Content	0.4																
EPL#28	DG98	Kyooma	Total Matter	0.2												0.2	0.2	0.2	0.2	4.0
			Ash Content	0.2																
-	DG14	Greenslopes	Total Matter	0.4												0.4	0.4	0.4	0.4	4.0
			Ash Content	0.3																
-	DG62	Werris Creek South	Total Matter	0.3												0.3	0.3	0.3	0.3	4.0
			Ash Content	0.2																
EPL#30	DG92	Werris Creek Centre	Total Matter	0.5												0.5	0.5	0.5	0.5	4.0
			Ash Content	0.3																
-	DG101	Westfall	Total Matter	1.2												1.2	1.2	1.2	1.2	4.0
			Ash Content	0.8																
-	DG103	West Street	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.6																
-	DG1	Escott	Total Matter	2.4												2.4	#DIV/0!	2.4	2.4	4.0
			Ash Content	1.0																
-	DG3	Eurunderee	Total Matter	1.1												1.1	1.1	1.1	1.1	4.0
			Ash Content	0.8																
-	DG34	8 Kurrara Street	Total Matter	13.7												13.7	#DIV/0!	13.7	13.7	4.0
			Ash Content	9.8																
-	DG106	Villamagna	Total Matter	0.8												0.8	0.8	0.8	0.8	4.0
			Ash Content	0.5																

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 and is not counted in the average

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

RED - result above 4g/m2/month

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2012-2013

	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 2012	0.8	25%	50%	25%	0.3	25%	50%	25%	0.3	30%	40%	30%	0.7	25%	50%	25%	1.0	10%	60%	30%	0.5	25%	50%	25%	4.0
May 2012	1.1	30%	40%	30%	0.7	35%	25%	40%	0.6	20%	50%	30%	0.6	40%	40%	20%	0.4	10%	60%	30%	0.7	25%	50%	25%	4.0
June 2012	1.0	35%	45%	20%	0.8	45%	35%	20%	0.9	35%	55%	10%	0.5	45%	40%	15%	1.9	20%	60%	20%	1.3	15%	65%	20%	4.0
July 2012	1.2	40%	30%	30%	0.8	40%	30%	30%	1.2	40%	30%	30%	0.7	40%	30%	30%	2.4	10%	60%	30%	1.5	25%	50%	25%	4.0
August 2012	0.6	30%	30%	40%	0.6	30%	30%	30%	0.5	30%	50%	20%	0.5	30%	50%	20%	0.7	20%	50%	30%	2.7	15%	20%	60%	4.0
September 2012	1.7	20%	20%	60%	1.2	20%	50%	30%	1.3	15%	55%	30%	0.9	20%	50%	30%	0.7	20%	60%	20%	0.6	10%	60%	30%	4.0
October 2012	1.5	15%	50%	35%	1.4	15%	50%	35%	0.9	20%	40%	40%	1.0	25%	50%	25%	0.6	20%	40%	40%	1.6	10%	50%	40%	4.0
November 2012	1.2	10%	60%	10%	1.5	15%	50%	10%	0.8	15%	40%	25%	0.9	15%	15%	40%	2.4	5%	50%	25%	1.5	10%	35%	25%	4.0
December 2012	1.0	15%	60%	25%	1.4	5%	65%	30%	1.7	60%	25%	15%	2.4	15%	65%	20%	1.4	20%	60%	20%	3.6	5%	85%	10%	4.0
January 2013	1.8	10%	50%	30%	1.3	10%	70%	20%	1.5	10%	60%	30%	1.3	15%	65%	20%	1.0	10%	60%	30%	2.5	5%	70%	10%	4.0
February 2013	0.7	10%	35%	55%	0.6	15%	40%	45%	1.0	20%	40%	40%	0.5	15%	45%	40%	0.4	10%	45%	30%	1.0	10%	50%	20%	4.0
March 2013	0.3	10%	50%	40%	0.2	15%	50%	25%	0.7	15%	60%	25%	-	-	-	-	0.4	5%	65%	30%	0.2	5%	65%	15%	4.0
ANNUAL AVERAGE	**1.1**				**0.9**				**1.0**				**0.9**				**1.1**				**1.5**				**4.0**
Average Coal %	**20.8%**				**22.5%**				**25.8%**				**25.9%**				**13.3%**				**13.3%**				**-**
Average Coal g/m2	**0.22**				**0.20**				**0.25**				**0.24**				**0.15**				**0.20**				**-**
MINIMUM	**0.3**				**0.2**				**0.3**				**0.5**				**0.4**				**0.2**				**-**
MAXIMUM	**1.8**				**1.5**				**1.7**				**2.4**				**2.4**				**3.6**				**4.0**

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

Deposited Dust - Quirindi Trains 2013-2014

	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 2013	0.8	15%	45%	40%	0.5	15%	50%	35%	-	-	-	-	1.0	15%	45%	15%	0.9	15%	60%	25%	0.7	5%	55%	40%	4.0
May 2013																									4.0
June 2013																									4.0
July 2013																									4.0
August 2013																									4.0
September 2013																									4.0
October 2013																									4.0
November 2013																									4.0
December 2013																									4.0
January 2014																									4.0
February 2014																									4.0
March 2014																									4.0
ANNUAL AVERAGE	**0.8**				**0.5**				**#DIV/0!**				**1.0**				**0.9**				**0.7**				**4.0**
Average Coal %	**15.0%**				**15.0%**				**#DIV/0!**				**15.0%**				**15.0%**				**5.0%**				**-**
Average Coal g/m2	**0.12**				**0.08**				**#DIV/0!**				**0.15**				**0.14**				**0.04**				**-**
MINIMUM	**0.8**				**0.5**				**0.0**				**1.0**				**0.9**				**0.7**				**-**
MAXIMUM	**0.8**				**0.5**				**0.0**				**1.0**				**0.9**				**0.7**				**4.0**

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

Appendix 4 – Noise Monitoring Results

13 February 2013

Ref: 04035/4670

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

RE: FEBRUARY 2013 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 6th February, 2013 as required by the draft 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 **Appendix 1**.

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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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]	R20*	Tonsley Park	Mine Owned
		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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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. Mine noise from WCC is shown in the tables in bold type. 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 stations.

WCC Operations

WCC operations on 6th February 2013 had the 3600 and a 1900 excavator in Strip 12 east at RL310m; the PC4000 excavator in Strip 11 centre at RL290m and a 1900 excavator in Strip 14 centre at RL370m. Three overburden truck fleets were running to the RL410m western dump on day and night shift; while one overburden fleet was hauling gravel to the new Mine Infrastructure Area pad. Scraper operations were moving overburden from Strip 15 to the LOM Visual Bund at RL410m on the eastern side of the mine on day and night shift. The crushing plant operated to 3:30am with one train loaded commencing at 10:00am and finished at 12:13pm.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period.

Table 2
WCC Noise Monitoring Results – 6 February 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2:35 pm	38	35	n/a	2.1/209	Traffic (36), birds & insects (33), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:34 pm	48	37	n/a	3.1/197	Birds & insects (47), traffic (41), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:30 pm	43	37/36*	n/a	3.1/197	Birds & insects (41), traffic (35), WCC inaudible
C R10 Meadholme/ R11 Glenara	2:55 pm	45	39	n/a	2.0/161	Birds & insects (45), traffic (22), WCC inaudible
D R24 Hazeldene	3:14 pm	37	37	n/a	3.8/200	Traffic (36), birds & insects (30), WCC inaudible
E R12 Railway Cottage	5:00 pm	44	38	n/a	5.5/197	Traffic (44), birds & insects (35), WCC inaudible
F R96 Talavera	2:40 pm	36	38	n/a	2.8/193	Birds & insects (34), traffic (32), WCC inaudible
G R97	4:10 pm	39	35	n/a	4.7/196	Birds & insects (37), wind (32), WCC inaudible
H R98 Kyooma	3:45 pm	37	36	n/a	3.9/201	Birds & insects (36), wind in trees (31), WCC barely audible
I R57 Kurrara St	4:52 pm	43	35	n/a	5.5/197	Train (40), traffic (39), birds & insects (32), WCC inaudible
J R57 Coronation Ave	4:34 pm	45	35	n/a	4.8/197	Construction noise (41), traffic (40), birds & insects (38), WCC inaudible
K R21 Alco Park	4:37 pm	46		n/a	4.9/197	Birds & insects (43), traffic (42), trains (34), WCC inaudible
L R103	4:20 pm	36	35	n/a	4.7/196	Traffic (35), birds (30), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 6 February 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8:30 pm	n/a	40	35	+1.7	4.1/167	Frogs & insects (39), traffic (32), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	10:47 pm	42	43	37	+6.2	1.0/100	Insects (42), WCC (34), traffic (30)
B2 R9Gedhurst/ R22 Mountain View	7:25 pm	n/a	43	37/36*	+1.1	4.3/185	Birds & insects (42), traffic (34), WCC inaudible
C R10 Meadholme/ R11 Glenara	8:50 pm	n/a	37	39	+1.8	3.2/159	Frogs & insects (34), traffic (34), WCC inaudible
D R24 Hazeldene	9:09 am	n/a	43	37	+2.6	2.7/151	Frogs & insects (42), traffic (34), WCC inaudible
E R12 Railway Cottage	11:00 pm	n/a	44	38	+6.5	1.4/77	Traffic (44), insects (35), WCC barely audible
F R96 Talavera	7:30 pm	n/a	43	37	+1.1	4.3/185	Birds & insects (43), traffic (30), WCC inaudible
G R97	8:52 pm	<25	38	35	+1.8	3.2/159	Frogs & insects (38), WCC (20)
H R98 Kyooma	8:33 pm	28	34	36	+1.7	4.1/167	Frogs & insects (34), WCC (23)
I R57 Kurrara St	9:35 pm	n/a	39	35	+3.6	1.9/134	Frogs & insects (39), traffic (30), trains (22), WCC inaudible
J R57 Coronation Ave	9:13 pm	n/a	36	35	+3.1	3.0/152	Traffic (34), insects (32), WCC inaudible
K R21 Alco Park	10:38 pm	n/a	44		+5.8	0.4/153	Insects (42), trains (38), traffic (37), WCC inaudible
L R103	10:18 pm	n/a	51	35	+4.9	0.6/148	Train (50), insects (44), traffic (32), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results shown in Table 3 indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC did not exceed the relevant noise criterion oat any location or 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 the operational noise monitoring location.

As shown in Table 3, during the night time measurement circuit the (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

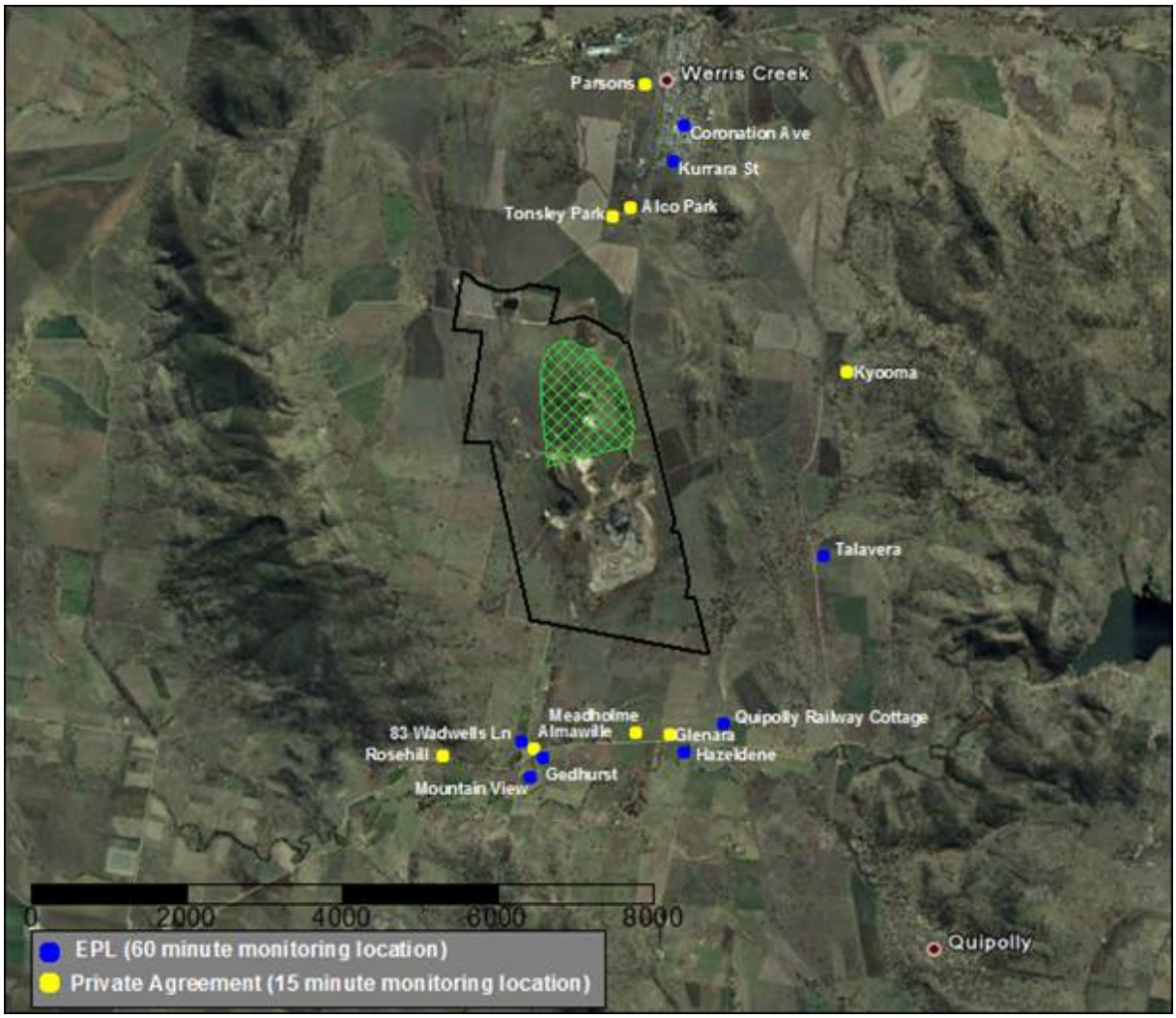
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	119 113	122 118	6/2/13

*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.

4 April 2013

Ref: 04035/4721

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

RE: MARCH 2013 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 27th March, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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 stations.

WCC Operations

WCC operations on 27th March 2013 had the 3600 excavator in Strip 19 on top of the hill in the pre-strip at RL420m; the PC4000 excavator in Strip 12 west at RL300m; a 1900 excavator in Strip 13 west at RL340m and a 1900 excavator in Strip 11 centre at RL280m. Two overburden truck fleets were running to the RL390m western dump on day and night shift; while one overburden fleet was hauling gravel from the 3600 to the new Mine Infrastructure Area pad. One truck fleet was coaling from the bottom of the pit to the ROM pad. Scraper operations were spreading topsoil on the eastern rehab on day shift only. The crushing plant operated to 3:30am 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 – 27 March 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	1:15 pm	36	35	n/a	1.8/253	Birds & insects (36), traffic (25), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:22 pm	39	37	n/a	1.6/244	Birds & insects (39), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:35 pm	37	37/36*	n/a	1.4/220	Birds & insects (36), traffic (30), WCC (22)
C R10 Meadholme/ R11 Glenara	2:27 pm	38	39	n/a	1.9/202	Birds & insects (36), plane (32), WCC inaudible
D R24 Hazeldene	2:50 pm	43	37	n/a	1.7/183	Birds (39), traffic (38), train (36), WCC inaudible
E R12 Railway Cottage	4:48 pm	38	38	n/a	1.5/269	Birds & insects (36), traffic (32), WCC inaudible
F R96 Talavera	3:42 pm	37	38	n/a	1.6/238	Birds & insects (37), WCC (15)
G R97	3:05 pm	32	35	n/a	2.0/169	Birds & insects (32), WCC (20)
H R98 Kyooma	3:23 pm	39	36	n/a	1.6/189	Birds & insects (39), WCC (20)
I R57 Kurrara St	4:43 pm	51	35	n/a	1.5/269	Traffic (49), trains (45), WCC inaudible
J R57 Coronation Ave	2:45 pm	48	35	n/a	1.5/184	Traffic (48), birds & insects (39), WCC inaudible
K R21 Alco Park	3:55 pm	50	35	n/a	1.7/179	Cars (50), traffic (37), trains (36), WCC inaudible
L R103	4:19 pm	39	35	n/a	1.6/297	Trains, (36), traffic (35), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 27 March 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	7:50 pm	n/a	42	35	+7.4	0.3/119	Birds & insects (42), dog (31), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	10:00 pm	<30	43	37	+7.0	0.6/226	Insects (43), WCC (25)
B2 R9Gedhurst/ R22 Mountain View	8:10 pm	32	39	37/36*	+7.7	1.0/43	Birds & insects (39), traffic (28), WCC (25)
C R10 Meadholme/ R11 Glenara	11:03 pm	<35	41	39	+7.5	1.0/32	Insects (38), traffic (35), WCC (32)
D R24 Hazeldene	11:21 pm	<30	41	37	+6.7	1.9/6	Traffic (40), insects (34), WCC (25)
E R12 Railway Cottage	11:26 pm	<25	37	38	+6.7	2.0/345	Insects (37), WCC (20), traffic (18)
F R96 Talavera	10:20 pm	38	46	37	+6.9	0.6/190	Insects (46), WCC (30)
G R97	9:40 pm	<25	43	35	+7.8	1.7/335	Insects (43), WCC (17)
H R98 Kyooma	10:00 pm	<25	34	36	+7.2	0.3/351	Insects (30), WCC (15)
I R57 Kurrara St	8:01 pm	n/a	52	35	+7.0	0.8/97	Trains (51), insects (40), traffic (38), WCC inaudible
J R57 Coronation Ave	9:20 pm	38	42	35	+8.5	1.2/317	Train (40), traffic (35), insects (32), WCC (32)
K R21 Alco Park	9:05 pm	36	47		+7.5	1.2/317	Insects (46), trains (36), traffic (37), WCC (32)
L R103	9:23 pm	n/a	48	35	+6.7	1.6/325	Train (45), insects (44), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring 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 the operational noise monitoring location.

As shown in Table 3, during the night time measurement circuit the (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

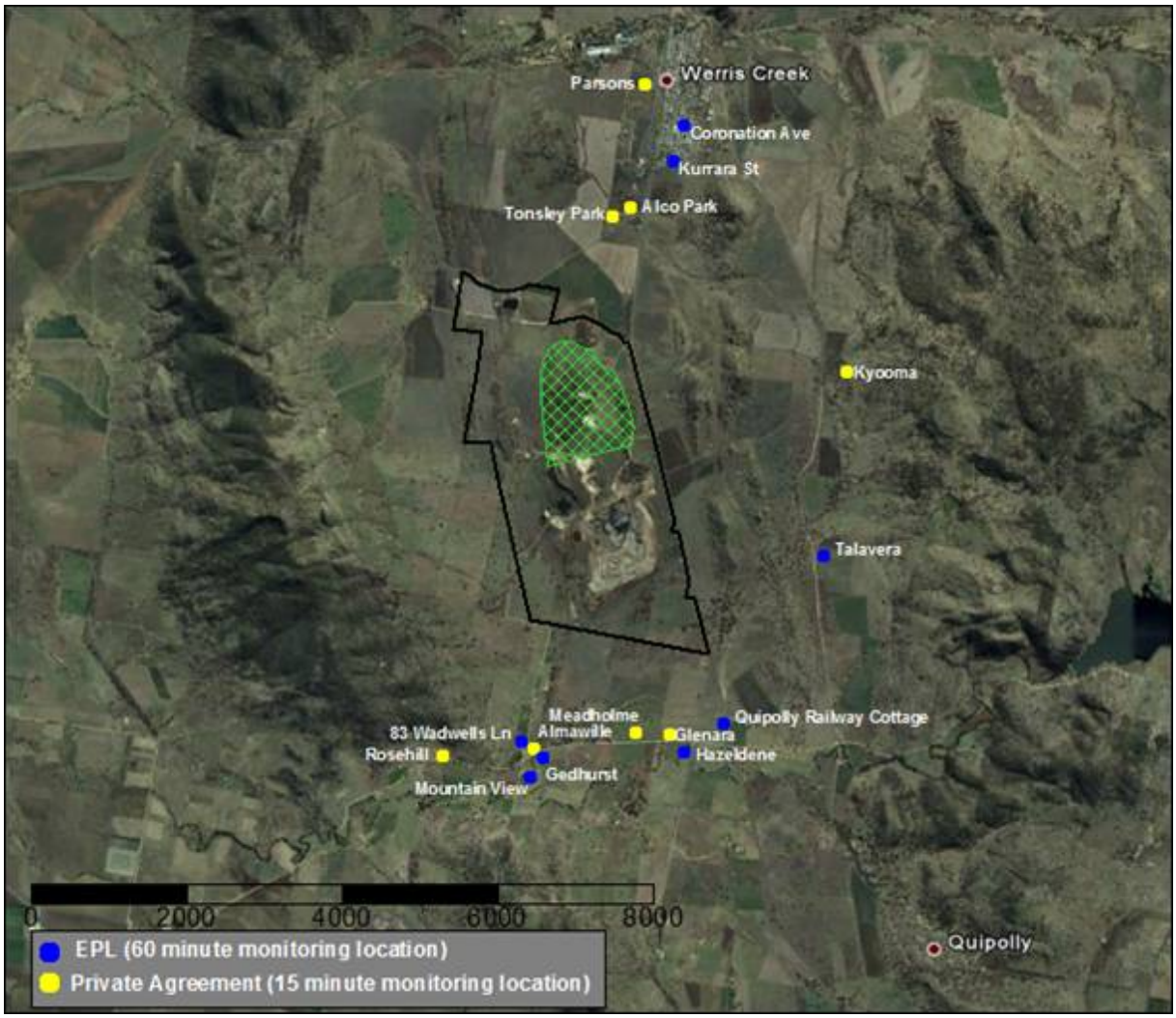
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	119 113	122 118	6/2/13

*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.

29 April 2013

Ref: 04035/4757

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

RE: APRIL 2013 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 23rd April, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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 stations.

WCC Operations

WCC operations on 23rd April 2013 had the 3600 excavator in Strip 12 centre at RL300m; the PC4000 excavator in Strip 11 centre at RL280m; a 1900 excavator in Strip 16 centre at RL410m and a 1900 excavator in Strip 14 west at RL370m. The overburden truck fleets were running to the RL390m western dump on day and night shift. The crushing plant operated to 3:30am 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 – 23 April 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2:40 pm	32	35	n/a	2.5/288	Birds & insects (29), traffic (29), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	4:00 pm	39	37	n/a	2.2/247	Birds & insects (38), cattle (28), horses (25), **WCC inaudible**
B2 R9Gedhurst/ R22 Mountain View	1:25 pm	38	37/36*	n/a	2.2/275	Birds & insects (37), traffic (30), **WCC (20)**
C R10 Meadholme/ R11 Glenara	3:02 pm	39	39	n/a	2.6/282	Birds & insects (38), traffic (31), **WCC barely audible**
D R24 Hazeldene	3:21 pm	35	37	n/a	1.9/283	Traffic (33), birds & insects (31), **WCC barely audible**
E R12 Railway Cottage	5:03 pm	49	38	n/a	3.9/216	Traffic (48), birds & insects (40), **WCC inaudible**
F R96 Talavera	2:30 pm	43	38	n/a	2.5/287	Birds & insects (42), traffic (35), **WCC (25)**
G R97	1:50 pm	35	35	n/a	3.0/303	Birds & insects (35), **WCC (15)**
H R98 Kyooma	2:10 pm	36	36	n/a	2.1/272	Birds & insects (36), **WCC (26)**
I R57 Kurrara St	5:08 pm	47	35	n/a	3.9/216	Trains (44), birds & insects (42), traffic (40), **WCC inaudible**
J R57 Coronation Ave	4:50 pm	42	35	n/a	3.9/279	Traffic (38), trains (38), birds & insects (36), **WCC inaudible**
K R21 Alco Park	4:30 pm	41	39	n/a	2.5/266	Birds & insects (39), traffic (36), **WCC inaudible**
L R103	3:41 pm	34	35	n/a	1.5/272	Trains, (30), birds & insects (28), domestic noise (28), traffic (25), **WCC inaudible**

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 23 April 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	9:05 pm	n/a	38	35	+9.5	1.6/189	Pump? (35), traffic (34), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	10:25 pm	37	33	37	+10.3	0.9/188	**WCC (32)**, cattle (26)
B2 R9Gedhurst/ R22 Mountain View	8:00 pm	34	30	37/36*	+8.5	0.8/154	Traffic (27), insects (22), **WCC (25)**
C R10 Meadholme/ R11 Glenara	9:26 pm	n/a	33	39	+8.9	1.2/171	Traffic (33), **WCC inaudible**
D R24 Hazeldene	9:45 pm	n/a	40	37	+9.6	1.1/182	Traffic (40), **WCC inaudible**
E R12 Railway Cottage	11:40 pm	<25	22	38	+10.5	0.2/75	**WCC (20)**, insects (16),
F R96 Talavera	8:50 pm	35	27	37	+9.2	1.3/172	**WCC (26)**, traffic (21)
G R97	8:05 pm	38	35	35	+7.7	0.4/142	**WCC (34)**, insects (25), traffic (25)
H R98 Kyooma	8:25 pm	41	34	36	+8.6	0.9/156	**WCC (34)**
I R57 Kurrara St	11:28 pm	40	42	35	+10.0	0.3/92	Trains (42), **WCC (32)**
J R57 Coronation Ave	11:10 pm	n/a	40	35	+10.4	1.0/179	Train (39), traffic (34), **WCC inaudible**
K R21 Alco Park	10:52 pm	40	44	37	+10.4	1.0/194	Traffic (41), trains (40), **WCC (32)**
L R103	10:02 pm	39	38	35	+9.7	1.1/192	Traffic (37), **WCC (32)**

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring 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 the operational noise monitoring location.

As shown in Table 3, during the night time measurement circuit the (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:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	119 113	122 118	6/2/13

*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
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS FEBRUARY 2013									
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					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)
2013-08	1/02/2013	12:38	S12_13-14_Ccoal pt2	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-09	8/02/2012	13:16	S16_2-4_385	OB	<0.25	<109.8	1.83	106.0	0.58	102.6	<0.25	<109.8	10.00	120.0
2013-10	14/02/2013	12:11	S13_8-10_350 +PS	OB	<0.25	<109.8	0.90	106.0	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-11	20/02/2013	16:29	S12_13_Decoal	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-12	21/02/2013	13:18	S13_10-12_A1coal +PS	OB	<0.25	<109.8	1.45	106.6	0.34	99.7	<0.25	<109.8	10.00	120.0
2013-13	27/02/2013	13:10	S13_3-9_350 TSB27	TSB	<0.25	<109.8	1.43	104.5	0.40	103.0	<0.25	<109.8	10.00	120.0
2013-14	28/02/2013	13:37	S12_13_DEcoal	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0
TOTALS	**FEBRUARY**	**# BLAST**	**7**	**AVERAGE**	**<0.25**	**<109.8**	**1.40**	**105.8**	**0.44**	**101.8**	**<0.25**	**<109.8**	**5.00**	**115.0**
TOTALS	**FEBRUARY**	**# BLAST**	**7**	**HIGHEST**	**<0.25**	**<109.8**	**1.83**	**106.6**	**0.58**	**103.0**	**<0.25**	**<109.8**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**75**	**AVERAGE**	**0.21**	**104.5**	**0.93**	**102.2**	**0.41**	**99.1**	**0.29**	**105.4**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**75**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS MARCH 2013									
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					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)
2013-15	5/03/2013	13:39	S12_11-12_Gcoal	IB	<0.25	<109.8	0.98	113.9	0.69	109.3	0.55	107.5	10.00	120.0
2013-16	7/03/2013	13:30	S12_14-17_Decoal	IB	<0.25	<109.8	0.43	98.9	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-17	11/03/2013	12:15	S13_13-21_A1coal	OB	<0.25	<109.8	0.93	104.7	0.37	104.3	<0.25	<109.8	10.00	120.0
2013-18	13/03/2013	12:18	S13_22-23_370TSB25	TSB	<0.25	<109.8	0.48	103.2	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-19	20/03/2013	9:45	Hill Dam (Strip 21)	OB	<0.25	<109.8	0.75	107.5	0.29	106.7	<0.25	<109.8	10.00	120.0
2013-20	25/03/2013	12:15	S12_18-21_290TSB30	TSB	<0.25	<109.8	0.58	91.4	<0.25	<109.8	<0.25	<109.8	10.00	120.0
2013-21	26/03/2013	12:17	S11_12-17_Gcoal pt1	IB	<0.25	<109.8	0.33	96.3	<0.25	<109.8	0.48	100.8	10.00	120.0
TOTALS	**MARCH**	**# BLAST**	**7**	**AVERAGE**	**<0.25**	**<109.8**	**0.64**	**102.3**	**0.45**	**106.8**	**0.52**	**104.2**	**5.00**	**115.0**
TOTALS	**MARCH**	**# BLAST**	**7**	**HIGHEST**	**<0.25**	**<109.8**	**0.98**	**113.9**	**0.69**	**109.3**	**0.55**	**107.5**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**82**	**AVERAGE**	**0.21**	**104.5**	**0.91**	**102.2**	**0.42**	**99.8**	**0.31**	**105.3**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**82**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS APRIL 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-22	2/04/2013	15:06	S13_14-18_A1coal	OB	<0.25	<109.8	1.00	104.9	0.45	101.0	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-0.8	265	1.5	0
2013-23	8/04/2013	12:12	S11_6-10_Gcoal	IB	<0.25	<109.8	1.45	103.0	1.19	107.3	<0.25	<109.8	10.00	120.0	13.20	-	50.00	-1.7	182	2.9	0
2013-24	11/04/2013	13:17	S11_12-17_Gcoal pt2	IB	0.38	109.7	1.00	108.9	0.66	108.3	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.3	154	2.5	0
2013-25	12/04/2013	13:07	S12_11_Decoal pt1	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.5	165	2.1	0
2013-26	16/04/2013	13:12	S14_11-20_370 trim	OB	<0.25	<109.8	0.55	104.7	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.7	345	2.4	0
2013-27	17/04/2013	13:11	S12_11_Decoal pt2	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.8	323	3.9	0
2013-28	22/04/2013	12:13	S12_18_290_TSB31/Decoal	TSB/IB	<0.25	<109.8	0.40	94.2	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.9	319	4.4	0
2013-29	26/04/2013	12:12	S16_5-8_385	OB	0.13	95.1	0.95	99.8	0.34	99	<0.25	<109.8	10.00	120.0	1.83	-	50.00	-2.6	174	1.8	0
TOTALS	**APRIL 2013**	**# BLAST**	**8**	**AVERAGE**	**0.26**	**102.4**	**0.89**	**102.6**	**0.66**	**103.9**	**<0.25**	**<109.8**	**5.00**	**115.0**							
TOTALS	**APRIL 2013**	**# BLAST**	**8**	**HIGHEST**	**0.38**	**109.7**	**1.45**	**108.9**	**1.19**	**108.3**	**<0.25**	**<109.8**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**8**	**AVERAGE**	**0.26**	**102.4**	**0.89**	**102.6**	**0.66**	**103.9**	**<0.25**	**<109.8**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**8**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**							

Appendix 6 – Groundwater Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1307073**	Page	: 1 of 6
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: GUNNEDAH LABORATORY	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: gun.lab@alsglobal.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER 6 MONTHLY	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 5723		
C-O-C number	: ----	Date Samples Received	: 26-MAR-2013
Sampler	: BP/CE	Issue Date	: 04-APR-2013
Site	: ----		
		No. of samples received	: 6
Quote number	: SY/417/12	No. of samples analysed	: 6

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
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Pabi Subba	Senior Organic Chemist	Sydney Organics

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

- **AC01: Bore data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **EK067G: It has been noted that Reactive P is greater than Total P for sample ID(MW5), however this difference is within the limits of experimental variation.**
- **EK071G: It has been noted that Reactive P is greater than Total P for sample ID:(MW3), however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1	MW2	MW3	MW4B	MW5
				Client sampling date / time	25-MAR-2013 10:40	25-MAR-2013 11:00	25-MAR-2013 12:00	25-MAR-2013 12:40	25-MAR-2013 12:30
Compound	CAS Number	LOR	Unit		ES1307073-001	ES1307073-002	ES1307073-003	ES1307073-004	ES1307073-005
AC01: Bore Data									
Standing Water Level	----	0.01	m		54.1	25.4	15.1	10.4	7.69
Stick up	----	0.01	m		0.25	0.15	0.95	0.70	1.15
AC02: Sampling Data									
Purge Type	----	-	--		BAIL	TAP	BAIL	BAIL	BAIL
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		1180	821	249	978	2260
pH	----	0.01	pH Unit		7.05	7.58	7.36	7.76	7.57
Temperature	----	0.1	°C		22.5	21.8	21.9	20.5	22.2
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.22	7.62	7.15	7.77	7.64
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1220	848	245	1020	2390
EA015: Total Dissolved Solids									
Total Dissolved Solids @180°C	----	10	mg/L		664	370	164	510	1520
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.01	<0.01	<0.01	<0.01	0.06
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		4.67	0.01	1.65	1.35	0.11
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		4.68	0.01	1.65	1.35	0.17
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.1	0.1	0.7	0.6	8.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		5.8	0.1	2.4	2.0	8.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.14	0.39	0.10	1.27
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.11	0.02	0.41	0.02	1.48
EP080/071: Total Petroleum Hydrocarbons									
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1	MW2	MW3	MW4B	MW5
				Client sampling date / time	25-MAR-2013 10:40	25-MAR-2013 11:00	25-MAR-2013 12:00	25-MAR-2013 12:40	25-MAR-2013 12:30
Compound	CAS Number	LOR	Unit		ES1307073-001	ES1307073-002	ES1307073-003	ES1307073-004	ES1307073-005
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MW6	----	----	----	----
			Client sampling date / time	25-MAR-2013 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1307073-006	----	----	----	----
AC01: Bore Data								
Standing Water Level	----	0.01	m	12.5	----	----	----	----
AC02: Sampling Data								
Purge Type	----	-	--	BAIL	----	----	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1750	----	----	----	----
pH	----	0.01	pH Unit	7.38	----	----	----	----
Temperature	----	0.1	°C	22.4	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.43	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1870	----	----	----	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	----	10	mg/L	1050	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	4.85	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.85	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	6.6	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.14	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)	Client sample ID	MW6	----	----	----	----
	Client sampling date / time	25-MAR-2013 13:00	----	----	----	----
Compound / CAS Number / LOR / Unit		ES1307073-006	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft						
>C10 - C16 Fraction	---- 100 µg/L	<100	----	----	----	----
>C16 - C34 Fraction	---- 100 µg/L	<100	----	----	----	----
>C34 - C40 Fraction	---- 100 µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	---- 100 µg/L	<100	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	MW1 - 25-MAR-2013 10:40	CLEAR
AC04: Appearance	MW2 - 25-MAR-2013 11:00	CLEAR
AC04: Appearance	MW3 - 25-MAR-2013 12:00	CLEAR
AC04: Appearance	MW4B - 25-MAR-2013 12:40	CLEAR
AC04: Appearance	MW5 - 25-MAR-2013 12:30	CLEAR
AC04: Appearance	MW6 - 25-MAR-2013 13:00	CLEAR
AC04: Odour	MW1 - 25-MAR-2013 10:40	NIL
AC04: Odour	MW2 - 25-MAR-2013 11:00	NIL
AC04: Odour	MW3 - 25-MAR-2013 12:00	NIL
AC04: Odour	MW4B - 25-MAR-2013 12:40	NIL
AC04: Odour	MW5 - 25-MAR-2013 12:30	NIL
AC04: Odour	MW6 - 25-MAR-2013 13:00	NIL
AC04: Colour	MW1 - 25-MAR-2013 10:40	CLEAR
AC04: Colour	MW2 - 25-MAR-2013 11:00	CLEAR
AC04: Colour	MW3 - 25-MAR-2013 12:00	CLEAR
AC04: Colour	MW4B - 25-MAR-2013 12:40	CLEAR
AC04: Colour	MW5 - 25-MAR-2013 12:30	CLEAR
AC04: Colour	MW6 - 25-MAR-2013 13:00	CLEAR

WO #5723

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 / C Kilbourne.

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				
	MW1	25/3/13	10:40	54.10		0.25	Bail			1154	7.05	22.5	CLEAR	NIL	CLEAR	6 Monthly H.W. View.
	MW2	25/3/13	11:00	25.42		0.15	Tap.			821	7.58	21.8	Clear	Nil	Clear	6 Monthly Railway view
	MW3	25/3/13	12:00	15.13		0.95	Bail			249	7.36	21.9	Clear	Nil	Clear	6 Monthly Entrance.
	MW4	25/3/13	—				"No stick up. - Unable to locate in long grass."									
	MW4B	25/3/13	12:40	10.39		0.7	Bail			978	7.76	20.5	Clear	Nil	Clear	6 Monthly Mine - Pezio
	MW5	25/3/13	12:30	7.69		1.15	Bail			2260	7.57	22.2	Clear	Nil	Clear	6 Monthly Mine - Pezio.
	MW5B	25/3/13	12:20	7.28		0.7										Mine.
	MW6	25/3/13	13:00	12.47			Bail			1748	7.38	22.4	Clear	Nil	Clear	6 Monthly 1111 WJC Rd.
	MW9	25/3/13	11:40	15.47		0.9										Mine - Pezio
	MW10	25/3/13	10:10	17.24		0.2										"Escot In.- (next to shed.)
	MW11	—					"Pump over bore. - no access to dip"									"Gap.
	MW14	25/3/13	11:30	16.71		0.95										Mine - Pezio
	MW14B	25/3/13	11:20	16.47		0.75										Mine -
	MW17B	26/3/13	12:35	9.53												"Wudell lane - Windmill
	MW20	25/3/13	9:40	19.39		0.55										Tonsley Park
	MW24A	26/3/13	9:20	13.27		0.15										Maranoa.
	MW25A	26/3/13	—				"No access pump over bore"									
	MW25B	26/3/13	—				" " " " "									
	P1	25/3/13					"No access - windrow over tracks."									"Mine
	P2	—					"Now under overburden."									"Mine
	PUG	—					"Unable to monitor"									"Mine.
	MW27	25/3/13	10:20	41.43		0.45										Cintra - Egypt In.
	MW29	25/3/13	14:00	11.57		0.35										Kyoomi - windmill
	MW31	25/3/13	13:40	—	"Dry"											Talawerran - windmill no flow

SPECIAL COMMENTS

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD	QUOTATION No:
ADDRESS/OFFICE:	ACIRL LABORATORY:
PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS	Bi-Monthly Ground Waters - SWL (Standing Water Level Only)
SAMPLER NAME:	
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	26/3/13	10:00	14.10		0.2										*Roseneth.
	MW12	26/3/13	13:30	7.03		0.5										*Hazeldean.
	MW13	26/3/13	10:30	4.40		0.4										*Wadell ln. - Well.
	MW13B	26/3/13	10:40	3.11		0.3										*Taylors ln - opp Haysled.
	MW13D	26/3/13	10:55	4.37		0.2										*Taylors lane - Windmill.
	MW15	26/3/13	12:00	3.92		0.5										*Paynes lane - Windmill
	MW16	26/3/13	12:50	4.37		0.3										*Mantains View - sled
	MW17A	26/3/13	12:15	3.49		0.5										82 Wadell ln.
	MW18A	26/3/13	12:25	3.30		~										83 Wadell lane.
	MW19A	26/3/13	10:15	6.89		0.15										*Lintana.
	MW21A	25/3/13	13:25	6.32		0.3										*Glenara.
	MW22A	26/3/13	13:15	4.46		0.55										*308 paynes ln. - House.
	MW22B	26/3/13	13:05	4.63		0.45										*308 paynes ln. - Irrigation.
	MW23A	26/3/13	11:30	3.47		0.2										*Peg Easy - Horse yard.
	MW23B	26/3/13	11:50	4.04		0.1										*Peg Easy - Irrigation.
	MW28A	26/3/13	9:45	6.97		0.25										Woodlands - LHS Windmill
	MW28B	25/3/13	—	—		0.8					*Pump cap over bore		No SWL			Woodlands - RHS Paddock

SPECIAL COMMENTS:

*Johns lane SWL. (Little sled.)

Nowingi 26/3/13 11:15 SWL 3.87m (stick up 0.45.)

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1305866**	Page	: 1 of 5
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 5655		
C-O-C number	: ----	Date Samples Received	: 13-MAR-2013
Sampler	: CE	Issue Date	: 20-MAR-2013
Site	: ----		
		No. of samples received	: 9
Quote number	: SY/417/12	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*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	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

- **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	SB2	SB6	SB9	SB10	VWD1
				Client sampling date / time	12-MAR-2013 12:40	12-MAR-2013 12:30	12-MAR-2013 11:50	12-MAR-2013 11:20	12-MAR-2013 13:30
Compound	CAS Number	LOR	Unit		ES1305866-001	ES1305866-002	ES1305866-003	ES1305866-004	ES1305866-005
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		387	262	236	201	987
pH	----	0.01	pH Unit		9.22	8.69	8.22	8.09	8.93
Temperature	----	0.1	°C		24.8	26.6	25.7	24.5	25.9
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.64	7.69	7.53	7.64	8.10
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		399	265	236	195	1040
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		24	35	327	168	18
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.06	<0.01	<0.01	<0.01	0.08
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		1.46	<0.01	1.58	0.39	2.87
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		1.52	<0.01	1.58	0.39	2.95
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.6	0.7	1.8	1.2	1.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.1	0.7	3.4	1.6	4.6
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.17	0.04	0.25	0.19	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.12	<0.01	<0.01	0.06	<0.01
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	VWD2	WCD	200MLD-NORTH VWD3	200MLD-SOUTH VWD4	----
				Client sampling date / time	12-MAR-2013 12:10	12-MAR-2013 07:45	12-MAR-2013 12:55	12-MAR-2013 13:10	----
Compound	CAS Number	LOR	Unit		ES1305866-006	ES1305866-007	ES1305866-008	ES1305866-009	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		776	998	989	861	----
pH	----	0.01	pH Unit		8.54	8.37	9.33	9.76	----
Temperature	----	0.1	°C		25.8	21.7	26.2	25.1	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.36	8.31	8.37	8.44	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		805	1030	1050	909	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		24	24	6	14	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.06	<0.01	0.11	0.02	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		2.44	<0.01	5.33	0.33	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		2.50	<0.01	5.44	0.35	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.9	0.5	1.6	0.6	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.4	0.5	7.0	1.0	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.01	0.23	<0.01	0.01	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		<0.01	0.21	<0.01	<0.01	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 12-MAR-2013 12:40	CLEAR
AC04: Appearance	SB6 - 12-MAR-2013 12:30	CLEAR
AC04: Appearance	SB9 - 12-MAR-2013 11:50	TURBID
AC04: Appearance	SB10 - 12-MAR-2013 11:20	TURBID
AC04: Appearance	VWD1 - 12-MAR-2013 13:30	CLEAR
AC04: Appearance	VWD2 - 12-MAR-2013 12:10	CLEAR
AC04: Appearance	WCD - 12-MAR-2013 07:45	CLEAR
AC04: Appearance	200MLD-NORTHVWD3 - 12-MAR-2013 12:55	CLEAR
AC04: Appearance	200MLD-SOUTHVWD4 - 12-MAR-2013 13:10	CLEAR
AC04: Odour	SB2 - 12-MAR-2013 12:40	NIL
AC04: Odour	SB6 - 12-MAR-2013 12:30	NIL
AC04: Odour	SB9 - 12-MAR-2013 11:50	NIL
AC04: Odour	SB10 - 12-MAR-2013 11:20	NIL
AC04: Odour	VWD1 - 12-MAR-2013 13:30	NIL
AC04: Odour	VWD2 - 12-MAR-2013 12:10	NIL
AC04: Odour	WCD - 12-MAR-2013 07:45	NIL
AC04: Odour	200MLD-NORTHVWD3 - 12-MAR-2013 12:55	NIL
AC04: Odour	200MLD-SOUTHVWD4 - 12-MAR-2013 13:10	NIL
AC04: Colour	SB2 - 12-MAR-2013 12:40	CLEAR
AC04: Colour	SB6 - 12-MAR-2013 12:30	SLIGHT BROWN
AC04: Colour	SB9 - 12-MAR-2013 11:50	BROWN
AC04: Colour	SB10 - 12-MAR-2013 11:20	BLACK / GREY
AC04: Colour	VWD1 - 12-MAR-2013 13:30	CLEAR
AC04: Colour	VWD2 - 12-MAR-2013 12:10	CLEAR
AC04: Colour	WCD - 12-MAR-2013 07:45	CLEAR
AC04: Colour	200MLD-NORTHVWD3 - 12-MAR-2013 12:55	CLEAR
AC04: Colour	200MLD-SOUTHVWD4 - 12-MAR-2013 13:10	CLEAR

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1304444**	Page	: 1 of 3
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 27-FEB-2013
Sampler	: ANDREW WRIGHT	Issue Date	: 05-MAR-2013
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/417/12	No. of samples analysed	: 4

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

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
Hoa Nguyen	Senior Inorganic 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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB2	QCU	QCD	SB9	----
			Client sampling date / time	25-FEB-2013 17:30	25-FEB-2013 17:45	25-FEB-2013 17:55	25-FEB-2013 17:15	----
Compound	CAS Number	LOR	Unit	ES1304444-001	ES1304444-002	ES1304444-003	ES1304444-004	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.97**	**7.65**	**7.87**	**7.28**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**281**	**436**	**774**	**158**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**62**	<5	**14**	**82**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.02**	**0.08**	**0.33**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	**0.02**	**0.08**	**0.33**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**0.6**	**0.3**	**1.7**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**0.6**	**0.4**	**2.0**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.33**	**0.14**	**0.16**	**0.04**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.14**	**0.03**	**0.10**	<0.01	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Werris Creek Coal Community Consultative Committee

Twenty Eighth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 29th August 2013

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting. The feedback from the site tour was positive with the CCC inspecting the rehabilitation, overburden emplacement, eastern lookout in pit, new mine infrastructure area and train load out facility.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Geoff Dunn (Community Representative); Jill Coleman (Community Representative); Col Stewart (Liverpool Plains Shire Council - Councilor); Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services); Peter Easey (WCC Operations Manager) and Andrew Wright (WCC Environmental Officer and Minute Taker).

Apologies: Lindsay Bridge (Community Representative) and Roslyn Marr (Resigned as a Community Representative).

2. Declaration of Pecuniary or Other Interests

Noel Taylor declared that his son works for Werris Creek Coal.

3. New Matters for Discussion under General Business

WCC Hazard Reduction Burns at “Marengo” property. Update on communication between a complainant and CCC chairperson.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. Minutes of Previous Meeting

Minutes of the previous meeting on the 30th June 2013 were accepted as true and accurate representation of business conducted on that day.

Moved: Col Stewart. Seconded: Ron Van Katwyk. Motion carried.

6. Environmental Monitoring Report: May, June and July 2013

Meteorology – June was a wet month with 87mm of rain falling but the period was otherwise dry and the prevailing autumn wind direction shifted from a south easterly to a winter north westerly wind.

Air Quality – All PM10 and PM2.5 dust results were below or consistent with the annual average for each site and well below the annual average criteria indicating good air quality. All dust deposition gauge annual averages were below the annual criteria of 4.0g/m^2/month except for the dust gauge at 8 Kurrara St for May and June 2013. The elevated May and June results for 8 Kurrara St were likely to have been contaminated with dust from another source other than mining as the two other Werris Creek dust gauges both recorded results less than 1g/m^2/month for the same period. A couple of results were contaminated with organic matter (>50%) which is not representative of mining dust emissions. There were three dust complaints received all during July 2013 from Werris Creek residents. Two complaints were related to general dust levels, and one complaint was for a specific event on 15th July 2013. On each occasion, the real time PM10 dust levels in Werris Creek were well below the 30µg/m^3 criteria indicating good air quality.

Noise – There were three noise exceedances recorded during July 2013. Attended noise monitoring was undertaken on Thursday 11th July 2013 recording 39dB(A) at Gedhurst (R9) and Mountain View (R22) which is +2/+3dBA respectively over the criteria; and Rosehill (R5) recorded 36dB(A) which is only +1dBA over criteria. The EPA has responded acknowledging the good record since October 2010 and that this event did not require any further action at this time. There were five noise complaints during the period; one related to open cut operations and four related to train noise. The investigation into the four train noise complaints found in every occasion that the main noise source was due to passing trains or activities within the Werris Creek rail yard which is unrelated to WCC operations. The noise complaint related to mining operations occurred on 17th May 2013 in the mid morning when there was a rail outage. The complainant indicated without the train noise, the mine was particularly noticeable. While audible, a review of the continuous noise monitoring results found that mining noise levels were within compliance.

Blasting – During the period a total of 19 blasts were fired with two blasts resulting in overpressure levels greater than 115dB(L) at "Talavera" (1st May 2013), Werris Creek (8th July 2013) and "Tonsley Park" (8th July 2013). The blast on the 1st May 2013 recorded 115.8dB(L) at "Talavera" due to an underground collapse shot allowing energy to escape into the atmosphere via broken ground created from a previously fired presplit blast. WCC will not fire presplit blasts ahead of any underground blasts into the future. On 8th July 2013, elevated overpressure recorded 119.0dB(L) at Werris Creek and 121.0dB(L) at "Tonsley Park" due to the ejection of energy from the old underground bore and general rifling in the weathered material at natural surface. The "Tonsley Park" result was not an exceedance due to Whitehaven Coal acquiring the property in November 2012. The blast design protocol was reviewed following this blast to include triggers for identifying any existing holes within a shot to be filled with stemming and the stemming height in this weathered material to be increased from 4m to 5m to improve confinement. There were twenty blast complaints during the period from five separate blast events. The increase in blasting complaints is believed to be due the sensitization of the Werris Creek community due the elevated overpressure from the blast on 8th July 2013 receiving 11 community complaints. In addition, WCC have recently increased the volume and size of blasts to produce enough inventory to maintain operational continuity of the new Excavator EX5600 required by WCC to achieve the budgeted 2.5Mt production rate for 2013-2014. To prevent the continued escalation of blasting complaints, WCC and Orica have improved the cross communication and signoff process as well as developed blast design protocols to establish maximum parameters to minimize the potential for complaints from either overpressure or vibration generated by the larger shots.

Groundwater – All groundwater levels are within longer term averages and the Site Water Management Plan trigger values.

Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

Surface Water Discharges – The June 2013 dirty water discharge was in compliance with WCC's Environmental Protection Licence 12290 and there were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the dirty water discharge event.
Complaints – There were thirty five complaints received during the period. There were twenty complaints related to blasting; five complaints relating to noise; four complaints related to lights; three complaints related to dust and three other complaints. There were nineteen different complainants during the period with thirty two complaints from Werris Creek residents and three complaints from Quipolly residents.

Motion moved to accept the Environmental Monitoring Report for May, June and July 2013.

Moved: Col Stewart. Seconded: Jill Coleman. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

The lift at the Werris Creek Railway Museum and fire early warning system should be installed and operational by the end of October 2013. A comment from the committee was that notices should be placed in the Werris Creek Flyer and newspaper advising that this project was funded and supported by WCC and Council.

b. Hazard Reduction Burns at "Marengo" Property

Noel Taylor enquired about the purpose of the burns at the "Marengo" property. Andrew Wright responded stating the controlled burns were for strategic hazard reduction to create a fire break between neighboring properties. The controlled burns were in accordance with the WCC Biodiversity and Offset Management Plan to manage fuel loads and trigger native plant restoration in the absence of grazing.

c. Communication between a complainant and CCC chairperson

Gae Swain indicated that she was in contact with a regular complainant of WCC regarding the impacts that she alleges to have occurred to her and her property.

d. Resignation of Roslyn Marr as Community Representative

Roslyn Marr emailed her resignation as a Community Representative of the CCC on 26th August 2013. Andrew Wright advised that the CCC needed to have between three and five community representatives, even with the vacancy there is currently four community representatives.

Motion moved to hold over the decision to the next meeting whether to advertise the CCC community representative vacancy.

Moved: Ron Van Katwyk. Seconded: Geoff Dunn. Motion Carried.

Meeting Closed 11:00pm.

Next Meeting scheduled for Thursday 21st November 2013.

Copy to:

Gae Swain	Independent Chairperson
Jill Coleman	Community Representative
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Roslyn Marr	Community Representative
Geoff Dunn	Community Representative

Ron Van Katwyk	LPSC	Peter Easey	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Stephen O'Donoghue	DoPI	Andrew Wright	Werris Creek Coal
Simon Lund	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

May, June and July 2013

This Environmental Monitoring Report covers the period 1st May 2013 to 31st July 2013 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: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

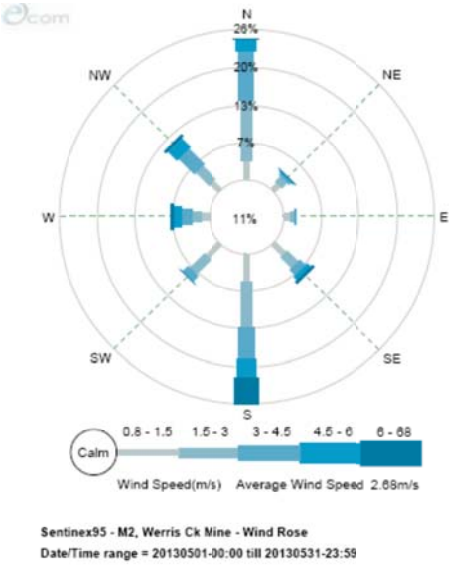
1.0 METEOROLOGY

1.1 WEATHER STATION

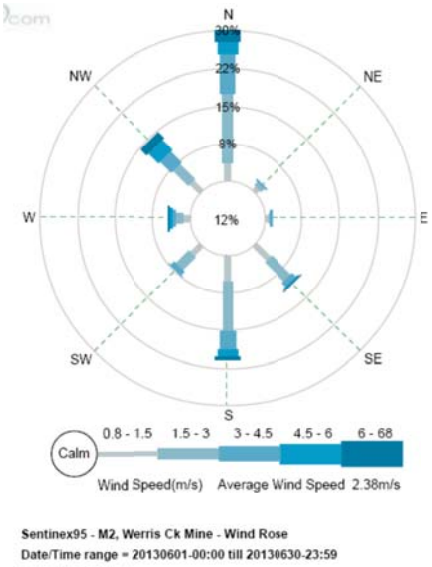
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and wind data is presented below in windroses. June was a wet month with 87mm of rain falling and the prevailing autumn wind direction shifting from a south easterly to winter 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 2013	-1.9	11.5	26.0	1.1	13.8	26.0	0.0	13.8	25.2	+1.7	+7.8	29.1	20.9	14.0	29.9
June 2013	-2.4	9.5	21.3	1.3	11.1	21.1	2.9	11.3	20.0	+1.1	+6.1	87.4	38.4	61.2	117.3
July 2013	-4.2	9.0	19.7	-0.6	11.5	20.2	2.6	11.8	19.7	0.0	+8.3	39.2	22.0	25.6	156.5

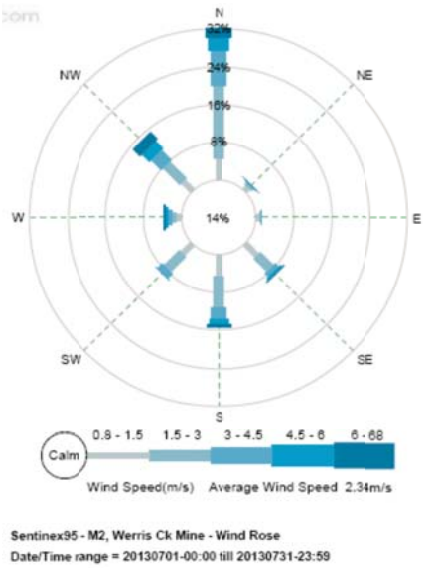
* Annual cumulative total since July 2012 to June 2013 from a composite data set based on the onsite Weather Station at WCC.



May 2013



June 2013



July 2013

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 the 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.

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.

Monitor Location	May 2013 (µg/m^3)	June 2013 (µg/m^3)	July 2013 (µg/m^3)	2012-2013 Average (µg/m^3)	Criteria (µg/m^3)	
					Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	6.7	6.4	6.4	6.4	8	25
PM10 – TEOM92 "Werris Creek"	11.9	9.0	9.3	10.6	30	50
PM10 – HVP20 "Tonsley Park"	15.4	7.7	11.9	12.3	30	50
PM10 - HVP4/HVP1 "Eurunderee"/"Escott"	9.5	4.0	5.7	6.9	30	50
PM10 – HVP20 "Glenara"	17.6	5.6	5.5	11.3	30	50
PM10 – HVP98 "Kyooma"	11.8	3.4	3.8	6.5	30	50
TSP – HVT98 "Kyooma"	35.8	6.4	6.7	16.5	90	-

2.1.2 Discussion - Compliance / Non Compliance

All PM10 and PM2.5 dust results were below or consistent with the annual average for each site and well below the annual average criteria indicating good air quality. There were no exceedances of the daily maximum criteria recorded for 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).

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 2013 (g/m^2/month)	June 2013 (g/m^2/month)	July 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
"Cintra"	1.5	1.3	1.2	2.0	4.0
"Railway View"	1.0	0.9	0.8	0.9	4.0
"Tonsley Park"	0.6	0.4	0.6	0.7	4.0
"Plain View"	1.0	1.2	0.8	1.4	4.0
"Marengo"	*0.8	0.3	0.4	0.7	4.0
"Mountain View"	0.8	1.5	0.5	0.9	4.0
"Glenara"	0.2	0.2	0.1	0.2	4.0
"Hazeldene"	0.5	0.4	0.3	0.5	4.0
"Woodlands"	0.7	0.4	0.4	0.6	4.0
"Talavera"	0.4	0.2	0.2	0.4	4.0
"Kyooma"	0.2	0.1	0.2	0.2	4.0
"Greenslopes"	0.3	0.3	0.3	0.3	4.0
Werris Creek South	0.3	0.2	*0.9	0.4	4.0
Werris Creek Centre	0.8	0.3	0.3	0.5	4.0
"Westfall"	0.5	0.4	0.5	0.7	4.0
West Street	0.5	0.3	0.7	0.6	4.0
"Escott"	0.2	1.6	0.4	1.2	4.0
"Eurunderee"	0.6	0.7	0.7	0.7	4.0
8 Kurrara St	**c6.2**	**c54.1**	0.4	**18.6**	4.0
"Villamagna"	0.4	0.4	*0.3	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.

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge annual averages were below the annual criteria of 4.0g/m^2/month except for the dust gauge at 8 Kurrara St for May and June 2013. The elevated May and June results for 8 Kurrara St were likely to have been contaminated with dust from another source other than mining as the two other Werris Creek

dust gauges both recorded results less than 1g/m^2/month for the same period. A couple of results were contaminated with organic matter (>50%) which is not representative of mining dust emissions.

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 2013		June 2013		July 2013		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.4	<1%	1.4	<1%	1.0	30%	1.1
DDW20	0.7	<1%	0.7	<1%	1.2	25%	0.7
DDW13	0.5	10%	-	-	0.9	30%	0.7
Train Line							
DDE13	0.6	<1%	-	-	0.8	20%	0.8
DDE20	0.9	<1%	0.9	<1%	1.7	20%	1.0
DDE30	0.6	<1%	0.6	<1%	1.6	10%	0.9

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fall out 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. Results collected for DDW13 and DDE13 in June 2013 were not reported due to both sample bottles being labeled DDE13.

2.4 AIR QUALITY COMPLAINTS

There were three dust complaints were received all during July 2013from Werris Creek residents. Two complaints were related to general dust levels, and one complaint was for a specific event on 15th July 2013. On each occasion, the real time PM10 dust levels in Werris Creek were well below the 30µg/m^3 criteria indicating good air quality. Specific actions taken in relation to each of these complaints are outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 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 - “Tonsley Park” (private agreement) R20;
- 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.

Tuesday 14th May 2013

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	Barely audible	37
B2	**West Quipolly** R9 & R22	Barely audible#	37/36[1]	Inaudible	37/36[1]
C	**Central Quipolly** R10*,R11*	Barely audible#	39	Inaudible	39
D	**"Hazeldene"** R24	Barely audible#	37	Barely audible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	27#	38
F	**"Talavera"** R96	34#	38	34#	37
G	R97	34#	35	30#	35
H	**"Kyooma"** R98*	33#	36	36#	36
I	**Kurrara St, WC**	Inaudible#	35	32#	35
J	**Coronation Ave, WC**	Inaudible#	35	32	35
K	**South St, WC** R21*	Inaudible#	39	27#	37
L	**West St, WC** R103	Inaudible#	35	27#	35

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

Wednesday 19th June 2013

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	Inaudible	37
B2	**West Quipolly** R9 & R22	Inaudible#	37/36[1]	Inaudible	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible#	39	Inaudible	39
D	**"Hazeldene"** R24	Inaudible#	37	Inaudible	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible	38
F	**"Talavera"** R96	Inaudible#	38	24	37
G	R97	<30#	35	35	35
H	**"Kyooma"** R98*	Inaudible#	36	26	36
I	**Kurrara St, WC**	32#	35	34	35
J	**Coronation Ave, WC**	Inaudible#	35	<30	35
K	**South St, WC** R21*	Inaudible#	39	**38**	37
L	**West St, WC** R103	30#	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 11th July 2013

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	**36**	35
B1	**West Quipolly** (R7, R8*)	Inaudible	37	37	37
B2	**West Quipolly** (R9 & R22)	20	37/36[1]	**39**	37/36[1]
C	**Central Quipolly**(R10*,R11*)	Inaudible#	39	38	39
D	**"Hazeldene"** R24	Inaudible	37	34	37
E	**"Railway Cottage"** R12	Inaudible#	38	31	38
F	**"Talavera"** R96	Inaudible#	38	Barely audible	37
G	R97	Inaudible	35	Inaudible	35
H	**"Kyooma"** R98*	25	36	Inaudible	36
I	**Kurrara St, WC**	Inaudible#	35	Barely audible	35
J	**Coronation Ave, WC**	Inaudible	35	30#	35
K	**South St, WC** (R20*, R21*)	Inaudible#	39	33#	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 three noise exceedances recorded during July 2013. Attended noise monitoring was undertaken on Thursday 11th July 2013 recording 39dB(A) at Gedhurst (R9) and Mountain View (R22) which is +2/+3dBA respectively over the criteria; and Rosehill (R5) recorded 36dB(A) which is only +1dBA over criteria. The noise exceedance occurred due to gap in the noise control process between listening to the audio from the Werris Creek or Quipolly continuous noise monitor. The EPA has responded acknowledging the good record since October 2010 and this event did not require any further action at this time. "Alco Park" (R21) did record an elevated night time noise level of 38dBA, while above the night time criteria it is within limits outlined in the Private Agreement in place with the owner.

3.2 NOISE COMPLAINTS

There were five noise complaints during the period; one related to open cut operations and four related to train noise. The investigation into the four train noise complaints found in every occasion that the main noise source was due to passing trains or activities within the Werris Creek rail yard which is unrelated to WCC operations. The noise complaint related to mining operations occurred on 17th May 2013 in the mid morning when there was a rail outage. The complainant indicated without the train noise, the mine was particularly noticeable. While audible, a review of the continuous noise monitoring results found that mining noise levels were within compliance. Specific actions taken in relation to each of these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at "Glenara", "Talavera", "Werris Creek" and "Tonsley Park" during the period. 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). During the period a total of nineteen blasts were fired by the blasting contractor, Orica Mining Services.

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 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.27	98.7	0.66	100.8	0.27	102.6	0.13	102.1
Monthly Maximum	0.38	106.7	1.12	110.1	0.49	111.3	0.18	115.8
Annual Average	0.26	100.6	0.78	101.7	0.47	103.2	0.13	102.1
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	6%
# Triggered this Month	4/9		9/9		7/9		3/9	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

June 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.23	100.4	0.89	102.0	0.32	101.8	0.23	107.6
Monthly Maximum	0.24	102.1	1.75	108.0	0.47	106.1	0.24	109.1
Annual Average	0.25	100.51	0.82	101.8	0.42	102.8	0.18	104.8
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	4.3%
# Triggered this Month	2/6		6/6		4/6		2/6	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

July 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.53	88.8	0.96	103.1	0.57	101.7	0.07	111.6
Monthly Maximum	0.53	88.8	1.38	121.0	0.65	119.0	0.07	111.6
Annual Average	0.25	100.5	0.82	101.8	0.42	102.8	0.18	104.8
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	3.7%	0%	3.7%	0%	3.7%
# Triggered this Month	1/4		4/4		3/4		1/4	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria; Yellow – overpressure >115dB(L) or vibration >1mm/s.

4.1.2 Discussion - Compliance / Non Compliance

During the period, two blasts resulted in overpressure levels greater than 115dB(L) at "Talavera" (1st May 2013), Werris Creek (8th July 2013) and "Tonsley Park" (8th July 2013). The blast on the 1st May 2013 recorded 115.8dB(L) at "Talavera" due to an underground collapse shot allowing energy to escape into the atmosphere via broken ground created from a previously fired presplit blast. WCC will not fire presplit blasts ahead of any underground blasts into the future. On 8th July 2013, elevated overpressure results recorded 119.0dB(L) at Werris Creek and 121.0dB(L) at "Tonsley Park" due to the ejection of energy from the old underground bore and general rifling in the weathered material at natural surface. The "Tonsley Park" result was not an exceedance due to Whitehaven Coal acquiring the property in November 2012. The blast design protocol was reviewed following this blast to include triggers for identifying any existing holes within a shot to be filled with stemming and the stemming height in this weathered material to be increased from 4m to 5m to improve confinement.

4.2 BLAST COMPLAINTS

There were twenty blast complaints during the period from five separate blast events. The increase in blasting complaints is believed to be due the sensitization of the Werris Creek community due the elevated overpressure from the blast on 8th July 2013 receiving 11 community complaints. In addition, WCC have recently increased the volume and size of blasts to produce enough inventory to maintain operational continuity of the new large Excavator EX5600 required by WCC to achieve the budgeted 2.5Mt production rate for 2013-2014. To prevent the continued escalation of blasting complaints, WCC and Orica have improved the cross communication and signoff process as well as developed blast design protocols to establish maximum parameters to minimize the potential for complaints from either overpressure or vibration generated by the larger shots. Specific actions taken in relation to these complaints are outlined in **Section 6.**

5.0 WATER

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

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 35 groundwater bores and piezometers in the key aquifers surrounding the mine including Werris Basalt (near to WCC and further afield) and Quipolly Creek Alluvium. Bi-monthly groundwater level monitoring was completed on 7th, 8th and 9th May 2013 and 27th and 28th July 2013. No groundwater quality monitoring was undertaken during the period.

5.1.1 Monitoring Data Results

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

	Site	July 2013		May 2013		Comments
Werrie Basalt – Near WCC	MW1	54.06	0%	54.22	0%	
	MW2	25.91	-2%	25.42	0%	
	MW3	14.97	0%	15.01	1%	
	MW4B	10.07	5%	9.95	4%	
	MW5	7.91	-5%	7.44	3%	
	MW5B	7.48	-5%	7.12	2%	
	MW6	12.49	0%	12.49	0%	
	P1			34.65	-8%	Previous dip in January. 20m from pit void.
	MW27	43.03	-2%	42.04	-3%	Likely to be affected by mine advancement
Werrie Basalt	MW8	15.28	-6%	14.42	-2%	
	MW9	15.74	-3%	15.27	1%	
	MW10	17.01	1%	17.10	1%	
	MW14	17.39	-2%	16.96	-1%	
	MW14B	17.15	-3%	16.72	-1%	
	MW17B	9.63	-1%	9.53	0%	
	MW19A	5.73	5%	6.03	14%	Bore pump influenced previous result
	MW20	19.51	0%	19.46	0%	

	Site	July 2013		May 2013		Comments
Quipolly Alluvium	MW12			8.10	-13%	Blockage in bore at 8.5m.
	MW13	4.6	-2%	4.52	-3%	Previous dip during large wet weather event
	MW13B	3.19	0%	3.18	-2%	Previous dip during large wet weather event
	MW13D	4.61	-1%	4.58	-5%	Previous dip during large wet weather event
	MW15	4.13	-1%	4.10	-4%	Previous dip during large wet weather event
	MW16	4.65	-2%	4.56	-4%	Previous dip during large wet weather event
	MW17A	3.79	-4%	3.64	-4%	Previous dip during large wet weather event
	MW18A	3.57	-3%	3.45	-4%	Previous dip during large wet weather event
	MW21A	6.56	-3%	6.34	0%	Previous dip during large wet weather event
	MW22A	4.77	-3%	4.62	-3%	Previous dip during large wet weather event
	MW22B	4.93	-1%	4.89	-5%	Previous dip during large wet weather event
	MW23A	3.64	6%	3.86	-10%	Previous dip during large wet weather event
	MW23B	4.23	-3%	4.10	-1%	Previous dip during large wet weather event
	MW28A	10.91	-9%	9.97	-5%	Previous dip during large wet weather event
	MW32	3.92	5%	4.12	-11%	Previous dip during large wet weather event

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is 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

All groundwater levels are within longer term averages and the Site Water Management Plan trigger values.

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 25th June 2013.

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	8.66	924	8	<5	pH increased 1.12, EC ERROR, TSS decreased 16, O&G no change.
SB9	7.95	203	48	<5	pH increased 0.42, EC ERROR, TSS increased 279, O&G no change.
SB10	-	-	-	-	Under construction due to Rail Loop Project.
OFFSITE					
QCU	7.74	484	5	<5	pH increased 0.45, EC increase 17, TSS no change, O&G no change.
QCD	7.95	850	<5	<5	pH increased 0.18, EC increased 82, TSS decreased 11, O&G no change.
WCU	-	-	-	-	Dry – no sample available.
WCD	8.26	1350	12	<5	pH decreased 0.05, EC increased 320, TSS decreased 12, 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

All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There was one controlled discharge 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
25/06/2013	SB9	7.95	203	48	<5	Compliant – Water quality in criteria	Controlled	Not Applicable
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

The June 2013 dirty water discharge was in compliance with WCC's Environmental Protection Licence 12290 and 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 no water complaints during the period.

6.0 COMPLAINTS SUMMARY

There were thirty five complaints received during the period with the details summarised below. There were twenty complaints related to blasting; five complaints relating to noise; four complaints related to lights; three complaints related to dust and three other complaints. There were nineteen different complainants during the period with thirty two complaints from Werris Creek residents and three complaints from Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
287	01/05/2013 5:03pm	Anonymous/EPA Werris Creek	Excessive noise experienced on Saturday and Sunday night (27th and 28th April 2013) after 10.30pm, Saturday night was particularly bad.	Wind directions from the north and west do not propagate or enhance noise emissions from WCC TLO which is south west of Werris Creek.	Written response provided to EPA.
288	01/05/2013 5:03pm	Anonymous/EPA Werris Creek	Intrusive lighting from the coal loader on Saturday and Sunday night (27th and 28th April 2013).	Lighting camera was reviewed for Saturday and Sunday night and did not identify any intrusive lights from Werris Creek Coal (both open cut and train load out facility). The only time light was visible was when the trains arrived and started being loaded with the dozers operating on the coal stockpile.	Written response provided to EPA.
289	17/05/2013 7:30am	Werris Creek	Mine noise is loud Thursday and Friday morning (16th & 17th May 2013) and can hear dump trucks.	Background noise levels are similar or higher than LF (mining) noise levels indicating that urban and traffic noises were dominant although mining was audible.	EO met with complainant. Written response provided to complainant.
290	5/06/2013 10:33am	Q Quipolly	Sulfurous Odour present this morning (5th June 2013) and noticeable for the last week.	Spontaneous combustion of waste material present in pit that had not been covered, unrelated to former underground mine. Gases from spon comb unlikely to contain high levels of SO_2 or H_2S due to low sulphur levels in WCC coal. If odour from spon comb, the odour would be more bituminous and if present offsite only due to temperature inversion/low winds trapping rather than disapating gases. No alarms from personal gas detectors of employees during the same period, therefore unlikely to be at a harmful level.	Dumping in pit recommenced with priority given to burying areas of overburden with spon comb. EO met with complainant. Written response provided to complainant.
291 & 292	17/06/2013 6:49am & 8:23am	AD & AP Quipolly	Sulfurous Odour present this morning (17th June 2013) and concerned about air quality and health impacts.	Spontaneous combustion of waste material present in pit that had not been covered, unrelated to former underground mine. Gases from spon comb unlikely to contain high levels of SO_2 or H_2S due to low sulphur levels in WCC coal. If odour from spon comb, the odour would be more bituminous and if present offsite only due to temperature inversion/low winds trapping rather than disapating gases. No alarms from personal gas detectors of employees during the same period, therefore unlikely to be at a harmful level.	Dumping in pit recommenced with priority given to burying areas of overburden with spon comb. EO met with complainant. Written response provided to complainant.
293 & 294	18/06/2013 1:12pm & 1:18pm	AI & AL Werris Creek	Blast experienced in two waves with the first shaking the house and the second lesser wave just rattling cupboards.	WCC shot #44-2013 (S16_8-11_385 Pt2) was fired at 1:11pm on Tuesday 18th June 2013 was in compliance. Blast in upper horizon of pit and had a high MIC.	WCC to review whether to reduce size of RL385 shots. Written response provided to complainant.

295	18/06/2013 7:30pm	A Werris Creek	Bright light shining at house but stopped by mid evening.	Lighting camera not operational on 18/19 June due to modem error. Maintenance building new drill on northern end of MIA with lighting plant shining to the east but works finished at 9pm and light turned off.	Lighting plant relocated next night. MIA bund to be constructed to provide a barrier for future workshop to prevent further recurrence. Written response provided to complainant.
296	02/07/2013 12:40am	A Werris Creek	Spotlight south of coal loader shining on house evening 1st July 2013.	Mining operations constructing MIA Bund. Lighting plant set up orientated westward and barely visible. Werris Creek lighting camera shows that dozer and truck headlights were intermittently visible but in accordance with PA10_0059.	Written response provided to complainant.
297 to 307	08/07/2013 Various	Various Werris Creek	Blast caused significant shaking of house and community amenity impact.	WCC shot #48-2013 (S16_12-18_Blackseam) was fired at 1:35pm on Monday 8th July 2013 was in compliance with PA10_0059 and EPL12290. Significant air blast due to energy released into atmosphere from old bore and surface of shot resulting in elevated air blast >115dB(L) in Werris Creek.	WCC and Orica to develop blast protocols to reduce potential air blast from above RL385m. Improved communication and signoff process. Written response provided to complainants.
308	08/07/2013 4:31pm	EPA/A Werris Creek	General dust problem from mining operations and coal stockpile.	Average dust levels for previous fortnight were PM10 9.2µg/m^3 and PM2.5 6.3µg/m^3. PM10 air quality less than 30µg/m^3 is considered good air quality.	Written response provided to complainant. Offer to swab/sample dust rejected.
309	15/07/2013 11:48pm	A Werris Creek	Noise from coal loader deafening evening 15th July 2013.	Open cut and Train Load Out operated to 3:30am. Northerly wind did not enhance noise from WCC. Review of audio indicates significant noise from trains passing through Werris Creek.	Written response provided to complainant.
310	15/07/2013 11:58pm	A Werris Creek	Dust from coal loader with pictures of alleged coal dust on tiles in house.	Average PM10 dust levels for previous day were less than 20µg/m^3. PM10 air quality less than 30µg/m^3 is considered good air quality.	Written response provided to complainant. Offer to swab/sample dust rejected.
311 to 314	17/07/2013 Various	Various Werris Creek	Blast rattled houses with three complaints alleging damage.	WCC shot #49-2013 (S13_18-23_350TSB35) was fired at 3:32pm on Wednesday 17th July 2013 was in compliance with PA10_0059 and EPL12290. Large blast with 888 holes performed as expected but complaints from dominant vibration wave frequency of 12-13Hz.	WCC and Orica to develop blast protocols to reduce potential air blast from above RL385m. Improved communication and signoff process. Written response provided to complainants. Undertake Property Investigations in accordance with PA10_0059.
315	17/07/2013 1:45pm	W Werris Creek	Black dust on outdoor tables and under veranda believed to be coal.	Average dust levels for previous fortnight were PM10 9.2µg/m^3 and PM2.5 6.3µg/m^3. PM10 air quality less than 30µg/m^3 is considered good air quality.	Written response provided to complainant. Offer to swab/sample dust.
316	26/07/2013 4:20pm	EPA/A Werris Creek	Alleged that WCC fired two blasts both with significant dust.	WCC only fired one shot #50-2013 (S13_22-23_350TSB36) at 1:36pm on Friday 26th July 2013 was in compliance with PA10_0059 and EPL12290. Second dust cloud was from material caught on highwall falling into the pit after the blast onto ash like material.	Written response provided to complainant.
317	27/07/2013 12:07am	A Werris Creek	Bright spotlights shining on home evening 26th, 27th and 28th July 2013.	Rail Loop construction was undertaking night works on 26th & 27th July only. Light plants orientated westward. Werris Creek lighting camera shows that construction works were visible as well as Train Load Out on 28th July but in accordance with PA10_0059.	Written response provided to complainant.
318	29/07/2013 8:53pm	A Werris Creek	Noise from coal loader morning 29th July 2013 between 12am & 1am.	Open cut and Train Load Out did not operate. Northerly wind did not enhance noise from WCC. Review of audio indicates significant noise from trains passing through Werris Creek.	Written response provided to complainant.

319	01/08/2013 11:55am	EPA/A Werris Creek	Noise from coal loader morning 30th July 2013 between 12:45am & 1am.	Open cut and Train Load Out operated to 3:30am. No trains loaded. North westerly wind did not enhance noise from WCC. Review of audio indicates significant noise from trains passing through Werris Creek.	Written response provided to complainant.
320 & 321	30/07/2013 12:13pm & 12:36pm	AL & S Werris Creek	Blast shook house but not as bad as previous blasts.	WCC shot #51-2013 (S13_10-13_330) was fired at 12:12pm on Tuesday 30th July 2013 was in compliance with PA10_0059 and EPL12290. Blast performed as expected, dominant vibration wave frequency of 15Hz increases risk of complaints. Larger blasts are required to produce enough material for EX5600 excavator to achieve 2.5Mt coal production target.	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.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2013-2014

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 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
03-Apr-13		1.8			4.0		18	8.8	17.9	8	3.5	7.9	11	4.8	11.4	12	12.3	12.4	14	7.1	14.4	50	30	90
09-Apr-13		**6.2**	6.2		**12.3**	12.3	16	**14.6**	16.8	3.5	**7.2**	5.7	4.8	**8.7**	8.1	12.3	**17.8**	12.4	7	**12.5**	10.8	50	30	90
15-Apr-13		5.9			11.3		16	15.9	16.5	13	6.1	8.2	14	8.2	9.9	31	14.3	18.4	20	11.4	13.8	50	30	90
21-Apr-13		12.7			25.7		9	17.9	14.6	4	13.1	7.2	5	13.5	8.7	16	30.5	17.8	8	20.0	12.5	50	30	90
27-Apr-13							19		15.4	17		9.1	16		10.2	27		19.7	50		19.9	50	30	90
03-May-13		2.3			5.0		15	5.5	15.4	8	5.2	8.9	11	3.2	10.3	15	6.7	19.0	18.9	17.4	19.8	50	30	90
09-May-13		**6.7**	6.4		**11.9**	12.1	18	**15.4**	15.8	20	**11.8**	10.4	7	**9.5**	9.8	20	**17.6**	19.1	76	**35.8**	27.7	50	30	90
15-May-13		6.5			11.4		6	18.3	14.5	5	9.6	9.8	3	9.9	9.0	7	19.1	17.6	17.4	18.9	26.4	50	30	90
21-May-13		14.0			26.8		19	19.0	15.0	10	19.6	9.8	10	16.2	9.1	19	27.4	17.7	18	75.5	25.4	50	30	90
27-May-13							17		15.2	6		9.4	7		8.9	11		17.0	13		24.2	50	30	90
02-Jun-13		2.9			4.0		3	1.3	14.1	1	1.1	8.7	2	1.7	8.3	3	1.3	15.8	3	3.2	22.3	50	30	90
08-Jun-13		**6.4**	6.4		**9.0**	11.1	6	**7.7**	13.4	3	**3.4**	8.2	4	**4.0**	7.9	3	**5.6**	14.7	6	**6.4**	20.9	50	30	90
14-Jun-13		6.3			8.5		1	6.4	12.5	3	3.2	7.8	2	3.5	7.4	1	3.3	13.7	3	4.6	19.6	50	30	90
20-Jun-13		12.2			16.7		11	16.5	12.4	4	6.2	7.5	6	7.2	7.3	9	10.8	13.4	<0.1	13.1	19.6	50	30	90
26-Jun-13							9		12.2	3		7.2	4		7.1	2		12.7			19.6	50	30	90
02-Jul-13		2.5			3.5		12	5.6	12.2	3	2.7	6.9	6	4.2	7.0	5	1.9	12.2	4	3.9	18.5	50	30	90
08-Jul-13		**6.4**	6.4		**9.3**	10.6	19	**11.9**	12.6	6	**3.8**	6.9	9	**5.7**	7.1	9	**5.5**	12.0	9	**6.7**	17.8	50	30	90
14-Jul-13		5.9			9.2		14	12.1	12.6	5	3.3	6.7	6	5.6	7.0	9	4.8	11.8	8	6.9	17.2	50	30	90
20-Jul-13		15.2			17.7		6	18.6	12.3	3	5.6	6.5	4	8.6	6.9	2	9.3	11.3	6	9.2	16.5	50	30	90
26-Jul-13									12.3			6.5			6.9			11.3			16.5	50	30	90
01-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
07-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
13-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
19-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
25-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
31-Aug-13									12.3			6.5			6.9			11.3			16.5	50	30	90
06-Sep-13									12.3			6.5			6.9			11.3			16.5	50	30	90
12-Sep-13									12.3			6.5			6.9			11.3			16.5	50	30	90
18-Sep-13									12.3			6.5			6.9			11.3			16.5	50	30	90
24-Sep-13									12.3			6.5			6.9			11.3			16.5	50	30	90
30-Sep-13									12.3			6.5			6.9			11.3			16.5	50	30	90
06-Oct-13									12.3			6.5			6.9			11.3			16.5	50	30	90
12-Oct-13									12.3			6.5			6.9			11.3			16.5	50	30	90
18-Oct-13									12.3			6.5			6.9			11.3			16.5	50	30	90
24-Oct-13									12.3			6.5			6.9			11.3			16.5	50	30	90
30-Oct-13									12.3			6.5			6.9			11.3			16.5	50	30	90
05-Nov-13									12.3			6.5			6.9			11.3			16.5	50	30	90
11-Nov-13									12.3			6.5			6.9			11.3			16.5	50	30	90
17-Nov-13									12.3			6.5			6.9			11.3			16.5	50	30	90
23-Nov-13									12.3			6.5			6.9			11.3			16.5	50	30	90
29-Nov-13									12.3			6.5			6.9			11.3			16.5	50	30	90
05-Dec-13									12.3			6.5			6.9			11.3			16.5	50	30	90
11-Dec-13									12.3			6.5			6.9			11.3			16.5	50	30	90
17-Dec-13									12.3			6.5			6.9			11.3			16.5	50	30	90
23-Dec-13									12.3			6.5			6.9			11.3			16.5	50	30	90
29-Dec-13									12.3			6.5			6.9			11.3			16.5	50	30	90
04-Jan-14									12.3			6.5			6.9			11.3			16.5	50	30	90
10-Jan-14									12.3			6.5			6.9			11.3			16.5	50	30	90
16-Jan-14									12.3			6.5			6.9			11.3			16.5	50	30	90
22-Jan-14									12.3			6.5			6.9			11.3			16.5	50	30	90
28-Jan-14									12.3			6.5			6.9			11.3			16.5	50	30	90
03-Feb-14									12.3			6.5			6.9			11.3			16.5	50	30	90
09-Feb-14									12.3			6.5			6.9			11.3			16.5	50	30	90
15-Feb-14									12.3			6.5			6.9			11.3			16.5	50	30	90
21-Feb-14									12.3			6.5			6.9			11.3			16.5	50	30	90
27-Feb-14									12.3			6.5			6.9			11.3			16.5	50	30	90
05-Mar-14									12.3			6.5			6.9			11.3			16.5	50	30	90
11-Mar-14									12.3			6.5			6.9			11.3			16.5	50	30	90
17-Mar-14									12.3			6.5			6.9			11.3			16.5	50	30	90
23-Mar-14									12.3			6.5			6.9			11.3			16.5	50	30	90
29-Mar-14									12.3			6.5			6.9			11.3			16.5	50	30	90
Min							**1.3**			**1.1**			**1.7**			**1.3**			**3.2**					
Median							**14.0**			**4.7**			**5.6**			**9.4**			**9.2**					
Max							**19.0**			**19.6**			**16.2**			**30.5**			**75.5**					
Capture							**31%**			**31%**			**31%**			**31%**			**28%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2013-2014

MONTH (g/m2/month)				April 2013	May 2013	June 2013	July 2013	August 2013	September 2013	October 2013	November 2013	December 2013	January 2014	February 2014	March 2014	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG2	Cintra	Total Matter	4.1	1.5	1.3	1.2									2.0	1.3	1.2	4.1	4.0
			Ash Content	3.0	0.8	0.9	0.8													
-	DG5	Railway View	Total Matter	0.7	1.0	0.9	0.8									0.9	0.9	0.7	1.0	4.0
			Ash Content	0.5	0.6	0.9	0.6													
EPL #1	DG20	Tonsley Park	Total Matter	1.2	0.6	0.4	0.6									0.7	0.7	0.4	1.2	4.0
			Ash Content	0.7	0.3	0.4	0.4													
-	DG15	Plain View	Total Matter	2.6	1.0	1.2	0.8									1.4	1.4	0.8	2.6	4.0
			Ash Content	1.3	0.6	1.0	0.5													
-	DG9	Marengo	Total Matter	1.4	0.8	0.3	0.4									0.7	0.4	0.3	1.4	4.0
			Ash Content	0.6	0.3	0.2	0.2													
-	DG22	Mountain View	Total Matter	0.7	0.8	1.5	0.5									0.9	0.9	0.5	1.5	4.0
			Ash Content	0.5	0.7	1.2	0.4													
EPL#29	DG11	Glenara	Total Matter	0.2	0.2	0.2	0.1									0.2	0.2	0.1	0.2	4.0
			Ash Content	0.1	0.1	0.1	0.1													
-	DG24	Hazeldene	Total Matter	0.8	0.5	0.4	0.3									0.5	0.5	0.3	0.8	4.0
			Ash Content	0.4	0.4	0.4	0.2													
-	DG17	Woodlands	Total Matter	0.8	0.7	0.4	0.4									0.6	0.6	0.4	0.8	4.0
			Ash Content	0.5	0.4	0.4	0.3													
-	DG96	Talavera	Total Matter	0.7	0.4	0.2	0.2									0.4	0.4	0.2	0.7	4.0
			Ash Content	0.4	0.2	0.2	0.2													
EPL#28	DG98	Kyooma	Total Matter	0.2	0.2	0.1	0.2									0.2	0.2	0.1	0.2	4.0
			Ash Content	0.2	0.2	0.1	0.2													
-	DG14	Greenslopes	Total Matter	0.4	0.3	0.3	0.3									0.3	0.3	0.3	0.4	4.0
			Ash Content	0.3	0.2	0.3	0.2													
-	DG62	Werris Creek South	Total Matter	0.3	0.3	0.2	0.9									0.4	0.3	0.2	0.9	4.0
			Ash Content	0.2	0.2	0.2	0.2													
EPL#30	DG92	Werris Creek Centre	Total Matter	0.5	0.8	0.3	0.3									0.5	0.5	0.3	0.8	4.0
			Ash Content	0.3	0.6	0.2	0.2													
-	DG101	Westfall	Total Matter	1.2	0.5	0.4	0.5									0.7	0.7	0.4	1.2	4.0
			Ash Content	0.8	0.5	0.2	0.3													
-	DG103	West Street	Total Matter	0.8	0.5	0.3	0.7									0.6	0.6	0.3	0.8	4.0
			Ash Content	0.6	0.5	0.2	0.4													
-	DG1	Escott	Total Matter	2.4	0.2	1.6	0.7									1.2	0.8	0.2	2.4	4.0
			Ash Content	1.0	0.2	0.6	0.5													
-	DG3	Eurunderee	Total Matter	1.1	0.6	0.7	0.4									0.7	0.7	0.4	1.1	4.0
			Ash Content	0.8	0.5	0.4	0.2													
-	DG34	8 Kurrara Street	Total Matter	13.7	6.2	54.1	0.4									18.6	0.4	0.4	54.1	4.0
			Ash Content	9.8	4.6	43.6	0.2													
-	DG106	Villamagna	Total Matter	0.8	0.4	0.4	0.3									0.5	0.5	0.3	0.8	4.0
			Ash Content	0.5	0.3	0.2	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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2013-2014

	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 2013	0.8	15%	45%	40%	0.5	15%	50%	35%	-	-	-	-	1.0	15%	45%	15%	0.9	15%	60%	25%	0.7	5%	55%	40%	4.0
May 2013	1.4	<1%	50%	30%	0.7	<1%	90%	10%	0.5	10%	85%	5%	0.6	<1%	70%	20%	0.9	<1%	30%	60%	0.5	<1%	90%	10%	4.0
June 2013	1.0	30%	30%	35%	0.5	40%	35%	20%	-	-	-	-	-	-	-	-	0.4	30%	40%	20%	0.8	15%	50%	15%	4.0
July 2013	1.0	30%	40%	20%	1.2	25%	40%	10%	0.9	30%	20%	10%	0.8	20%	40%	20%	1.7	20%	30%	40%	1.6	10%	25%	30%	4.0
August 2013																									4.0
September 2013																									4.0
October 2013																									4.0
November 2013																									4.0
December 2013																									4.0
January 2014																									4.0
February 2014																									4.0
March 2014																									4.0
ANNUAL AVERAGE	**1.1**				**0.7**				**0.7**				**0.8**				**1.0**				**0.9**				**4.0**
Average Coal %	**25.0%**				**26.7%**				**20.0%**				**17.5%**				**21.7%**				**10.0%**				**-**
Average Coal g/m2	**0.26**				**0.19**				**0.14**				**0.14**				**0.21**				**0.09**				**-**
MINIMUM	**0.8**				**0.5**				**0.5**				**0.6**				**0.4**				**0.5**				**-**
MAXIMUM	**1.4**				**1.2**				**0.9**				**1.0**				**1.7**				**1.6**				**4.0**

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

Appendix 4 – Noise Monitoring Results

1 July 2013

Ref: 04035/4818

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

RE: JUNE 2013 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 19th June, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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.

WCC Operations

WCC operations on Wednesday 19th June 2013 had the 5600 excavator in Strip 16 west at RL380m, 3600 excavator in Strip 13 centre at RL350m; the PC4000 excavator in Strip 13 centre at RL350m and a 1900 excavator in Strip 11 centre at RL270m. The overburden truck fleets were running to the RL390m western dump and in pit dump at RL300m on day and night shift. The 1900 excavator truck fleets were hauling coal to the ROM. The crushing plant operated to 3:30am 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 – 19 June 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	3:02 pm	43	35	n/a	5 / 150	Birds (40), traffic (40), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	3:37 pm	45	37	n/a	5 / 166	Dog (41), tractor (40), wind (38), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	3:21 pm	49	37/36*	n/a	5 / 166	Car (48), traffic (39), birds (35), WCC inaudible
C R10 Meadholme/ R11 Glenara	2:42 pm	48	39	n/a	5 / 150	Birds (43), traffic (43), wind (43), WCC inaudible
D R24 Hazeldene	1:49 pm	51	37	n/a	5.5 / 172	Traffic (49), Birds (43), WCC inaudible
E R12 Railway Cottage	5:13 pm	48	38	n/a	3.2 / 162	Traffic (47), birds (41), WCC inaudible
F R96 Talavera	2:05 pm	41	38	n/a	6.1 / 146	Wind (41), WCC inaudible
G R97	1:38 pm	46	35	n/a	6.1 / 146	Wind (44), Birds (40), WCC (<30)
H R98 Kyooma	3:11 pm	42	36	n/a	5 / 166	Wind 41, traffic (35), WCC inaudible
I R57 Kurrara St	5:01 pm	47	35	n/a	3.2 / 166	Traffic (43), trains (43), WCC (32)
J R57 Coronation Ave	4:42 pm	56	35	n/a	3.7 / 160	Traffic (54), birds (51), WCC inaudible
K R21 Alco Park	4:20 pm	48	39	n/a	5.3 / 160	Traffic (48), WCC inaudible
L R103	4:46 pm	45	35	n/a	3.7 / 160	Dog (42), traffic (42), WCC (30)

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 19 June 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8:48 pm	n/a	37	35	4.4	1.5 / 152	Traffic (36), insects (28), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	11:58 pm	n/a	30	37	5.6	0.6 / 145	Traffic (30), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	7:47 pm	n/a	32	37/36*	5.1	1.6 / 133	Traffic (30), horse (25), WCC inaudible
C R10 Meadholme/ R11 Glenara	9:09 pm	n/a	36	39	5.7	1.5 / 149	Traffic (35), frogs (27), WCC inaudible
D R24 Hazeldene	9:27 pm	n/a	42	37	5.5	1.6 / 137	Traffic (42), WCC inaudible
E R12 Railway Cottage	11:26 pm	n/a	38	38	6.2	1.9 / 161	Traffic (37), insects (28), WCC inaudible
F R96 Talavera	9:18 pm	28	30	37	5.5	1.5 / 149	Traffic (28), WCC (24)
G R97	8:26 pm	41	35	35	6.2	1.2 / 139	WCC (35)
H R98 Kyooma	8:51 pm	30	38	36	6.1	1.5 / 149	Dog (38), WCC (26)
I R57 Kurrara St	11:40 pm	43	44	35	6.1	1 / 167	Trains (43), WCC (34)
J R57 Coronation Ave	10:47 pm	<35	50	35	6.5	1.7 / 152	Train (49), traffic (41), WCC (<30)
K R21 Alco Park	10:23 pm	41	44	37	6.5	1.7 / 142	Trains (42), WCC (38)
L R103	7:52 pm	n/a	54	35	5.1	1.6 / 133	Dog (54), train (42), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period except at R21 “Alco Park” where a mine noise contribution 1 dB above the noise criterion was recorded during the night time measurement. This noise level does not

constitute an exceedance or breach of a license condition since, in accordance with Condition 1 of Schedule 3 of PA10_0059, there is an agreement in place with this receiver allowing for mine noise levels up to 40dB(A).

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 (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.

No plant noise tests were conducted during the June survey.

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:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	119 113	122 118	6/2/13

*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.

20 May 2013

Ref: 04035/4757

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

RE: MAY 2013 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 May, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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 stations.

WCC Operations

WCC operations on 14th May 2013 had the 3600 excavator in Strip 12 centre at RL300m; the PC4000 excavator in Strip 11 centre at RL280m; a 1900 excavator in Strip 13 west at RL390m and two 1900 excavators in Strip 11 east at RL290m. The overburden truck fleets were running to the RL390m western dump on day and night shift. While the two 1900 excavator truck fleets were hauling coal to the ROM. The crushing plant operated to 3:30am 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 May 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2:15 pm	41	35	n/a	5.2/331	Birds & insects (39), traffic (36), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:15 pm	43	37	n/a	5.4/326	Birds & insects (41), traffic (36), wind (35), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:10 pm	44	37/36*	n/a	5.4/326	Birds & insects (44), WCC barely audible
C R10 Meadholme/ R11 Glenara	2:35 pm	38	39	n/a	5.7/319	Birds & insects (36), traffic (34), WCC barely audible
D R24 Hazeldene	2:53 pm	42	37	n/a	4.8/323	Birds & insects (40), traffic (39), WCC barely audible
E R12 Railway Cottage	4:30 pm	49	38	n/a	4.3/310	Traffic (48), rail works (40), WCC inaudible
F R96 Talavera	3:59 pm	46	38	n/a	4.4/318	Birds & insects (46), traffic (36), WCC (34)
G R97	3:12 pm	37	35	n/a	5.0/336	Birds & insects (34), WCC (34), traffic (27)
H R98 Kyooma	3:34 pm	40	36	n/a	4.7/317	Wind (36), birds & insects (34), WCC (33), traffic (30)
I R57 Kurrara St	4:50 pm	48	35	n/a	4.0/308	Traffic (46), birds & insects (43), WCC inaudible
J R57 Coronation Ave	2:44 pm	55	35	n/a	5.1/330	Traffic (55), birds & insects (46), domestic noise (40), WCC inaudible
K R21 Alco Park	4:02 pm	45	35	n/a	4.6/324	Birds & insects (43), traffic (42), WCC inaudible
L R103	4:22 pm	51	35	n/a	4.1/315	Birds & insects (50), traffic (44), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 14 May 2013 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	7:33 pm	n/a	31	35	+3.6	0.6/203	Traffic (31), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	7:40 pm	n/a	32	37	+4.8	0.8/231	Traffic (32), insects 22, WCC barely audible
B2 R9Gedhurst/ R22 Mountain View	7:53 pm	n/a	30	37/36*	+5.4	0.8/231	Traffic (30), WCC inaudible
C R10 Meadholme/ R11 Glenara	8:55 pm	n/a	33	39	+6.3	0.8/261	Traffic (33), WCC inaudible
D R24 Hazeldene	9:13 pm	n/a	33	37	+6.8	2.7/337	Traffic (33), WCC barely audible
E R12 Railway Cottage	12:03 am	37	41	38	+7.4	2.7/3.0	Traffic (41), WCC (27)
F R96 Talavera	10:49 pm	40	34	37	+7.0	3.3/358	WCC (34)
G R97	9:44 pm	37	30	35	+6.8	3.9/340	WCC (30)
H R98 Kyooma	10:17 pm	42	36	36	+5.3	3.6/344	WCC (36)
I R57 Kurrara St	11:00 pm	39	36	35	+7.2	3.3/358	Traffic (32), WCC (32), train (28)
J R57 Coronation Ave	9:08 pm	40	37	35	+6.6	0.7/288	Traffic (33), WCC (32), dogs (31)
K R21 Alco Park	10:20 pm	35	32		+5.6	3.6/344	Traffic (29), WCC (27)
L R103	10:38 pm	30	31	35	+6.2	3.5/350	Traffic (27), WCC (27), train (26)

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

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 criterion at each monitoring location during each monitoring 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 the operational noise monitoring location.

As shown in Table 3, during the night time measurement circuit the (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

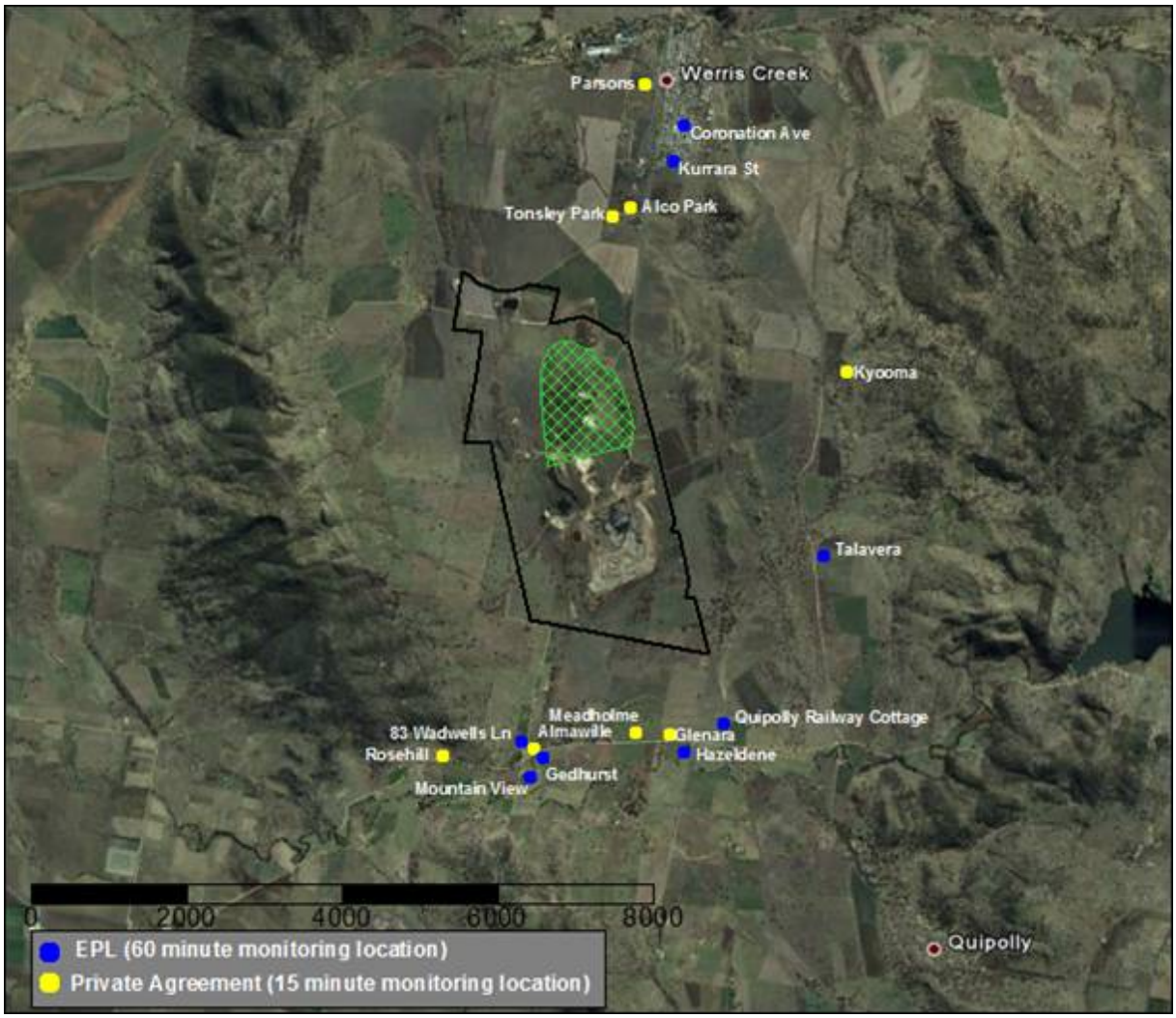
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Haul truck CAT 785C (unattenuated)	602	108	116	119		14/5/13
Haul truck CAT 785C (unattenuated)	612	108	116	120		14/5/13
Haul truck CAT 785C (unattenuated)	613	108	116	121		14/5/13
Haul truck CAT 785C (unattenuated)	623	108	116	122		14/5/13
Haul truck CAT 785C (unattenuated)	624	108	116	120		14/5/13
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Excavator (Mitsubishi engine)	EX543	116	120	116		14/5/13
Excavator (Cummins engine)	EX542	116	120	113		14/5/13
Dozer D10T (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	118 109	124 113	6/2/13

Dozer D9T on stockpile (2nd gear) (1st gear)		107 (1st)	114 (1st)	119 113	122 118	6/2/13
Drill	DR523	116		119		14/5/13
Drill	CJC 837	116		113		14/5/13

*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.

23 July 2013

Ref: 04035/4818

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

RE: JULY 2013 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 11th July, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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.

WCC Operations

WCC operations on Thursday 11th July 2013 had the 5600 excavator in Strip 15 centre at RL390m, 3600 excavator in Strip 13 centre at RL350m; a 1900 excavator in Strip 15 east at RL370m and a 1900 excavator in Strip 12 centre at RL310m. Day and night shift initially had the overburden truck fleets running to the RL390m western (out of pit) dump and truck fleets coaling from Strip 12 were hauling coal to the ROM. After 10:30pm, the Noise Control Operator contacted the Open Cut Examiner (OCE) indicating that the 5 minute noise levels were over 35dBA due to mining noise with the OCE responding by directing all CAT 785 trucks to the in pit dump at RL300m and maintaining the attenuated CAT 793 trucks to the western dump. At 11pm, the 5 minute noise levels were again over 35dBA due to mining noise so the OCE called an early crib (night shift lunch break) and the entire operation was suspended for an hour. The crushing plant operated to 3:30am 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 – 11 July 2013 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed (m/s)/dir^{O}	Identified Noise Sources
A R5 Rosehill	1.22 pm	35	35	n/a	1.1/176	Birds & insects (35), traffic (20), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1.20 pm	43	37	n/a	1.7/207	Birds & insects (40), traffic (37), domestic noise (36), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1.41 pm	34	37/36*	n/a	1.9/244	Birds & insects (33), traffic (25), WCC (20)
C R10 Meadholme/ R11 Glenara	3.50 pm	39	39	n/a	3.7/191	Traffic (38), birds & insects (32), WCC inaudible
D R24 Hazeldene	2.44 pm	39	37	n/a	2.4/231	Traffic (38), birds & insects (30), WCC inaudible
E R12 Railway Cottage	4.57 pm	48	38	n/a	3.4/224	Traffic (48), birds & insects (30), WCC inaudible
F R96 Talavera	3.45 pm	38	38	n/a	3.4/200	Birds & insects (38), traffic (28), WCC inaudible
G R97	3.00 pm	33	35	n/a	2.2/203	Birds & insects (33), WCC inaudible
H R98 Kyooma	3.20 pm	36	36	n/a	2.1/225	Birds & insects (35), WCC (25)
I R57 Kurrara St	4.49 pm	45	35	n/a	3.1/223	Trains (43), traffic (40), birds & insects (33), WCC inaudible
J R57 Coronation Ave	2.33 pm	35	35	n/a	1.0/231	Traffic (34), birds (27), WCC inaudible
K R21 Alco Park	4.12 pm	42	39	n/a	3.5/203	Traffic (41), farm activities (35), WCC inaudible
L R103	4.30 pm	44	35	n/a	2.7/214	Train (44), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 11 July 2013 (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	9:24 pm	43	39	35	+3.6	1.6/200	WCC (36), insects (34), traffic (30)
B1 R7 83 Wadwells Lane/R8 Almawillee	9:50 pm	43	38	37	+4.9	1.4/197	WCC (37), traffic (31), insects (25)
B2 R9Gedhurst/ R22 Mountain View	9:44 pm	44	41	37/36*	+4.9	1.3/196	WCC (39), insects (34), traffic (33)
C R10 Meadholme/ R11 Glenara	11:07 pm	44	39	39	+6.7	1.0/256	WCC (38), traffic (30), insects (28)
D R24 Hazeldene	10:47 pm	40	34	37	+6.2	1.3/281	WCC (34)
E R12 Railway Cottage	11:06 pm	36	33	38	+6.1	1.5/264	Traffic (32), WCC (31), birds (18)
F R96 Talavera	8:30 pm	n/a	26	37	+4.2	1.8/207	Traffic (26), WCC barely audible
G R97	7:40 pm	n/a	22	35	+4.2	1.8/155	Insects (22), WCC inaudible
H R98 Kyooma	8:03 pm	n/a	31	36	+4.8	1.6/156	Insects (31), WCC inaudible
I R57 Kurrara St	8:03 pm	n/a	43	35	+4.7	1.7/193	Trains (43), traffic (32), WCC barely audible
J R57 Coronation Ave	7:20 pm	38	42	35	+3.0	2.1/159	Traffic (39), dogs (38), WCC (30), insects (28)
K R21 Alco Park	7:20 pm	36	40	37	+3.0	2.1/159	Traffic (39), WCC (33)
L R103	7:40 pm	n/a	49	35	+4.2	1.8/155	Train (49), WCC inaudible

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels were below the relevant noise criterion at each monitoring location during each monitoring period except at R5 “Rosehill” where a mine noise contribution 1 dB above the

noise criterion was recorded during the night time measurement and at R9/R22 where a mine noise contribution 2 to 3 dB above the noise criterion was recorded also during the night time measurement. That is, due to the close proximity of the residences at Gedhurst and Mountain View a single noise measurement is made which is considered representative of the noise environment at both. On the basis of the different criterion at each residence the exceedance is 2db at Gedhurst and 3 dB at Mountain View.

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.

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 (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.

No plant noise tests were conducted during the July survey.

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:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	116	119	6/2/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (attenuated)	608	108	116	117	120	11/9/12
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	120	115		18/12/12
Dozer D10T (2^{nd} gear) (1^{st} gear)	505	107 (1^{st})	114 (1^{st})	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)		107 (1^{st})	114 (1^{st})	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)		107 (1^{st})	114 (1^{st})	119 113	122 118	6/2/13

*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

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS MAY 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-30	1/05/2013	13:12	S13_6-8_Decoal/350 UG collapse	IB	0.24	106.7	0.30	101.6	0.34	94.4	0.08	115.8	10.00	120.0	0.30	-	50.00	-3.2	354	5.3	0
2013-31	3/05/2013	13:12	S14_22-23_370 TSB29	TSB	0.26	98.3	1.05	102.6	0.37	102.6	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.8	297	2.5	0
2013-32	8/05/2013	12:11	S15_9-11_370	OB	<0.25	<109.8	0.59	105.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.8	213	1.1	1
2013-33	13/05/2013	13:23	S13_13-14_A1 Coal	OB	0.18	102.1	0.90	98.9	0.32	98.3	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.2	320	5.4	0
2013-34	16/05/2013	13:12	S14_22-23_Ramp TSB	TSB	<0.25	<109.8	0.35	110.1	0.08	111.3	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.3	295	3.5	0
2013-35	17/05/2013	13:21	S15_17-18_385	OB	<0.25	<109.8	0.87	100.0	0.20	109.0	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.3	285	5.4	0
2013-36	22/05/2013	12:17	S13_4-5_360 trim	OB	<0.25	<109.8	0.37	95.0	0.12	98.5	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.2	218	0.3	0
2013-37	23/05/2013	10:17	S14_15-20_ramp	OB	<0.25	<109.8	1.12	106.0	0.49	104.0	0.18	97.6	10.00	120.0	Not Monitored		50.00	-1.9	175	5.3	0
2013-38	28/05/2013	13:10	Seed Wave Trial Blast	-	0.38	87.8	0.40	87.3	<0.25	<109.8	0.13	92.9	10.00	120.0	Not Monitored		50.00	-2.3	138	1.8	0
TOTALS	**MAY 2013**	**# BLAST**	**17**	**AVERAGE**	**0.27**	**98.7**	**0.66**	**100.8**	**0.27**	**102.6**	**0.13**	**102.1**	**5.00**	**115.0**							
TOTALS	**MAY 2013**	**# BLAST**	**17**	**HIGHEST**	**0.38**	**106.7**	**1.12**	**110.1**	**0.49**	**111.3**	**0.18**	**115.8**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**17**	**AVERAGE**	**0.26**	**100.6**	**0.78**	**101.7**	**0.47**	**103.2**	**0.13**	**102.1**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**17**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**6%**	**5%**	**5%**							

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS JUNE 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-39&40	5/06/2013	12:17	S13_3-4_350 trim & S16_8-11_385 pt 1	IB/OB	<0.25	<109.8	0.58	102.0	<0.25	<109.8	0.21	106.0	10.00	120.0	<0.25	-	50.00	-2.6	347	4.7	1
2013-41	6/06/2013	15:08	S15_12-18_Blackseam	OB	<0.25	<109.8	1.05	104.0	0.32	102.6	0.24	109.1	10.00	120.0	Not Monitored		50.00	-1.9	307	3.2	0
2013-42&43	7/06/2013	11:53	S11_17-19_Gcoal & S12_18_290 TSB secondary	IB/TSB	<0.25	<109.8	0.45	97.6	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.6	342	5.8	0
2013-44	18/06/2013	13:11	S16_8-11_385 Pt2	OB	0.21	102.1	1.75	108	0.47	106.1	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.2	304	2.9	1
2013-45&46	21/06/2013	13:20	S12_15-17_280 TSB34 & S13_4-5_350 Trim Pt2	TSB	0.24	98.7	0.95	102.3	0.32	101.6	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.1	222	1.7	0
2013-47	27/06/2013	13:33	S12_12-13_ramp TSB33	TSB	<0.25	<109.8	0.58	97.9	0.18	96.9	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.8	173	1.9	0
TOTALS	**JUNE 2013**	**# BLAST**	**23**	**AVERAGE**	**0.23**	**100.4**	**0.89**	**102.0**	**0.32**	**101.8**	**0.23**	**107.6**	**5.00**	**115.0**							
TOTALS	**JUNE 2013**	**# BLAST**	**23**	**HIGHEST**	**0.24**	**102.1**	**1.75**	**108.0**	**0.47**	**106.1**	**0.24**	**109.1**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**23**	**AVERAGE**	**0.25**	**100.51**	**0.82**	**101.8**	**0.42**	**102.8**	**0.18**	**104.8**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**23**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**4.3%**	**5%**	**5%**							

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS JULY 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-48	8/07/2013	13:35	S16_12-18_Blackseam	OB	<0.25	<109.8	0.93	121.0	0.45	119.0	0.07	111.6	10.00	120.0	Not Monitored		50.00	-2.3	167	1.1	1
2013-49	17/07/2013	15:32	S13_18-23_350 TSB35	TSB	<0.25	<109.8	1.25	102.6	0.60	88.1	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.2	258	1.3	1
2013-50	26/07/2013	13:26	S13_22-23_350 TSB	TSB	0.53	88.8	0.28	88.9	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.8	276	1.9	0
2013-51	30/07/2013	12:12	S13_10-13_330	OB	<0.25	<109.8	1.38	99.8	0.65	98.0	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.3	168	1.8	1
TOTALS	**JULY 2013**	**# BLAST**	**27**	**AVERAGE**	**0.53**	**88.8**	**0.96**	**103.1**	**0.57**	**101.7**	**0.07**	**111.6**	**5.00**	**115.0**							
TOTALS	**JULY 2013**	**# BLAST**	**27**	**HIGHEST**	**0.53**	**88.8**	**1.38**	**121.0**	**0.65**	**119.0**	**0.07**	**111.6**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**27**	**AVERAGE**	**0.25**	**100.5**	**0.82**	**101.8**	**0.42**	**102.8**	**0.18**	**104.8**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**27**	**0%**	**0%**	**0%**	**3.7%**	**0%**	**3.7%**	**0%**	**3.7%**	**5%**	**5%**							

Appendix 6 – Groundwater Monitoring Results

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 (Stand

SAMPLER NAME: B Phillips / C Kilbourne

Annual - 1L Nat, Nutrien

SITE: WERRIS CREEK MINE AND SURROUNDS

Reportables / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests				Fiel
	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	
			(24hr)	mbgl mbtoc m	mbgl mbtoc m	m	Pump / Bailer	L	mbgl mbtoc m	uS/cm	pH units	°C		
	MW1	7/5/13	11:30	54.22			Bail			1194	6.87	21.2	Clear	
	MW2	7/5/13	12:00	25.42			Tap			786	7.90	20.6	Clear	
Purge → *	MW3	9/5/13	11:30	15.01			Pump	120L		3160	6.78	22.1	Clear	
	MW4	9/5/13	—				No stick up - unable to locate in bo							
	MW4B	9/5/13	12:30	9.95			Bail			974	7.76	19.5	Clear	
	MW5	9/5/13	12:10	7.44			Bail			2340	7.37	20.2	Clear	
	MW5B	9/5/13	11:50	7.12			Bail			2480	7.14	20.2	Clear	
	MW6	7/5/13	12:30	12.49			Bail			1764	7.30	21.9	Slightly Turbid	
	MW9	9/5/13	10:40	15.27			Bail			763	7.43	20.2	Clear	
	MW10	7/5/13	9:20	17.10			Tap			1195	7.87	18.7	Clear	
	MW11	7/5/13	9:40	—	Pump over bore.					No sample - New pump not gone				
	MW14	9/5/13	10:10	16.96			Bail			1095	7.28	20.0	Clear	
	MW14B	9/5/13	9:40	16.72			Bail			931	7.09	20.6	Slightly Turbid	
	MW17B	9/5/13	12:50	4.53			Tank	fed by mill		1914	8.59	17.5	Clear	
	MW20	7/5/13	9.00	19.46			Tap			No pressure at any tap - no sample				
	MW24A	7/5/13	13:45	13.24			Tap			2250	7.03	20.3	Clear	
	MW25A	7/5/13	11:00	—	Pump over Bore					No sample - no tap on bore				
	MW25B	7/5/13	10:45	—	Pump over Bore.		Tap (Tank)			4290	8.95	16.7	Clear	
	P1			In production area										
	P2			Under over-burden.										
	PUG			Andrew to monitor.										
	MW27	7/5/13	10:15	12.04			Bail			1417	6.85	21.8	Clear	
	MW29	7/5/13	11:15	11.51			From Tank on pump *			10559	8.59	19.5	Clear	
	MW31	7/5/13	13:15	Dry						(About 8.5m Down.)				

SPECIAL COMMENTS

WO# 5926

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:	Annual- 1L Nat, Nutrients, Metals, O+G
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	8/5/13	9:05	14.42			Tap.			964	7.38	19.7	Clear	Nil	Clear	Rosemeth
	MW12	9/5/13	14:00	8.10			Tap			462	7.10	19.5	Clear	Nil	Clear.	Hazeldene.
	MW13	8/5/13	10:00	4.52			Bail			668	7.04	19.4	Clear	Nil	Clear	* Wadwell Rd.
	MW13B	8/5/13	10:15	3.19			* No sample.-			No access through broken windmill."						*Taylors lane, -opp. Hayshed
	MW13D	8/5/13	10:45	4.58			Bail			1086	7.26	20.3	Clear	Nil	Clear	*Taylors lane - windmill
	MW15	8/5/13	11:30	4.10			Bail			1027	7.10	20.4	Clear	Nil	Clear.	*Paynes ln. - windmill
	MW16	8/5/13	12:20	4.56			Tap.			638	7.12	19.2	Clear	Nil	Clear	* Mountain View. (Little shed)
	MW17A	8/5/13	12:00	3.64			Tap			930	7.15	21.1	Clear	Nil	Clear	* 83 Wadell In..
	MW18A	8/5/13	12:30	3.45			Tap			871	7.18	20.4	Clear	Nil	Clear	*82 Wadell In.
	MW19A	8/5/13	9:30	6.03			Tap			828	8.52	21.9	Clear	Nil	Clear	*Lintong - (Tap in yard) Pump
	MW21A	8/5/13	14:20	6.34			Tap			713	7.74	22.3	Clear	Nil	Clear	* Glenara
	MW22A	8/5/13	14:00	4.62			Tap			538	7.10	20.3	Clear	Nil	Clear	308 Paynes In. - House
	MW22B	8/5/13	13:40	4.89			Bail			452	7.27	18.0	Clear	Nil	Clear	308 Paynes In. - Irrigation
	MW23A	9/5/13	13:00	3.86			Tap			960	7.16	21.3	Clear	Nil	Clear	Peggy - House yard
	MW23B	9/5/13	13:30	4.10			Bail			873	7.29	20.2	Clear	Nil	Clear.	Peggy — Irrigation
	MW28A	7/5/13	12:45	9.97						(No sample -	Broken	windmill over	here)			* Windmill - LHS (Woodlawn)
	MW28B	7/5/13	13:00	—	* Bung over bore.					(No sample -	No pressure at	tap on	pump.)			* Woodlawn RHS Paddock.
SPECIAL COMMENTS: M	* NARANJ 8/5/13		11:10	4.62			Tap			726	7.28	21.8	Clear	Nil	Clear	* Naranj. - Johns lane bore in shed.

Sheet: of

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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:	
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	25/7/13	11:00	15.28		0.2										Roseneath.
*	MW12	26/7/13	12:25	—		0.5			"Blockage or pump @ approx 8.50 m" So > 850m							Hazel dene.
	MW13	25/7/13	11:40	4.60		0.4										Wadell lane. (well)
	MW13B	25/7/13	12:00	3.19		0.3										Taylors lane - Opp. Hayshed.
	MW13D	25/7/13	12:20	4.61		0.2										Taylors lane - Windmill
	MW15	25/7/13	13:30	4.13		0.2										Paynes lane - Windmill
*	MW16	26/7/13	11:40	4.68		0.3										* Moutain View - Red shed.
*	MW17A	26/7/13	11:10	3.79		0.5										*83 Wadell ln. shed.
*	MW18A	26/7/13	11:20	3.57		—										*83 " " - side of house.
	MW19A	25/7/13	11:20	5.73		0.15										Linbara. - pump.
	MW21A	25/7/13	13:45	6.56		0.30										GLENARA.
*	MW22A	26/7/13	12:00	4.77		0.55										308 Paynes ln. - House
*	MW22B	26/7/13	12:15	4.93		0.45										" " - Irrigation.
	MW23A	25/7/13	13:00	3.64		0.2										Pegg Easy - Horse Yard
	MW23B	25/7/13	13:15	4.23		0.1										" " - Irrigation Paddock
	MW28A	25/7/13	14:10	10.98		0.25										* Woodlawn - LHS Windmill
80	MW28B	25/7/13	14:00	—		0.8			"Pump over base"			No	Silt			* Woodlawn - RHS
SPECIAL COMMENTS: * NAKANI		25/7/13	12:40	3.92												#3 Johns Ln. (Pump House)

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: B Phillips / C Elbourne

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				
	MW1	25/7/13	10:00	5.06												6 Monthly Hill view
	MW2	25/7/13	10:20	25.91		0.15										6 Monthly Railway view
	MW3	26/7/13	10:15	14.97		0.95										6 Monthly Eurunderee
	MW4	—								"Broken stickup - unable to locate						
	MW4B	26/7/13	11:00	10.07		0.70										6 Monthly Mine Grant
	MW5	26/7/13	10:50	7.91		1.15										6 Monthly
	MW5B	26/7/13	10:40	7.48		0.70										
	MW6	25/7/13	10:40	12.49												6 Monthly IIII W/C Rd
	MW9	26/7/13	9:50	10.74												*Mine - rail Outload.
	MW10	25/7/13	9:20	17.01		0.20										Escott Lane - near shed.
	MW11	—					"	No point to dip - Pump over bore "								Escott Lane - the Gap
	MW14	26/7/13	9:35	17.39		0.95										Mine - Rail outload
	MW14B	26/7/13	9:15	17.15		0.75										Mine - ✓ ✓
	MW17B	26/7/13	11:20	9.63		0.65										*Wadell lane - Windmill
	MW20	25/7/13	8:50	19.57		0.55										Tonsley Park
	MW24A	25/7/13	14:30	13.01		0.15										*Marango.
	MW25A	25/7/13						"No access pump over bore"								Brunga. = little shed.
	MW25B	✓						" " "								Brunga. - Tank
	P1	—					In new prediction area.									
	P2	—					Under overburden.									
	PUG	—					Andrew Wright to monitor.									
	MW27	25/7/13	9:40	43.03		0.45										Cintra - Escott lanes
	MW29	25/7/13	14:45	11.26		0.35										Kyoama - Windmill (No one)
	MW31	25/7/13	14:20	"Dry"												Talawarra - Windmill (no fan)

SPECIAL COMMENTS:

Sheet: of

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1314418**	Page	: 1 of 6
Amendment	: **1**		
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 6165		
C-O-C number	: ----	Date Samples Received	: 28-JUN-2013
Sampler	: C.ELLBOURN	Issue Date	: 12-JUL-2013
Site	: ----		
		No. of samples received	: 11
Quote number	: SY/417/13	No. of samples analysed	: 11

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
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes Conductivity results for sample 1 & 2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB2	SB9	SD4	SD5	VWD2
			Client sampling date / time	25-JUN-2013 12:00	25-JUN-2013 11:30	25-JUN-2013 13:30	25-JUN-2013 13:15	25-JUN-2013 11:00
Compound	CAS Number	LOR	Unit	ES1314418-001	ES1314418-002	ES1314418-003	ES1314418-004	ES1314418-006
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	897	203	238	234	831
pH	----	0.01	pH Unit	9.27	8.23	8.51	8.25	8.29
Temperature	----	0.1	°C	11.7	11.6	11.1	11.4	13.6
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.66	7.95	7.61	7.94	8.05
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	924	203	175	237	880
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	8	48	25	28	<5
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.03	0.03	0.01	<0.01	0.05
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.63	0.87	0.47	0.10	0.86
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.66	0.90	0.48	0.10	0.91
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.6	1.0	1.3	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.5	1.5	1.4	1.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.01	0.37	0.73	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.34	0.67	<0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----
Oil & Grease	----	5	mg/L	----	----	----	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BGD	QCU	QCD	WCD	VWD3
				Client sampling date / time	25-JUN-2013 09:30	25-JUN-2013 10:00	25-JUN-2013 10:30	25-JUN-2013 08:50	25-JUN-2013 15:00
Compound	CAS Number	LOR	Unit		ES1314418-007	ES1314418-008	ES1314418-009	ES1314418-010	ES1314418-011
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		310	455	807	1280	1040
pH	----	0.01	pH Unit		8.61	7.51	8.01	8.57	8.74
Temperature	----	0.1	°C		10.2	12.0	11.5	9.6	12.9
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.01	7.74	7.95	8.26	8.41
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		322	484	850	1350	1100
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		116	5	<5	12	10
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	<0.01	0.01	0.07
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.03	0.32	0.14	0.71	4.33
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.03	0.32	0.14	0.72	4.40
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.2	<0.1	0.2	0.3	2.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.2	0.3	0.3	1.0	6.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	0.18	0.08	0.18	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.11	0.01	0.05	0.14	<0.01
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	VWD4	----	----	----	----
			Client sampling date / time	25-JUN-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1314418-012	----	----	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**929**	----	----	----	----
pH	----	0.01	pH Unit	**8.93**	----	----	----	----
Temperature	----	0.1	°C	**12.4**	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.58**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**986**	----	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**5**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.10**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.10**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.7**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.8**	----	----	----	----
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	----	----	----	----
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	SB2 - 25-JUN-2013 12:00	CLEAR
AC04: Appearance	SB9 - 25-JUN-2013 11:30	SLIGHTY BROWN
AC04: Appearance	SD4 - 25-JUN-2013 13:30	SLIGHT BROWN
AC04: Appearance	SD5 - 25-JUN-2013 13:15	SLIGHT BROWN YELLOW
AC04: Appearance	VWD2 - 25-JUN-2013 11:00	CLEAR
AC04: Appearance	BGD - 25-JUN-2013 09:30	SLIGHTY TURBID
AC04: Appearance	QCU - 25-JUN-2013 10:00	CLEAR
AC04: Appearance	QCD - 25-JUN-2013 10:30	CLEAR
AC04: Appearance	WCD - 25-JUN-2013 08:50	CLEAR
AC04: Appearance	VWD3 - 25-JUN-2013 15:00	CLEAR
AC04: Appearance	VWD4 - 25-JUN-2013 15:00	CLEAR
AC04: Odour	SB2 - 25-JUN-2013 12:00	NIL
AC04: Odour	SB9 - 25-JUN-2013 11:30	NIL
AC04: Odour	SD4 - 25-JUN-2013 13:30	NIL
AC04: Odour	SD5 - 25-JUN-2013 13:15	NIL
AC04: Odour	VWD2 - 25-JUN-2013 11:00	NIL
AC04: Odour	BGD - 25-JUN-2013 09:30	NIL
AC04: Odour	QCU - 25-JUN-2013 10:00	NIL
AC04: Odour	QCD - 25-JUN-2013 10:30	NIL
AC04: Odour	WCD - 25-JUN-2013 08:50	NIL
AC04: Odour	VWD3 - 25-JUN-2013 15:00	NIL
AC04: Odour	VWD4 - 25-JUN-2013 15:00	NIL
AC04: Colour	SB2 - 25-JUN-2013 12:00	CLEAR
AC04: Colour	SB9 - 25-JUN-2013 11:30	CLEAR
AC04: Colour	SD4 - 25-JUN-2013 13:30	CLEAR
AC04: Colour	SD5 - 25-JUN-2013 13:15	CLEAR
AC04: Colour	VWD2 - 25-JUN-2013 11:00	CLEAR
AC04: Colour	BGD - 25-JUN-2013 09:30	SLIGHTLY TURBID
AC04: Colour	QCU - 25-JUN-2013 10:00	CLEAR
AC04: Colour	QCD - 25-JUN-2013 10:30	CLEAR
AC04: Colour	WCD - 25-JUN-2013 08:50	CLEAR
AC04: Colour	VWD3 - 25-JUN-2013 15:00	CLEAR
AC04: Colour	VWD4 - 25-JUN-2013 15:00	CLEAR

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1314418**	Page	: 1 of 6
Amendment	: **1**		
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE-WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 6165		
C-O-C number	: ----	Date Samples Received	: 28-JUN-2013
Sampler	: C.ELLBOURN	Issue Date	: 12-JUL-2013
Site	: ----		
		No. of samples received	: 11
Quote number	: SY/417/13	No. of samples analysed	: 11

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
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes Conductivity results for sample 1 & 2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SB2	SB9	SD4	SD5	VWD2
			Client sampling date / time	25-JUN-2013 12:00	25-JUN-2013 11:30	25-JUN-2013 13:30	25-JUN-2013 13:15	25-JUN-2013 11:00
Compound	CAS Number	LOR	Unit	ES1314418-001	ES1314418-002	ES1314418-003	ES1314418-004	ES1314418-006
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	897	203	238	234	831
pH	----	0.01	pH Unit	9.27	8.23	8.51	8.25	8.29
Temperature	----	0.1	°C	11.7	11.6	11.1	11.4	13.6
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.66	7.95	7.61	7.94	8.05
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	924	203	175	237	880
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	8	48	25	28	<5
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.03	0.03	0.01	<0.01	0.05
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.63	0.87	0.47	0.10	0.86
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.66	0.90	0.48	0.10	0.91
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.6	1.0	1.3	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.5	1.5	1.4	1.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.01	0.37	0.73	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.34	0.67	<0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----
Oil & Grease	----	5	mg/L	----	----	----	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BGD	QCU	QCD	WCD	VWD3
				Client sampling date / time	25-JUN-2013 09:30	25-JUN-2013 10:00	25-JUN-2013 10:30	25-JUN-2013 08:50	25-JUN-2013 15:00
Compound	CAS Number	LOR	Unit		ES1314418-007	ES1314418-008	ES1314418-009	ES1314418-010	ES1314418-011
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		310	455	807	1280	1040
pH	----	0.01	pH Unit		8.61	7.51	8.01	8.57	8.74
Temperature	----	0.1	°C		10.2	12.0	11.5	9.6	12.9
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.01	7.74	7.95	8.26	8.41
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		322	484	850	1350	1100
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		116	5	<5	12	10
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	<0.01	0.01	0.07
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.03	0.32	0.14	0.71	4.33
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.03	0.32	0.14	0.72	4.40
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.2	<0.1	0.2	0.3	2.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.2	0.3	0.3	1.0	6.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	0.18	0.08	0.18	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.11	0.01	0.05	0.14	<0.01
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	VWD4	----	----	----	----
			Client sampling date / time	25-JUN-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1314418-012	----	----	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**929**	----	----	----	----
pH	----	0.01	pH Unit	**8.93**	----	----	----	----
Temperature	----	0.1	°C	**12.4**	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.58**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**986**	----	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**5**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.10**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.10**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.7**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.8**	----	----	----	----
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	----	----	----	----
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	SB2 - 25-JUN-2013 12:00	CLEAR
AC04: Appearance	SB9 - 25-JUN-2013 11:30	SLIGHTY BROWN
AC04: Appearance	SD4 - 25-JUN-2013 13:30	SLIGHT BROWN
AC04: Appearance	SD5 - 25-JUN-2013 13:15	SLIGHT BROWN YELLOW
AC04: Appearance	VWD2 - 25-JUN-2013 11:00	CLEAR
AC04: Appearance	BGD - 25-JUN-2013 09:30	SLIGHTY TURBID
AC04: Appearance	QCU - 25-JUN-2013 10:00	CLEAR
AC04: Appearance	QCD - 25-JUN-2013 10:30	CLEAR
AC04: Appearance	WCD - 25-JUN-2013 08:50	CLEAR
AC04: Appearance	VWD3 - 25-JUN-2013 15:00	CLEAR
AC04: Appearance	VWD4 - 25-JUN-2013 15:00	CLEAR
AC04: Odour	SB2 - 25-JUN-2013 12:00	NIL
AC04: Odour	SB9 - 25-JUN-2013 11:30	NIL
AC04: Odour	SD4 - 25-JUN-2013 13:30	NIL
AC04: Odour	SD5 - 25-JUN-2013 13:15	NIL
AC04: Odour	VWD2 - 25-JUN-2013 11:00	NIL
AC04: Odour	BGD - 25-JUN-2013 09:30	NIL
AC04: Odour	QCU - 25-JUN-2013 10:00	NIL
AC04: Odour	QCD - 25-JUN-2013 10:30	NIL
AC04: Odour	WCD - 25-JUN-2013 08:50	NIL
AC04: Odour	VWD3 - 25-JUN-2013 15:00	NIL
AC04: Odour	VWD4 - 25-JUN-2013 15:00	NIL
AC04: Colour	SB2 - 25-JUN-2013 12:00	CLEAR
AC04: Colour	SB9 - 25-JUN-2013 11:30	CLEAR
AC04: Colour	SD4 - 25-JUN-2013 13:30	CLEAR
AC04: Colour	SD5 - 25-JUN-2013 13:15	CLEAR
AC04: Colour	VWD2 - 25-JUN-2013 11:00	CLEAR
AC04: Colour	BGD - 25-JUN-2013 09:30	SLIGHTLY TURBID
AC04: Colour	QCU - 25-JUN-2013 10:00	CLEAR
AC04: Colour	QCD - 25-JUN-2013 10:30	CLEAR
AC04: Colour	WCD - 25-JUN-2013 08:50	CLEAR
AC04: Colour	VWD3 - 25-JUN-2013 15:00	CLEAR
AC04: Colour	VWD4 - 25-JUN-2013 15:00	CLEAR

Werris Creek Coal Community Consultative Committee

Twenty Ninth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 21st November 2013

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site after the meeting. The CCC inspected the rehabilitation, overburden emplacement, eastern lookout in pit, mine infrastructure area and train load out facility.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Geoff Dunn (Community Representative); Lindsay Bridge (Community Representative); Col Stewart (Liverpool Plains Shire Council - Councilor); Peter Easey (WCC Operations Manager) and Andrew Wright (WCC Environmental Officer and Minute Taker).

Apologies: Jill Coleman (Community Representative) and Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services).

2. Declaration of Pecuniary or Other Interests

Noel Taylor declared that his son works for Werris Creek Coal.

3. New Matters for Discussion under General Business

Water Evaporator on Large Dam.

4. Minutes of Previous Meeting

Minutes of the previous meeting on the 29th August 2013 were accepted as true and accurate representation of business conducted on that day.

Moved: Lindsay Bridge. Seconded: Ron Van Katwyk. Motion carried.

5. Matters Arising

a) Actions from Previous Meeting

Lindsay Bridge attempted to coordinate a meeting between WCC and an aggrieved resident of Werris Creek in relation to mining impacts that was not willing to make an official complaint. The resident did not wish to meet with WCC. The committee agreed that an attempt had been made and if the resident did not wish to progress the matter further, then the matter is considered closed.

b) Other Matters Arising

None.

6. Environmental Monitoring Report: August, September and October 2013

Meteorology – The three month period was dry and rainfall below average with just over 50mm received. The prevailing wind direction was from the north-north west typical of the autumn period.
Air Quality – Dust results for August were below average while the prevailing dry conditions during September and October affected regional air quality with all results above the annual average at each location. There was one elevated result above the daily criteria on 30th September at "Glenara" recording 56.4µg/m^3; it is unknown what local or agricultural contribution to dust levels were on this day. Bushfire smoke and ambient dust impacted regional air quality during October with smoke from the Port Stephens bushfire particularly affecting regional air quality on 18th October 2013 with 15 minute PM10 readings peaking at 158.7µg/m^3 but not causing the daily PM10 average above 50µg/m^3. There were five dust complaints during the period; three related to the open cut mine and two related to the train load out facility. Open cut mine dust complaints occurred during periods of high winds. A review of operations did not identify excessive dust with operations managed appropriately to mitigate dust leaving site. The real time PM10 dust levels as measured in Werris Creek at the time of each complaint were below the 30µg/m^3 criteria indicating good air quality.
Noise – There was one noise exceedance recorded during September 2013. Attended noise monitoring was undertaken on Thursday 19th September 2013 with a noise level of 39dB(A) recorded at R97 (+4dBA over criteria) due to westerly winds and strip orientation/location of excavators only 2.5km away and directly towards the property. The EPA has responded acknowledging that as this property does not have a residence, it is not considered an exceedance in accordance with the Environment Protection Licence. There was only one noise complaint during the period from the property owner of R97. WCC has offered to negotiate a private agreement with the owner of R97 but was declined.
Blasting – During the period a total of thirty blasts were fired by the blasting contractor, Orica Mining Services. 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 ten blast complaints during the period from eight separate blast events. The continuation of blasting complaints is believed to be due the sensitization of the Werris Creek community by an elevated overpressure from the blast on 8th July 2013. WCC are continuing to balance blasting to minimise community impact while also producing enough blasted inventory to achieve the budgeted 2.5Mt coal production rate for 2013-2014.
Groundwater – All groundwater levels are within longer term averages and the Site Water Management Plan trigger values.
Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the Site Water Management Plan trigger values.
Surface Water Discharges – The August 2013 dirty water discharge was in compliance with WCC's Environmental Protection Licence 12290 and there were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the dirty water discharge event.
Complaints – There were eighteen complaints received during the period. There were ten complaints related to blasting; five complaints related to dust; two complaints related to lights and one complaint relating to noise. There were nine different complainants during the period with fifteen complaints from Werris Creek residents and three complaints from Quipolly residents.

Motion moved to accept the Environmental Monitoring Report for August, September and October 2013.

Moved: Col Stewart. Seconded: Noel Taylor. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

The lift at the Werris Creek Railway Museum and fire early warning system should be installed and operational by the end of 2013.

Andrew Wright tabled a letter from a Werris Creek resident regarding the lack of public seating along the length of Single Street especially for the older residents and wondered if the Community Enhancement Fund might be able to purchase seating for the main street. The committee supported the merits of the project, but requested WCC to write a letter to LPSC to determine whether there was a program planned for public seating in Single Street.

b. CCC Community Representative Vacancy

Andrew Wright advised that the CCC needed to have between three and five community representatives, even with the vacancy there is currently four community representatives. The committee requested WCC to advertise for nominations for the vacant Community Representative position.

c. Community Meeting regarding Blasting

A community meeting on the 6th November 2013 was organised by Kevin Anderson (Tamworth Member of NSW Parliament) with Werris Creek residents who signed a petition regarding concerns over blasting. Whitehaven Coal will respond to Kevin Anderson outlining the progress of suggestions and ideas that were raised at the meeting; including feedback from the community on improving the blast notification process and more regular communication (increased frequency of newsletters and community meetings).

d. EPA Audit of Werris Creek Coal

The Environment Protection Authority (EPA) undertook an unannounced audit of WCC on 7th November 2013 focusing on blast compliance with WCC's Environmental Protection Licence 12290 and best practice blasting. The EPA found WCC to be generally compliant with an audit report to be prepared outlining whether any further actions are required.

e. Water Evaporation on Large Dam

Noel Taylor enquired regarding the water spray on a large dam that could be seen from Werris Creek Road. Andrew Wright outlined that the device was an evaporator with the purpose to evaporate on average 0.5ML of void water per day to ease the pressure on the excess water stored in pit and on the surface at WCC. The excess water was from the heavy rainfall from earlier in the year resulting in the lowest coal seams being underwater which is an issue for mining. The evaporator was the only option available to WCC that was generally in accordance with its environmental approvals not causing additional environmental impacts. As void water is from the pit, it is slightly salty and therefore is not allowed to be discharged or transferred offsite either to a creek or for use in irrigation.

Meeting Closed 11:00pm.

Next Meeting scheduled for Thursday 27th February 2014.

Copy to:

Gae Swain	Independent Chairperson
Jill Coleman	Community Representative
Noel Taylor	Community Representative
Lindsay Bridge	Community Representative
Roslyn Marr	Community Representative
Geoff Dunn	Community Representative

Ron Van Katwyk	LPSC	Peter Easey	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Stephen O'Donoghue	DoPI	Andrew Wright	Werris Creek Coal
Simon Lund	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

August, September and October 2013

This Environmental Monitoring Report covers the period 1st August 2013 to 31st October 2013 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: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

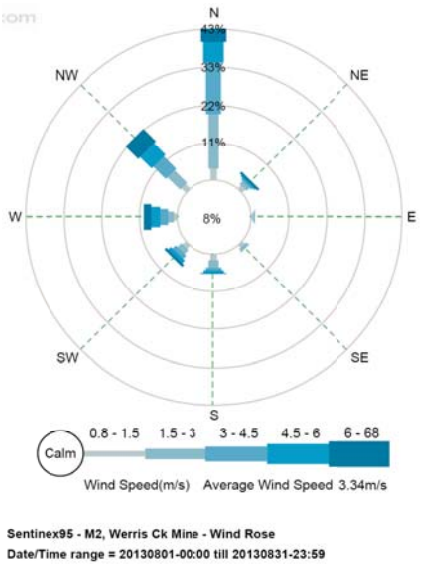
1.0 METEOROLOGY

1.1 WEATHER STATION

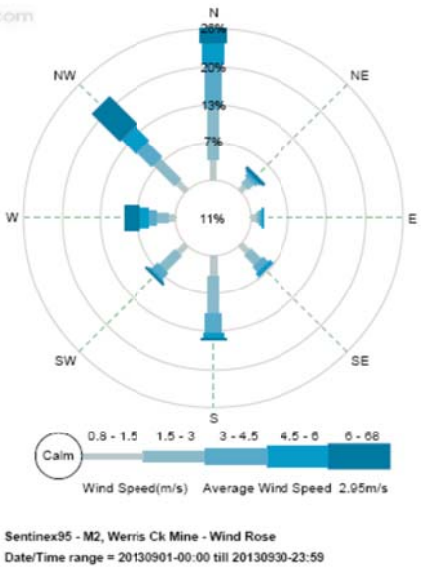
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for the last three months and wind data is presented below in windroses. The three month period was dry and rainfall below average with just over 50mm received. The prevailing wind direction was from the north-north west typical of the autumn period.

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 2013	-5.8	9.7	25.1	-2.0	12.5	24.8	-0.1	12.8	24.2	+2.4	+9.6	2.4	0.6	3.2	158.9
September 2013	0.8	15.2	31.4	4.2	17.9	31.2	6.9	18.2	30.4	+2.7	+10.4	39.6	7.2	27.0	198.5
October 2013	0.3	17.8	33.1	3.5	19.6	32.8	5.4	19.7	32.1	+1.5	+9.8	11.2	8.4	10.2	209.7

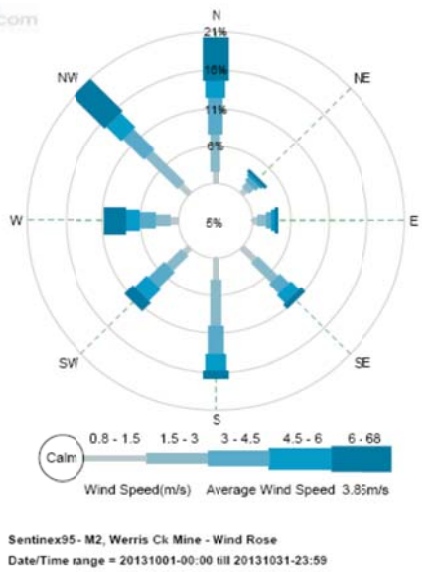
* Annual cumulative total since July 2012 to June 2013 from a composite data set based on the onsite Weather Station at WCC.



August 2013



September 2013



October 2013

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.

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.

Monitor Location	August 2013 (µg/m^3)	September 2013 (µg/m^3)	October 2013 (µg/m^3)	2012-2013 Average (µg/m^3)	Criteria (µg/m^3)	
					Annual	Daily
PM2.5 – TEOM92 "Werris Creek"	6.2	8.1	8.2	6.8	8	25
PM10 – TEOM92 "Werris Creek"	9.9	15.3	16.6	12.1	30	50
PM10 – HVP20 "Tonsley Park"	13.5	21.4	27.2	16.1	30	50
PM10 - HVP4/HVP1 "Eurunderee"/"Escott"	7.5	14.3	17.0	9.7	30	50
PM10 – HVP20 "Glenara"	12.6	25.2	34.9	17.3	30	50
PM10 – HVP98 "Kyooma"	8.6	14.0	15.9	9.4	30	50
TSP – HVT98 "Kyooma"	14.1	26.5	26.7	19.5	90	-

2.1.2 Discussion - Compliance / Non Compliance

The PM10 and PM2.5 dust results for August were below average for all monitoring locations, while the prevailing dry conditions during September and October affected regional air quality with all results above the annual average at each location.

There was one elevated result above the daily criteria on 30th September at "Glenara" recording 56.4µg/m^3. The wind on the 30th September was a moderate north northwesterly with the upwind HVAS (unaffected by WCC) at "Tonsley Park" recording 22.6µg/m^3, consistent with the EPA monitor in Tamworth recording 20.5µg/m^3 while the Werris Creek TEOM recorded 13.6µg/m^3. Being conservative and assuming the upwind dust contribution on the 30th September was 13.6µg/m^3; then the worst case WCC dust contribution to "Glenara" was 42.8µg/m^3 and in compliance with the daily (24 hour incremental) criteria of 50µg/m^3 in PA10_0059. In is unknown what local or agricultural contribution to dust levels occurred on the 30th September 2013.

Bushfire smoke and ambient dust impacted regional air quality during October with smoke from the Port Stephens bushfire particularly affecting regional air quality on 18th October 2013 with 15 minute PM10 readings peaking at 158.7µg/m^3 but not causing the daily PM10 average above 50µg/m^3.

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).

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 2013 (g/m^2/month)	September 2013 (g/m^2/month)	October 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
"Cintra"	0.4	2.2	0.5	1.6	4.0
"Railway View"	0.5	1.2	1.0	0.9	4.0
"Tonsley Park"	0.4	*1.4	0.5	0.7	4.0
"Plain View"	1.1	0.8	0.7	1.2	4.0
"Marengo"	0.5	0.6	0.5	0.6	4.0
"Mountain View"	0.5	2.8	1.3	1.2	4.0
"Glenara"	0.8	1.1	0.9	0.5	4.0

Monitor Location	August 2013 (g/m^2/month)	September 2013 (g/m^2/month)	October 2013 (g/m^2/month)	2012-2013 Average (g/m^2/month)	Annual Criteria (g/m^2/month)
"Hazeldene"	0.4	0.6	0.7	0.5	4.0
"Woodlands"	0.5	0.5	1.3	0.7	4.0
"Talavera"	0.4	0.6	0.5	0.4	4.0
"Kyooma"	0.2	0.3	0.4	0.2	4.0
"Greenslopes"	0.3	0.6	0.3	0.4	4.0
Werris Creek South	0.2	0.3	0.3	0.4	4.0
Werris Creek Centre	0.1	0.3	0.2	0.4	4.0
"Westfall"	0.4	0.6	0.7	0.6	4.0
West Street	0.5	0.6	0.5	0.6	4.0
"Escott"	0.2	*0.5	**5.0***	1.5	4.0
"Eurunderee"	0.6	1.6	0.2	0.7	4.0
8 Kurrara St	0.2	0.6	0.3	**10.8**	4.0
"Villamagna"	0.4	0.4	3.0*	0.8	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.

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results for August, September and October were below the annual criteria of 4.0g/m^2/month except for the "Escott" dust gauge in October 2013. The prevailing dry conditions during September and October affected regional air quality with the results being generally above the annual average. A couple of results were contaminated with organic matter (>50%) including the "Escott" October result which is not representative of mining dust emissions.

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 2013		September 2013		October 2013		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	0.8	5%	1.2	-	-	-	1.1
DDW20	0.5	10%	1.1	-	1.9	20%	0.7
DDW13	0.5	35%	1.7	-	1.4	40%	0.7
Train Line							
DDE13	0.7	30%	1.8	-	2.9	70%	0.8
DDE20	0.6	30%	1.2	-	2.4	60%	1.0
DDE30	0.9	5%	1.0	-	3.1	20%	0.9

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fall out 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. In September 2013, a mistake with the dust sample Chain of Custody form meant that samples were not microscopically analysed for coal this month. In October 2013, the DDW30 dust gauge (next to Hawkins Street) was vandalized and no sample was able to be collected.

For October, the dust gauges to the east of the rail line were clearly higher due to coal dust from passing coal trains by the dominate north westerly winds. While dust levels were elevated for the month, they were still below the EPA set 4.0g/m^2/month dust impact criteria.

2.4 AIR QUALITY COMPLAINTS

There were five dust complaints during the period; three related to the open cut mine and two related to the train load out facility. Open cut mine dust complaints occurred on 8th August, 9th September and 17th, 19th and 23rd October during periods of high winds. A review of operations did not identify excessive dust with operations managed appropriately to mitigate dust leaving site. The real time PM10 dust levels as measured in

Werris Creek at the time of each complaint were below the 30µg/m^3 criteria indicating good air quality. At the time of the two dust complaints for the train load out facility on 17th and 19th October, all truck and dozer operations were suspended to prevent excessive dust being generated. Specific actions taken in relation to each of 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.

Thursday 8th August 2013

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	Inaudible	37
B2	**West Quipolly** R9 & R22	Inaudible #	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible#	39	Inaudible	39
D	**"Hazeldene"** R24	Inaudible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible#	38
F	**"Talavera"** R96	25#	38	32	37
G	R97	32#	35	25#	35
H	**"Kyooma"** R98*	26#	36	32	36
I	**Kurrara St, WC**	Inaudible#	35	Barely audible#	35
J	**Coronation Ave, WC**	Inaudible#	35	30	35
K	**South St, WC** R21*	Inaudible#	39	34#	37
L	**West St, WC** R103	Inaudible#	35	34#	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 19th September 2013

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
B1	**West Quipolly** R7, R8*	Inaudible#	37	Inaudible#	37
B2	**West Quipolly** R9 & R22	Inaudible#	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly** R10*,R11*	Barely audible#	39	Inaudible#	39
D	**"Hazeldene"** R24	Barely audible#	37	Inaudible#	37
E	**"Railway Cottage"** R12	Inaudible#	38	Inaudible	38
F	**"Talavera"** R96	Barely audible#	38	36#	37
G	R97	Barely audible#	35	**39**	35
H	**"Kyooma"** R98*	27#	36	42	36
I	**Kurrara St, WC**	Inaudible#	35	32	35
J	**Coronation Ave, WC**	Inaudible#	35	34	35
K	**South St, WC** R21*	Inaudible#	39	34	37
L	**West St, WC** R103	Inaudible#	35	31	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 22nd & 23rd October 2013

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
B1	**West Quipolly** (R7, R8*)	Inaudible#	37	34#	37
B2	**West Quipolly** (R9 & R22)	Inaudible#	37/36[1]	28#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	32	39	32#	39
D	**"Hazeldene"** R24	Barely audible#	37	25#	37
E	**"Railway Cottage"** R12	Inaudible#	38	32	38
F	**"Talavera"** R96	27#	38	32#	37
G	R97	Barely audible#	35	33#	35
H	**"Kyooma"** R98*	23#	36	35#	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	Barely audible#	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 was one noise exceedance recorded during September 2013. Attended noise monitoring was undertaken on Thursday 19th September 2013 with a noise level of 39dB(A) recorded at R97 (+4dBA over criteria) due to westerly winds and strip orientation/location of excavators only 2.5km away and directly towards the property. The EPA has responded acknowledging that as this property does not have a residence, it is not considered an exceedance in accordance with the Environment Protection Licence.

3.2 NOISE COMPLAINTS

There was only one noise complaint during the period from the property owner of R97 that recorded an exceedance on 19th September 2013. WCC has offered to negotiate a private agreement with the owner of R97 but was declined. Specific actions taken in relation to this complaint is outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at "Glenara", "Talavera", "Werris Creek" and "Tonsley Park" during the period. 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). During the period a total of thirty blasts were fired by the blasting contractor, Orica Mining Services.

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 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.25	<109.8	0.87	101.5	0.51	99.7	0.26	105.9
Monthly Maximum	<0.25	<109.8	1.23	111.2	0.60	102.5	0.45	110.6
Annual Average	0.32	97.6	0.86	102.0	0.47	101.9	0.17	106.8
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	2.8%	0%	2.8%	0%	2.8%
# Triggered this Month	0/9		7/9		5/9		2/9	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

September 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.25	<109.8	0.55	99.1	0.29	99.3	0.28	93.3
Monthly Maximum	<0.25	<109.8	0.77	103.4	0.29	102.0	0.28	93.3
Annual Average	0.32	97.6	0.77	101.2	0.41	101.4	0.22	102.2
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	2.0%	0%	2.0%	0%	2.0%
# Triggered this Month	0/13		4/13		2/13		1/13	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria.

October 2013	"Glenara"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.25	<109.8	0.86	101.6	0.48	96.7	0.41	104.1
Monthly Maximum	<0.25	<109.8	1.54	108.4	0.66	109.5	0.50	107.1
Annual Average	0.32	97.6	0.81	101.5	0.44	100.8	0.23	104.1
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	1.8%	0%	1.8%	0%	1.8%
# Triggered this Month	0/8		7/8		7/8		6/8	

NM – Site not monitored;* Indicates project related properties not subject to blasting criteria; Yellow – overpressure >115dB(L) or 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 ten blast complaints during the period from eight separate blast events. The continuation of blasting complaints is believed to be due the sensitization of the Werris Creek community due the elevated overpressure from the blast on 8th July 2013. WCC are continuing to balance blasting to minimise community impact while also producing enough blasted inventory to achieve the budgeted 2.5Mt coal production rate for 2013-2014. Specific actions taken in relation to these complaints are outlined in **Section 6.**

5.0 WATER

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

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 35 groundwater bores and piezometers in the key aquifers surrounding the mine including Werrie Basalt (near to WCC and further afield) and Quipolly Creek Alluvium. Bi-monthly groundwater level monitoring and groundwater quality monitoring was completed on 24th and 25th September 2013.

5.1.1 Monitoring Data Results

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

	Site	Sept 2013		Previous	pH	EC	Comments
Werrie Basalt Near WCC	MW1	54.90	-2%	54.06	7.64	1250	No rainfall recharge, Level down and pH/EC up
	MW2	26.25	-1%	25.91	7.77	835	No rainfall recharge, Level down and pH up
	MW3	15.30	-2%	14.97	7.45	3320	No rainfall recharge, Level down and pH/EC up
	MW4B	10.66	-6%	10.07	8.01	1030	No rainfall recharge, Level down and pH/EC up
	MW5	8.53	-7%	7.91	7.81	2440	No rainfall recharge, Level down and pH/EC up
	MW6	12.45	0%	12.49	7.77	1890	No rainfall recharge, pH/EC up
	P1	35.40	-4%	34.05	-	-	No rainfall recharge, Level down
	MW27	43.46	-1%	43.03	-	-	No rainfall recharge, Level down
Werrie Basalt	MW8	15.86	-4%	15.28	-	-	No rainfall recharge, Level down
	MW9	-	-	15.74	-	-	Standpipe needs to be repaired
	MW10	16.93	0%	17.01	-	-	No rainfall recharge
	MW14	17.55	-1%	17.39	-	-	No rainfall recharge, Level down
	MW17B	9.94	-3%	9.63	-	-	No rainfall recharge, Level down
	MW19A	5.82	-2%	5.73	-	-	No rainfall recharge, Level down
	MW20	19.71	-1%	19.51	-	-	No rainfall recharge, Level down
Quipolly Alluvium	MW12	8.91	-9%	8.10	-	-	No rainfall recharge, Level down
	MW13	4.63	-1%	4.6	-	-	No rainfall recharge, Level down
	MW13B	3.26	-2%	3.19	-	-	No rainfall recharge, Level down
	MW13D	4.69	-2%	4.61	-	-	No rainfall recharge, Level down
	MW15	4.39	-6%	4.13	-	-	No rainfall recharge, Level down
	MW16	4.93	-6%	4.65	-	-	No rainfall recharge, Level down
	MW17A	4.04	-6%	3.79	-	-	No rainfall recharge, Level down
	MW18A	3.85	-7%	3.57	-	-	No rainfall recharge, Level down
	MW21A	7.10	-5%	6.56	-	-	No rainfall recharge, Level down
	MW22A	5.07	-6%	4.77	-	-	No rainfall recharge, Level down
	MW22B	5.33	-8%	4.93	-	-	No rainfall recharge, Level down
	MW23A	3.95	-8%	3.64	-	-	No rainfall recharge, Level down
	MW23B	4.70	-10%	4.23	-	-	No rainfall recharge, Level down
	MW28A	11.75	-7%	10.91	-	-	No rainfall recharge, Level down
	MW32	4.02	-2%	3.92	-	-	No rainfall recharge, Level down

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is 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 extended dry conditions has resulted in no rainfall recharge to aquifers with all monitoring bores groundwater levels declining between 0% and 10% over the period. All groundwater levels are within longer term averages and the Site Water Management Plan trigger values.

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 27th August 2013.

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	8.37	1010	7	<5	pH decreased 0.29, EC increased 86, TSS decreased 1, O&G no change.
SB9	8.10	208	8	<5	pH increased 0.15, EC increased 5, TSS decreased 40, O&G no change.
SB10	-	-	-	-	Under construction due to Rail Loop Project.
OFFSITE					
QCU	7.90	470	25	<5	pH increased 0.16, EC decrease 14, TSS increased 20, O&G no change.
QCD	8.05	826	11	<5	pH increased 0.10, EC decreased 24, TSS increased 6, O&G no change.
WCU	-	-	-	-	Dry – no sample available.
WCD	8.43	1270	15	<5	pH increased 0.17, EC decreased 80, TSS increased 3, 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

All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There was one controlled discharge 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
12/08/2013	SB2	8.44	1010	<5	<5	Compliant – Water quality in criteria	Controlled	Not Applicable
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

The August 2013 dirty water discharge was in compliance with WCC's Environmental Protection Licence 12290 and there were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the dirty water discharge event.

5.3 WATER COMPLAINTS

There were no water complaints during the period.

6.0 COMPLAINTS SUMMARY

There were eighteen complaints received during the period with the details summarised below. There were ten complaints related to blasting; five complaints related to dust; two complaints related to lights and one complaint relating to noise. There were nine different complainants during the period with fifteen complaints from Werris Creek residents and three complaints from Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
322 to 324	06/08/2013 Various	Various Werris Creek	Blast shook house and impacted amenity.	WCC blast #52-2013 (S13_3-7_330 TS37) at 13:15 Tuesday 6th August 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainants.
325	08/08/2013 10:16pm	A Werris Creek	Dust from visual bund dump covering washing.	OCE inspections did not identify dust off the visual bund dump. Wind from north west blowing (if any dust was generated) away from Werris Creek township.	Written response provided to complainant.
326	12/08/2013 9:02am	A Werris Creek	Bright lights shining in back room from bottom of conveyor at TLO until 1:35am.	Train loaded on 11th August 2013 from 11:15pm to 1:39am from high ash coal stockpile pushing north east towards Werris Creek. Lighting plants were set up correctly and in accordance with Project Approval 10_0059 requirements.	Written response provided to complainant.
327	22/08/2013 1:46pm	AQ Werris Creek	Blast shook house and impacted amenity.	WCC blast #56-2013 (S13_8-10_DE Coal UG Collapse) at 13:41 Thursday 22nd August 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainants.
328	25/08/2013 9:58pm	A Werris Creek	Blast shook house and impacted amenity.	WCC blast #57-2013 (S13_8-10_DE Coal) at 13:14 Friday 23rd August 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainants.
329	02/09/2013 11:11pm	A Werris Creek	Bright lights from TLO impacting on their house preventing them from having a decent night.	Two dozers working at TLO and one train loaded. All lighting plants appropriately set up and in compliance with PA10_0059.	Written response provided to complainants.
330	09/09/2013 10:16am	Q Quipolly	Visible dust coming off mine site and beyond a reasonable haze.	Visual inspection did not observe excessive or visual dust off the mine site. General conditions very hazy and PM10 levels in Werris Creek were in compliance.	Written response provided to complainant.
331	11/09/2013 12:17pm	U Werris Creek	The blast caused the front windows to rattle.	WCC blast #68A-2013 (S13_330_Cap Rocks) at 12:16 Wednesday 11th September 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainant.
332	18/09/2013 1:50pm	U Werris Creek	Blast shook house and concerned about impacts to residence however no damage.	WCC blast #69-2013 (S15_2-6_DE Coal UG Collapse & TSB40) at 13:49 Wednesday 18th September 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainants.

333	4/10/2013 3:50pm	AQ Werris Creek	If blast can be felt must be too big and impacting on amenity.	WCC blast #75-2013 (S13_18-21_350-330_TSB41 Part 1) at 15:41 Friday 4th October 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainant.
334	4/10/2013 3:50pm	AY East of Mine	Owner wanted to make formal complaint regarding noise exceedance on property R97.	Noise Exceedance of R97 recorded 39dBA +4dBA above the noise criteria on 19th September 2013 due to westerly source to receiver winds.	Written response provided to complainant.
335	10/10/2013 10:49am	AX Werris Creek	Blast shook house and rattled windows. Concerned over how often this is now occurring.	WCC blast #76-2013 (S13_18-21_350-330_TSB42) at 10:47 Thursday 10th October 2013 was in compliance with PA10_0059 and EPL12290.	Written response provided to complainant.
336	22/10/2013 10:21am	A/EPA Werris Creek	Dust from Coal Stockpile at 2:30pm on 17th October 2013.	Strong north westerly wind resulted in all operations except water carts suspended between 11:30am and 1:30pm on Thursday 17th October. Visual inspections did not observe dust offsite although conditions were hazy. Real time dust monitoring was elevated but considered to be good air quality PM10 25.9µg/m3.	Written response provided to EPA.
337	22/10/2013 10:21am	A/EPA Werris Creek	Dust from Coal Stockpile between 2:30pm and 4pm on 19th October 2013.	Light westerly wind not dusty. TLO worked half shift on Saturday 19th October finishing at 12:30pm. Visual inspections did not observe dust offsite. Real time dust monitoring was considered to be good air quality PM10 13.0µg/m3.	Written response provided to EPA.
338	24/10/2013 2:44pm	A/EPA Werris Creek	Dust from Overburden area between 2pm and 2:45pm on 23rd October 2013.	Strong westerly wind prevailing on 23rd October. Visual inspections did not observe dust offsite although conditions were hazy. Real time dust monitoring was elevated but considered to be good air quality PM10 26.1µg/m3.	Written response provided to EPA.
339	28/10/2013 2:28pm	Anonymous/ EPA	Dust cloud from blast visible from Kamilaroi Highway.	WCC blast #80-2013 (S13_7_DE Coal Wedge) at 13:08 Monday 28th October 2013 was in compliance with PA10_0059 and EPL12290. Shot was small but dusty due to prevailing dry conditions.	Written response provided to EPA.

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.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2013-2014

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 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
03-Apr-13		1.8			4.0		18	8.8	17.9	8	3.5	7.9	11	4.8	11.4	12	12.3	12.4	14	7.1	14.4	50	30	90
09-Apr-13		6.2	6.2		12.3	12.3	16	14.6	16.8	3.5	7.2	5.7	4.8	8.7	8.1	12.3	17.8	12.4	7	12.5	10.8	50	30	90
15-Apr-13		5.9			11.3		16	15.9	16.5	13	6.1	8.2	14	8.2	9.9	31	14.3	18.4	20	11.4	13.8	50	30	90
21-Apr-13		12.7			25.7		9	17.9	14.6	4	13.1	7.2	5	13.5	8.7	16	30.5	17.8	8	20.0	12.5	50	30	90
27-Apr-13							19		15.4	17		9.1	16		10.2	27		19.7	50		19.9	50	30	90
03-May-13		2.3			5.0		15	5.5	15.4	8	5.2	8.9	11	3.2	10.3	15	6.7	19.0	18.9	17.4	19.8	50	30	90
09-May-13		6.7	6.4		11.9	12.1	18	15.4	15.8	20	11.8	10.4	7	9.5	9.8	20	17.6	19.1	76	35.8	27.7	50	30	90
15-May-13		6.5			11.4		6	18.3	14.5	5	9.6	9.8	3	9.9	9.0	7	19.1	17.6	17.4	18.9	26.4	50	30	90
21-May-13		14.0			26.8		19	19.0	15.0	10	19.6	9.8	10	16.2	9.1	19	27.4	17.7	18	75.5	25.4	50	30	90
27-May-13							17		15.2	6		9.4	7		8.9	11		17.0	13		24.2	50	30	90
02-Jun-13		2.9			4.0		3	1.3	14.1	1	1.1	8.7	2	1.7	8.3	3	1.3	15.8	3	3.2	22.3	50	30	90
08-Jun-13		6.4	6.4		9.0	11.1	6	7.7	13.4	3	3.4	8.2	4	4.0	7.9	3	5.6	14.7	6	6.4	20.9	50	30	90
14-Jun-13		6.3			8.5		1	6.4	12.5	3	3.2	7.8	2	3.5	7.4	1	3.3	13.7	3	4.6	19.6	50	30	90
20-Jun-13		12.2			16.7		11	16.5	12.4	4	6.2	7.5	6	7.2	7.3	9	10.8	13.4	<0.1	13.1	19.6	50	30	90
26-Jun-13							9		12.2	3		7.2	4		7.1	2		12.7			19.6	50	30	90
02-Jul-13		2.5			3.5		12	5.6	12.2	3	2.7	6.9	6	4.2	7.0	5	1.9	12.2	4	3.9	18.5	50	30	90
08-Jul-13		6.4	6.4		9.3	10.6	19	11.9	12.6	6	3.8	6.9	9	5.7	7.1	9	5.5	12.0	9	6.7	17.8	50	30	90
14-Jul-13		5.9			9.2		14	12.1	12.6	5	3.3	6.7	6	5.6	7.0	9	4.8	11.8	8	6.9	17.2	50	30	90
20-Jul-13		15.2			17.7		6	18.6	12.3	3	5.6	6.5	4	8.6	6.9	2	9.3	11.3	6	9.2	16.5	50	30	90
26-Jul-13							15		12.4	10		6.7	9		7.0	14		11.4	12		16.3	50	30	90
01-Aug-13		0.1			1.5		10	9.8	12.3	6	6.4	6.7	7	6.6	7.0	10	7.5	11.3	8	8.3	15.9	50	30	90
07-Aug-13		5.5	6.2		9.9	10.5	20	13.5	12.6	7	8.6	6.7	8	7.5	7.0	19	12.6	11.7	16	14.1	15.9	50	30	90
13-Aug-13		4.8			8.3		12	11.5	12.6	9	8.5	6.8	7	7.0	7.0	14	13.5	11.8	12	12.4	15.7	50	30	90
19-Aug-13		20.0			30.3		11	19.8	12.5	11	11.0	7.0	7	9.4	7.0	8	18.6	11.6	22	22.1	16.0	50	30	90
25-Aug-13							10		12.4	7		7.0	7		7.0	12		11.6	13		15.9	50	30	90
31-Aug-13							19		12.7	12		7.2	13		7.2	16		11.8	19		16.0	50	30	90
06-Sep-13		1.8			5.0		30	5.2	13.3	18	3.7	7.6	17	4.6	7.6	39	7.7	12.8	27	6.4	16.4	50	30	90
12-Sep-13		8.1	6.5		15.3	11.3	28	21.4	13.9	10	14.0	7.7	17	14.3	7.9	30	25.2	13.4	22	26.5	16.6	50	30	90
18-Sep-13		7.4			14.8		5	23.6	13.6	4	11.3	7.5	5	14.9	7.8	8	22.8	13.2	6	20.4	16.3	50	30	90
24-Sep-13		17.8			33.7		35	35.2	14.3	32	32.4	8.4	28	27.6	8.5	46	46.3	14.3	72	71.7	18.2	50	30	90
30-Sep-13							23		14.6	12		8.5	12		8.6	56		15.7	16		18.1	50	30	90
06-Oct-13		4.0			8.8		13	12.8	14.5	8	7.7	8.4	8	6.8	8.6	22	22.1	15.9	14	14.3	18.0	50	30	90
12-Oct-13		8.2	6.8		16.6	12.1	41	27.2	15.3	20	15.9	8.8	22	17.0	9.0	32	34.9	16.4	37	26.7	18.6	50	30	90
18-Oct-13		7.1			14.4		38	22.6	16.0	31	11.5	9.4	36	12.0	9.8	42	31.6	17.1	46	21.3	19.5	50	30	90
24-Oct-13		24.5			43.7		22	41.1	16.1	10	31.2	9.4	7	36.2	9.7	23	56.4	17.3	21	45.6	19.5	50	30	90
30-Oct-13									16.1			9.4			9.7			17.3			19.5	50	30	90
05-Nov-13									16.1			9.4			9.7			17.3			19.5	50	30	90
11-Nov-13									16.1			9.4			9.7			17.3			19.5	50	30	90
17-Nov-13									16.1			9.4			9.7			17.3			19.5	50	30	90
23-Nov-13									16.1			9.4			9.7			17.3			19.5	50	30	90
29-Nov-13									16.1			9.4			9.7			17.3			19.5	50	30	90
05-Dec-13									16.1			9.4			9.7			17.3			19.5	50	30	90
11-Dec-13									16.1			9.4			9.7			17.3			19.5	50	30	90
17-Dec-13									16.1			9.4			9.7			17.3			19.5	50	30	90
23-Dec-13									16.1			9.4			9.7			17.3			19.5	50	30	90
29-Dec-13									16.1			9.4			9.7			17.3			19.5	50	30	90
04-Jan-14									16.1			9.4			9.7			17.3			19.5	50	30	90
10-Jan-14									16.1			9.4			9.7			17.3			19.5	50	30	90
16-Jan-14									16.1			9.4			9.7			17.3			19.5	50	30	90
22-Jan-14									16.1			9.4			9.7			17.3			19.5	50	30	90
28-Jan-14									16.1			9.4			9.7			17.3			19.5	50	30	90
03-Feb-14									16.1			9.4			9.7			17.3			19.5	50	30	90
09-Feb-14									16.1			9.4			9.7			17.3			19.5	50	30	90
15-Feb-14									16.1			9.4			9.7			17.3			19.5	50	30	90
21-Feb-14									16.1			9.4			9.7			17.3			19.5	50	30	90
27-Feb-14									16.1			9.4			9.7			17.3			19.5	50	30	90
05-Mar-14									16.1			9.4			9.7			17.3			19.5	50	30	90
11-Mar-14									16.1			9.4			9.7			17.3			19.5	50	30	90
17-Mar-14									16.1			9.4			9.7			17.3			19.5	50	30	90
23-Mar-14									16.1			9.4			9.7			17.3			19.5	50	30	90
29-Mar-14									16.1			9.4			9.7			17.3			19.5	50	30	90
Min							**1.3**			**1.1**			**1.7**			**1.3**			**3.2**					
Median							**15.4**			**7.7**			**7.2**			**13.5**			**14.4**					
Max							**41.1**			**32.4**			**36.2**			**56.4**			**75.5**					
Capture							**57%**			**57%**			**57%**			**57%**			**54%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2013-2014

MONTH (g/m2/month)				April 2013	May 2013	June 2013	July 2013	August 2013	September 2013	October 2013	November 2013	December 2013	January 2014	February 2014	March 2014	ANNUAL AVERAGE	AVERAGE - EXCLUDED	MINIMUM	MAXIMUM	AQGHGMP Criteria
-	DG2	Cintra	Total Matter	4.1	1.5	1.3	1.2	0.4	2.2	0.5						1.6	1.2	0.4	4.1	4.0
			Ash Content	3.0	0.8	0.9	0.8	0.3	1.2	0.4										
-	DG5	Railway View	Total Matter	0.7	1.0	0.9	0.8	0.5	1.2	1.0						0.9	0.9	0.5	1.2	4.0
			Ash Content	0.5	0.6	0.9	0.6	0.5	0.8	0.7										
EPL #1	DG20	Tonsley Park	Total Matter	1.2	0.6	0.4	0.6	0.4	1.4	0.5						0.7	0.6	0.4	1.4	4.0
			Ash Content	0.7	0.3	0.4	0.4	0.3	0.6	0.4										
-	DG15	Plain View	Total Matter	2.6	1.0	1.2	0.8	1.1	0.8	0.7						1.2	1.2	0.7	2.6	4.0
			Ash Content	1.3	0.6	1.0	0.5	0.7	0.5	0.6										
-	DG9	Marengo	Total Matter	1.4	0.8	0.3	0.4	0.5	0.6	0.5						0.6	0.5	0.3	1.4	4.0
			Ash Content	0.6	0.3	0.2	0.2	0.4	0.3	0.4										
-	DG22	Mountain View	Total Matter	0.7	0.8	1.5	0.5	0.5	2.8	1.3						1.2	1.2	0.5	2.8	4.0
			Ash Content	0.5	0.7	1.2	0.4	0.5	2.0	0.8										
EPL#29	DG11	Glenara	Total Matter	0.2	0.2	0.2	0.1	0.8	1.1	0.9						0.5	0.5	0.1	1.1	4.0
			Ash Content	0.1	0.1	0.1	0.1	0.6	0.8	0.6										
-	DG24	Hazeldene	Total Matter	0.8	0.5	0.4	0.3	0.4	0.6	0.7						0.5	0.5	0.3	0.8	4.0
			Ash Content	0.4	0.4	0.4	0.2	0.3	0.6	0.6										
-	DG17	Woodlands	Total Matter	0.8	0.7	0.4	0.4	0.5	0.5	1.3						0.7	0.7	0.4	1.3	4.0
			Ash Content	0.5	0.4	0.4	0.3	0.5	0.5	1.1										
-	DG96	Talavera	Total Matter	0.7	0.4	0.2	0.2	0.4	0.6	0.5						0.4	0.4	0.2	0.7	4.0
			Ash Content	0.4	0.2	0.2	0.2	0.2	0.3	0.4										
EPL#28	DG98	Kyooma	Total Matter	0.2	0.2	0.1	0.2	0.2	0.3	0.4						0.2	0.2	0.1	0.4	4.0
			Ash Content	0.2	0.2	0.1	0.2	0.2	0.3	0.4										
-	DG14	Greenslopes	Total Matter	0.4	0.3	0.3	0.3	0.3	0.6	0.3						0.4	0.4	0.3	0.6	4.0
			Ash Content	0.3	0.2	0.3	0.2	0.3	0.3	0.3										
-	DG62	Werris Creek South	Total Matter	0.3	0.3	0.2	0.9	0.2	0.3	0.3						0.4	0.3	0.2	0.9	4.0
			Ash Content	0.2	0.2	0.2	0.2	0.2	0.2	0.3										
EPL#30	DG92	Werris Creek Centre	Total Matter	0.5	0.8	0.3	0.3	0.1	0.3	0.2						0.4	0.4	0.1	0.8	4.0
			Ash Content	0.3	0.6	0.2	0.2	0.1	0.2	0.2										
-	DG101	Westfall	Total Matter	1.2	0.5	0.4	0.5	0.4	0.6	0.7						0.6	0.6	0.4	1.2	4.0
			Ash Content	0.8	0.5	0.2	0.3	0.2	0.5	0.4										
-	DG103	West Street	Total Matter	0.8	0.5	0.3	0.7	0.5	0.6	0.5						0.6	0.6	0.3	0.8	4.0
			Ash Content	0.6	0.5	0.2	0.4	0.3	0.5	0.5										
-	DG1	Escott	Total Matter	2.4	0.2	1.6	0.7	0.2	0.5	5.0						1.5	0.7	0.2	5.0	4.0
			Ash Content	1.0	0.2	0.6	0.5	0.1	0.2	1.4										
-	DG3	Eurunderee	Total Matter	1.1	0.6	0.7	0.4	0.6	1.6	0.2						0.7	0.7	0.2	1.6	4.0
			Ash Content	0.8	0.5	0.4	0.2	0.4	1.4	0.2										
-	DG34	8 Kurrara Street	Total Matter	13.7	6.2	54.1	0.4	0.2	0.6	0.3						10.8	0.4	0.2	54.1	4.0
			Ash Content	9.8	4.6	43.6	0.2	0.2	0.3	0.3										
-	DG106	Villamagna	Total Matter	0.8	0.4	0.4	0.3	0.4	0.4	3.0						0.8	0.5	0.3	3.0	4.0
			Ash Content	0.5	0.3	0.2	0.1	0.3	0.3	1.3										

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2013-2014

	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 2013	0.8	15%	45%	40%	0.5	15%	50%	35%	-	-	-	-	1.0	15%	45%	15%	0.9	15%	60%	25%	0.7	5%	55%	40%	4.0
May 2013	1.4	<1%	50%	30%	0.7	<1%	90%	10%	0.5	10%	85%	5%	0.6	<1%	70%	20%	0.9	<1%	30%	60%	0.5	<1%	90%	10%	4.0
June 2013	1.0	30%	30%	35%	0.5	40%	35%	20%	-	-	-	-	-	-	-	-	0.4	30%	40%	20%	0.8	15%	50%	15%	4.0
July 2013	1.0	30%	40%	20%	1.2	25%	40%	10%	0.9	30%	20%	10%	0.8	20%	40%	20%	1.7	20%	30%	40%	1.6	10%	25%	30%	4.0
August 2013	0.8	5%	30%	60%	0.5	10%	30%	50%	0.5	35%	20%	45%	0.7	30%	40%	25%	0.6	30%	40%	20%	0.9	5%	30%	35%	4.0
September 2013	1.2	-	-	-	1.1	-	-	-	1.7	-	-	-	1.8	-	-	-	1.2	-	-	-	1.0	-	-	-	4.0
October 2013	-	-	-	-	1.9	20%	40%	30%	1.4	40%	20%	40%	2.9	70%	10%	20%	2.4	60%	20%	20%	3.1	20%	20%	30%	4.0
November 2013																									4.0
December 2013																									4.0
January 2014																									4.0
February 2014																									4.0
March 2014																									4.0
ANNUAL AVERAGE	**1.0**				**0.9**				**1.0**				**1.3**				**1.2**				**1.2**				**4.0**
Average Coal %	**20.0%**				**22.0%**				**28.8%**				**33.8%**				**31.0%**				**11.0%**				**-**
Average Coal g/m2	**0.21**				**0.20**				**0.29**				**0.44**				**0.36**				**0.14**				**-**
MINIMUM	**0.8**				**0.5**				**0.5**				**0.6**				**0.4**				**0.5**				**-**
MAXIMUM	**1.4**				**1.9**				**1.7**				**2.9**				**2.4**				**3.1**				**4.0**

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

Appendix 4 – Noise Monitoring Results

12 August 2013

Ref: 04035/4818

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

RE: AUGUST 2013 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 8th August, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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.

WCC Operations

WCC operations on Thursday 8th August 2013 had the 5600 excavator in Strip 13 centre at RL370m, 3600 excavator in Strip 15 west at RL390m; a 1900 excavator in Strip 15 centre at RL390m and a 1900 excavator in Strip 13 west at RL370m. Day and night shift initially had the overburden truck fleets running to the RL390m western (out of pit) dump and truck fleets coaling from Strip 15 were hauling coal to the ROM. After 7:30pm, the Noise Control Operator contacted the Open Cut Examiner (OCE) indicating that the 5 minute noise levels were approaching 35dBA due to mining noise with the OCE responding by directing all trucks to the in pit dump at RL300m. At 9pm, the entire operation was suspended due to noise levels approaching 35dBA. The crushing plant 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 – 8 August 2013 (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	2:43 pm	43	35	n/a	5.9/262	Traffic (40), birds (38), wind (36), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:30 pm	43	37	n/a	5.6/276	Birds & insects (41), wind in trees (40), traffic (30), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:38 pm	47	37/36*	n/a	5.5/275	Wind in trees (46), birds (43), WCC inaudible
C R10 Meadholme/ R11 Glenara	3:05 pm	48	39	n/a	4.9/269	Wind in trees (46), birds & insects (44), traffic (30), WCC inaudible
D R24 Hazeldene	3:23 pm	46	37	n/a	4.2/275	Traffic (43), birds & insects (43), WCC inaudible
E R12 Railway Cottage	5:06 pm	47	38	n/a	3.3/290	Traffic (47), birds & insects (30), WCC inaudible
F R96 Talavera	2:48 pm	37	38	n/a	5.1/267	Traffic (35), birds (32), WCC (25)
G R97	4:10 pm	39	35	n/a	4.0/274	Birds (34), traffic (33), wind (32), WCC (32)
H R98 Kyooma	3:52 pm	40	36	n/a	3.8/282	Wind (37), birds & insects (35), traffic (30), WCC (26)
I R57 Kurrara St	4:48 pm	51	35	n/a	3.7/288	Traffic (51), birds (35), WCC inaudible
J R57 Coronation Ave	4:29 pm	54	35	n/a	3.8/262	Traffic (54), birds (37), wind in trees (35), WCC inaudible
K R21 Alco Park	4:46 pm	40	39	n/a	4.5/281	Traffic (40), birds (32), train (31), WCC inaudible
L R103	4:29 pm	40	35	n/a	3.8/262	Birds (36), train (36), traffic (33), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3 WCC Noise Monitoring Results – 8 August 2013 (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	9:15 pm	n/a	33	35	+1.3,2.1,8	Traffic (32), frogs (25), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	10:42 pm	n/a	32	37	Lapse,4.8,4	Traffic (30), cattle (25), insects (23), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	8:12 pm	n/a	33	37/36*	+0.6,2,344	Traffic (33), insect (25), WCC inaudible
C R10 Meadholme/ R11 Glenara	9:36 pm	n/a	41	39	+1.9,2.1,359	Dog (40), traffic (35), WCC inaudible
D R24 Hazeldene	9:53 pm	n/a	39	37	+2.4,4.0,4	Traffic (39), WCC inaudible
E R12 Railway Cottage	10:56 pm	n/a	44	38	Lapse,4.6,3	Traffic (44), WCC inaudible
F R96 Talavera	7:28 pm	38	35	37	Lapse,2.9,320	Traffic (32), WCC (32)
G R97	8:50 pm	30	32	35	+0.8,2.0,2	Traffic (31), WCC (25)
H R98 Kyooma	8:32 pm	39	34	36	Lapse,2.1,322	WCC (32), traffic (28), insects (24)
I R57 Kurrara St	9:28 pm	n/a	38	35	+1.7,2.8,359	Trains (36), traffic (34), WCC inaudible
J R57 Coronation Ave	9:10 pm	n/a	34	35	+1.3,1.9,11	Traffic (34), trains (31), WCC inaudible
K R21 Alco Park	7:48 pm	42	36	37	Lapse,3.3,320	WCC (34), traffic (32)
L R103	7:29 pm	42	41	35	Lapse,3.3,312	Train (40), WCC (34)

1. L1 (1 min) from mine noise only.

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

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 criterion at any monitoring location at any time during the monitoring.

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 (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

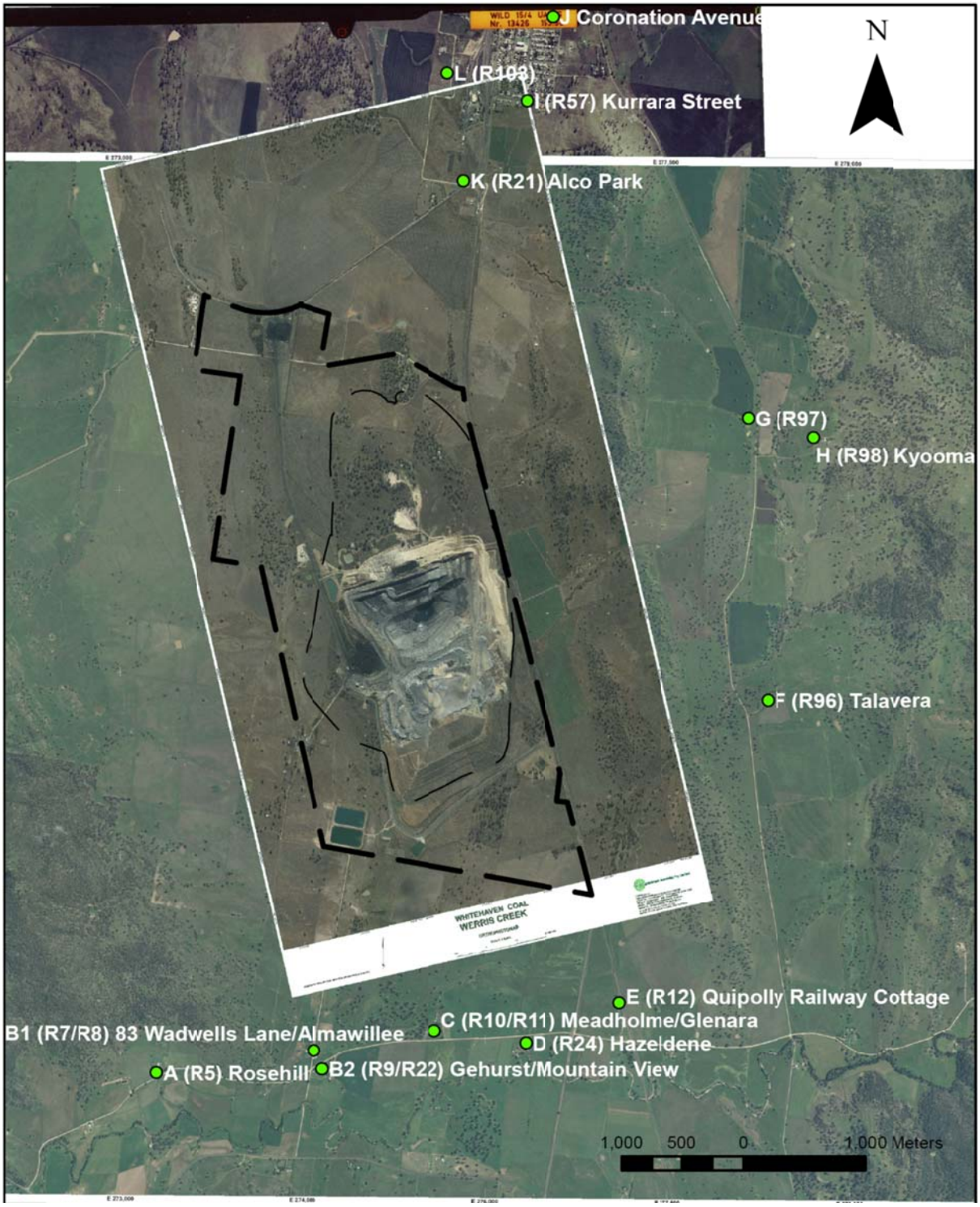
Author:

Neil Pennington
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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	115	118	8/8/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	108	116	122		8/8/13
Haul truck CAT 785C (unattenuated)	624	108	116	121		8/8/13
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	n/a	115		18/12/12
Dozer D10T (1^{st} gear)	505	107 (1^{st})	114 (1^{st})	113 109	128 121	18/12/12
Dozer D10T on stockpile (2^{nd} gear) (1^{st} gear)	505	107 (1^{st})	114 (1^{st})	118 109	124 113	6/2/13
Dozer D9T on stockpile (2^{nd} gear) (1^{st} gear)	501	107 (1^{st})	114 (1^{st})	119 113	122 118	6/2/13
Excavator (EX 5600)	570	121	n/a	116	119	8/8/13
Haul truck CAT 793XQ	660	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	661	115	n/a	116	118	8/8/13
Haul truck CAT 793XQ	662	115	n/a	115	118	8/8/13
Haul truck CAT 793XQ	663	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	664	115	n/a	114	117	8/8/13
Haul truck CAT 793XQ	665	115	n/a	115	117	8/8/13
Haul truck CAT 793XQ	666	115	n/a	115	117	8/8/13

Haul truck CAT 793XQ	667	115	n/a	116	119	8/8/13
Hitachi Excavator	543	116	n/a	115	119	8/8/13
Grader	849	n/a	n/a	110	112	8/8/13
Warrior 2400 crusher	n/a	n/a	n/a	117	117	8/8/13
Kleeman screen	MCR401	n/a	n/a	111	112	8/8/13

*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.

27 September 2013

Ref: 04035/4912

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

RE: SEPTEMBER 2013 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 19th September, 2013 as required by the draft 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
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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.

WCC Operations

WCC operations on Thursday 19th September 2013 had the 5600 excavator in Strip 16 centre at RL395m, 3600 excavator in Strip 13 centre at RL330m; a 1900 excavator in Strip 15 west at RL385m and a 1900 excavator in Strip 13 east at RL340m. Day and night shift initially had the overburden truck fleets running to either the RL390m western (out of pit) dump or RL370m inpit dump and truck fleets coaling from Strip 13 were hauling coal to the ROM. At 8:30pm, all trucks were directed to the inpit dump. Between 9pm and 10pm, various trucks were shutdown and restarted to manage noise levels below 35dBA at Quipolly and Werris Creek. The crushing plant operated to 3:30am with one train loaded arriving at 2:02pm and departing 4:12pm.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 19 September 2013 (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	2:35 pm	51	35	n/a	5.6/299	Birds & insects (51), cattle (40), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:30 pm	46	37	n/a	6.2/299	Birds & insects (44), wind in trees (41), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	1:30 pm	48	37/36*	n/a	6.2/298	Birds & insects (48), wind in trees (38), WCC inaudible
C R10 Meadholme/ R11 Glenara	2:26 pm	46	39	n/a	3.8/291	Wind in trees (46), birds & insects (36), WCC barely audible
D R24 Hazeldene	3:14 pm	44	37	n/a	4.7/292	Wind (43), birds & insects (37), WCC barely audible
E R12 Railway Cottage	2:34 pm	52	38	n/a	4.7/294	Traffic (52), birds & insects (43), WCC inaudible
F R96 Talavera	3:40 pm	38	38	n/a	5.5/294	Birds & insects (34), wind (34), cattle (28), traffic (28), WCC barely audible
G R97	5:07 pm	38	35	n/a	4.8/270	Sheep (34), birds & insects (33), wind (30), WCC barely audible
H R98 Kyooma	4:46 pm	43	36	n/a	5.2/268	Wind (43), birds & insects (30), WCC (27)
I R57 Kurrara St	5:00 pm	50	35	n/a	4.7/273	Traffic (46), trains (44), birds & insects (41), WCC inaudible
J R57 Coronation Ave	5:31 pm	43	35	n/a	4.5/274	Traffic (41), birds & insects (35), dogs (34), WCC inaudible
K R21 Alco Park	4:21 pm	44	39	n/a	6.2/295	Train (42), birds & insects (41), wind (33), WCC inaudible
L R103	4:40 pm	47	35	n/a	5.2/268	Train (45), wind (40), birds & insects (39), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

Table 3
WCC Noise Monitoring Results – 19 September 2013 (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	8:07 pm	n/a	38	35	+0.1,5.0.272	Traffic (36), birds & insects (34), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	8:26 pm	n/a	34	37	+0.8,3.6,267	Traffic (33), birds & insects (28), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	8:15 pm	n/a	37	37/36*	+0.3,4.9,271	Traffic (36), birds & insects (31), WCC inaudible
C R10 Meadholme/ R11 Glenara	9:30 pm	n/a	32	39	+1.9,2.8,263	Traffic (32), WCC inaudible
D R24 Hazeldene	9:48 pm	n/a	33	37	+1.6,3.2,263	Traffic (33), birds & insects (21), WCC inaudible
E R12 Railway Cottage	12:35 am	n/a	37	38	+7.3,0.6,294	Traffic (37), WCC inaudible
F R96 Talavera	9:30 pm	43	38	37	+1.5,3.3,267	WCC (36), traffic (34), birds & insects (20)
G R97	11:11 pm	46	40	35	+3.7,0.2,280	WCC (39), sheep (33)
H R98 Kyooma	10:49 pm	48	42	36	+3.0,0.8,144	WCC (42), birds & insects (25), sheep (20)
I R57 Kurrara St	11:11 pm	42	38	35	+4.2,0.5,348	Traffic (36), WCC (34)
J R57 Coronation Ave	11:33 pm	41	40	35	+4.4,0.5,265	Traffic (38), WCC (34), dogs (30)
K R21 Alco Park	10:55 pm	n/a	40	37	+2.3,0.3,255	Traffic (40), dogs (30), WCC barely audible
L R103	12:02 am	38	35	35	+4.5,0.6,48	Traffic (33), WCC (31)

1. L1 (1 min) from mine noise only.
* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

The results in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, the measured noise levels exceeded the relevant noise criterion at R97 and Kyooma during the evening/night time monitoring period.

There is no residence at R97. The monitoring is undertaken at the gate to the property off Black Gully Road. The mine has a private agreement with the resident at Kyooma.

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 exceeded 45 dB(A) at the R97 and Kyooma monitoring locations. There is no residence at R97 and, therefore, the sleep disturbance criterion is not applicable. The mine has a private agreement with the resident at Kyooma.

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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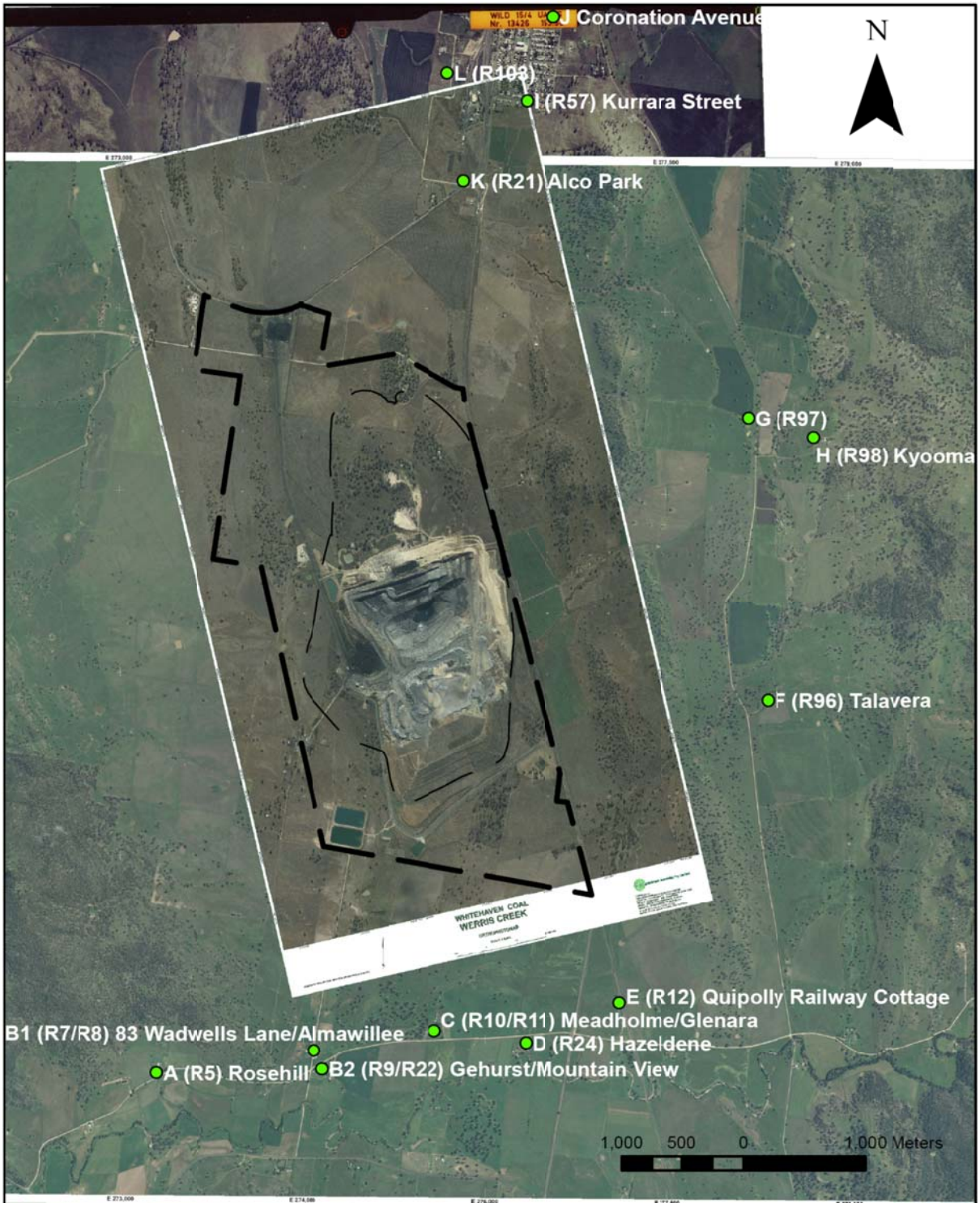
Appendix I



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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	115	118	8/8/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	108	116	122		8/8/13
Haul truck CAT 785C (unattenuated)	624	108	116	121		8/8/13
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	n/a	115		18/12/12
Dozer D10T (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)	501	107 (1st)	114 (1st)	119 113	122 118	6/2/13
Excavator (EX 5600)	570	121	n/a	116	119	8/8/13
Haul truck CAT 793XQ	660	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	661	115	n/a	116	118	8/8/13
Haul truck CAT 793XQ	662	115	n/a	115	118	8/8/13
Haul truck CAT 793XQ	663	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	664	115	n/a	114	117	8/8/13
Haul truck CAT 793XQ	665	115	n/a	115	117	8/8/13
Haul truck CAT 793XQ	666	115	n/a	115	117	8/8/13

Haul truck CAT 793XQ	667	115	n/a	116	119	8/8/13
Hitachi Excavator	543	116	n/a	115	119	8/8/13
Grader	849	n/a	n/a	110	112	8/8/13
Warrior 2400 crusher	n/a	n/a	n/a	117	117	8/8/13
Kleeman screen	MCR401	n/a	n/a	111	112	8/8/13

*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.

24 October 2013

Ref: 04035/4956

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

RE: OCTOBER 2013 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 22nd and Wednesday 23rd October, 2013 as required by the draft 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 Programme

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 Programme

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
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.

Monitoring points B1, B2, C and K are considered representative of multiple receivers because they are sufficiently close together that therefore noise monitoring at the monitoring points are acoustically representative of individual receivers in accordance with EPL 12290 Condition L4.6.

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 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.

WCC Operations

WCC operations on Tuesday 22nd October 2013 had the 5600 excavator in Strip 15 centre at RL370m, 3600 excavator in Strip 13 west at RL330m; a 1900 excavator in Strip 15 centre at RL370m and a 1900 excavator in Strip 15 centre at RL370m. Day and night shift had the overburden truck fleets from the centre pit running via the east to the western RL420m (out of pit) dump or the western overburden trucks to RL390m western inpit dump. Because of elevated noise levels to the east of WCC, both 1900 excavators (and trucks) were suspended at 7:05pm and 7:15pm respectively. The 5600 excavator (and trucks) was suspended intermittently after 7:25pm to manage noise levels below 35dBA.

A total of 18.1 hours of excavator production (across 3 excavators) and 56 hours of truck production (across 3x785 trucks and 7x793 trucks) were lost to manage noise impacts. The crushing plant and train load out operated to 3:30am with the dozers on the train load out suspended between 7:30pm and 9:20pm with no trains loaded.

Noise Compliance Assessment

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

For logistical reasons the day time monitoring was completed on the morning of Wednesday 23rd October as noted in Table 2.

Table 2
WCC Noise Monitoring Results – 22/23 October 2013 (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	4:42 pm	43	35	n/a	5.2,288	Birds & insects (43), traffic (30), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	3:40 pm	49	37	n/a	4.4,282	Birds & insects (49), traffic (33), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	5:03 pm	45	37/36*	n/a	4.2,294	Birds & insects (45), traffic 925), WCC inaudible
C R10 Meadholme/ R11 Glenara	7:02 am**	43	39	n/a	2.0/336	Traffic (41), birds & insects (38), WCC (32)
D R24 Hazeldene	3:38 pm	44	37	n/a	4.2,284	Birds & insects (44), traffic (30), WCC barely audible
E R12 Railway Cottage	4:55 pm	49	38	n/a	4.2,294	Traffic (47), birds & insects (42), WCC inaudible
F R96 Talavera	2:33 pm	36	38	n/a	3.7,286	Birds & insects (34), traffic (30), WCC (27)
G R97	1:45 pm	38	35	n/a	4.2,305	Wind (36), birds & insects (34), WCC barely audible
H R98 Kyooma	2:04 pm	35	36	n/a	3.0,327	Birds & insects (32), wind (32), WCC (23)
I R57 Kurrara St	1:50 pm	46	35	n/a	3.9,298	Birds (43), trains (42), traffic (36), WCC inaudible
J R57 Coronation Ave	7:06 am**	52	35	n/a	3.9/357	Traffic (49), birds & insects (48), trains (40), domestic noise (35), WCC inaudible
K R21 Alco Park	2:55 pm	43	39	n/a	6.2,295	Train (42), traffic (33), birds & insects (30), WCC inaudible
L R103	3:13 pm	46	35	n/a	5.2,268	Birds & insects (42), cattle (41), traffic (40), WCC inaudible

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

** Monitoring on 23/10/13

Table 3
WCC Noise Monitoring Results – 22 October 2013 (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	n/a	41	35	Lapse,3.9/309	Insects (40), traffic (32), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	11:34 pm	39	36	37	+1.6,6.7,353	WCC (34), birds & insects (32)
B2 R9Gedhurst/ R22 Mountain View	7:34 pm	35	38	37/36*	+1.6,3.1,331	Birds & insects (35), traffic (32), WCC (28)
C R10 Meadholme/ R11 Glenara	8:37 pm	41	36	39	+2.6,3.6,314	Traffic (33), WCC (32), insects (28)
D R24 Hazeldene	8:55 pm	30	39	37	+4.2,4.6,351	Traffic (37), insects (31), WCC (25)
E R12 Railway Cottage	10:25 pm	36	42	38	+2.0,5.8,349	Traffic (41), WCC (32), birds & insects (30)
F R96 Talavera	9:11 pm	41	42	37	+4.7,4.8,352	Birds & insects (42), WCC (32)
G R97	8:20 pm	42	51	35	+2.6,3.3,342	Insects (51), WCC (33), train (30)
H R98 Kyooma	8:45 pm	42	38	36	+2.7,4.1,336	WCC (35), insects (35), traffic (25)
I R57 Kurrara St	10:42 pm	n/a	42	35	+1.8,5.8,349	Frogs & insects (40), traffic (36), trains (32), WCC inaudible
J R57 Coronation Ave	7:15 pm	n/a	50	35	Lapse,3.9,309	Traffic (47), birds & insects (46), trains (37), WCC inaudible
K R21 Alco Park	10:01 pm	n/a	44	37	+5.1,5.3,354	Insects (43), trains (33), WCC barely audible
L R103	10:20 pm	n/a	42	35	+4.4,6.6,355	Insects (41), trains (33), traffic (30), WCC inaudible

1. L1 (1 min) from mine noise only.

* Gedhurst noise criterion is 37dB(A) Leq while Mountain View noise criterion is 36 dB(A) Leq.

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 criterion at any time or location.

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 the relevant criterion at any time or 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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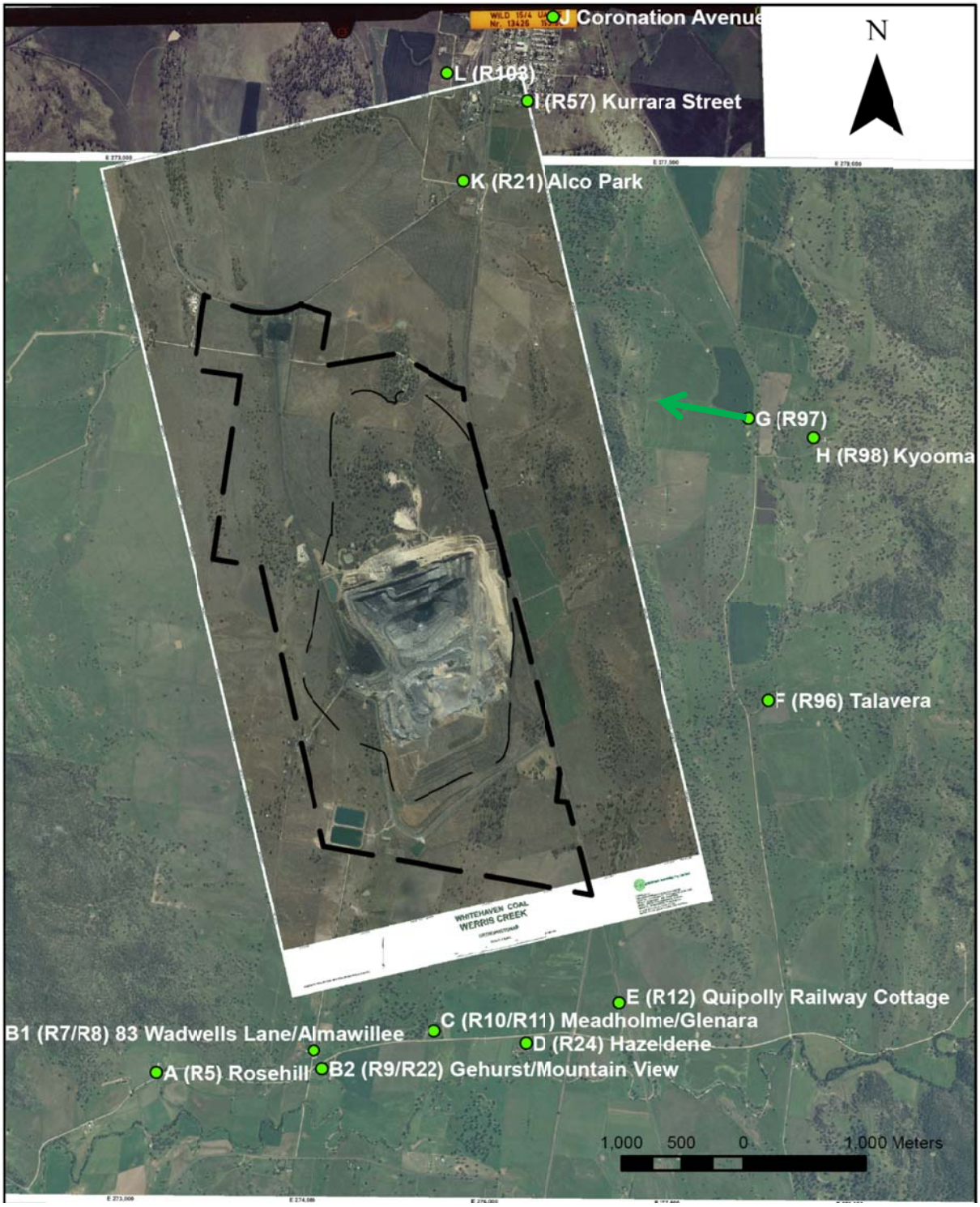
Appendix I



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 $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	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
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		EA SWLs		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.	Leq	Lmax			
Haul truck CAT 785C (unattenuated)	608	108	116	120	122	17/7/12
Haul truck CAT 785C (attenuated)	608	108	116	115	118	8/8/13
Haul truck CAT 785C (unattenuated)	614	108	116		120	17/7/12
Haul truck CAT 785C (unattenuated)	609	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	610	108	116	121		11/9/12
Haul truck CAT 785C (unattenuated)	611	108	116	120		11/9/12
Haul truck CAT 785C (unattenuated)	600	108	116	119		11/9/12
Haul truck CAT 785C (unattenuated)	613	108	116	122		8/8/13
Haul truck CAT 785C (unattenuated)	624	108	116	121		8/8/13
Water Cart	WA897	111	118	113		11/9/12
Scraper	SC882	118	121	113		11/9/12
Excavator (PC 3600)	EX551	116	120	115		11/9/12
Dozer	829	107	114	114		11/9/12
Crushing Plant	n/a	114	116	118		11/9/12
Haul truck CAT 785C Horn pre attenuation	608	108	116		129	17/7/12
Haul truck Cat 785C Horn post attenuation	608	108	116		124	11/9/12
Haul truck CAT 793XQ	662	n/a	n/a	115	118	18/12/12
Excavator (PC4000)	EX837	116	n/a	115		18/12/12
Dozer D10T (1st gear)	505	107 (1st)	114 (1st)	113 109	128 121	18/12/12
Dozer D10T on stockpile (2nd gear) (1st gear)	505	107 (1st)	114 (1st)	118 109	124 113	6/2/13
Dozer D9T on stockpile (2nd gear) (1st gear)	501	107 (1st)	114 (1st)	119 113	122 118	6/2/13
Excavator (EX 5600)	570	121	n/a	116	119	8/8/13
Haul truck CAT 793XQ	660	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	661	115	n/a	116	118	8/8/13
Haul truck CAT 793XQ	662	115	n/a	115	118	8/8/13
Haul truck CAT 793XQ	663	115	n/a	116	119	8/8/13
Haul truck CAT 793XQ	664	115	n/a	114	117	8/8/13
Haul truck CAT 793XQ	665	115	n/a	115	117	8/8/13
Haul truck CAT 793XQ	666	115	n/a	115	117	8/8/13

Haul truck CAT 793XQ	667	115	n/a	116	119	8/8/13
Hitachi Excavator	543	116	n/a	115	119	8/8/13
Grader	849	n/a	n/a	110	112	8/8/13
Warrior 2400 crusher	n/a	n/a	n/a	117	117	8/8/13
Kleeman screen	MCR401	n/a	n/a	111	112	8/8/13

*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

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS AUGUST 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-52	6/08/2013	13:15	S13_3-7_330 TSB37	TSB	<0.25	<109.8	1.02	108.6	0.60	102.5	0.07	110.6	10.00	120.0	12.23	117.7	50.00	-2.9	331	8.4	0
2013-53	13/08/2013	10:09	S13_8-10_Decoal UG collapse pt1 TSB38	TSB	<0.25	<109.8	0.99	84.4	0.34	94.3	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.8	4	3.2	0
2013-54	16/08/2013	12:08	S13_14-17_330	IB	<0.25	<109.8	0.70	100.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.7	177	4.6	0
2013-55	16/08/2013	12:08	S13_10_330 trim	IB	<0.25	<109.8	0.70	100.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.7	177	4.6	0
2013-56	22/08/2013	13:41	S13_8-10_330 DE Coal UG Collapse	TSB	<0.25	<109.8	1.23	97.7	0.39	100.4	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.0	332	8.4	0
2013-57	23/08/2013	13:14	S13_8-10_DE Coal	IB	<0.25	<109.8	0.63	111.2	<0.25	<109.8	<0.25	<109.8	10.00	120.0	2.53	119.7	50.00	-3.3	295	6.3	1
2013-58	29/08/2013	12:09	S13_18_330	IB	<0.25	<109.8	<0.25	<109.8	0.60	100.6	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.6	23	3.5	1
2013-59	29/08/2013	12:09	S13_8-10_330 Pt2	IB	<0.25	<109.8	<0.25	<109.8	0.60	100.6	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.6	23	3.5	1
2013-60	30/08/2013	12:13	S15_4-5_DE UG Collapse	TSB	<0.25	<109.8	0.85	106.9	<0.25	<109.8	0.45	101.2	10.00	120.0	Not Monitored		50.00	-3.3	343	10.2	1
TOTALS	**AUGUST 2013**	**# BLAST**	**36**	**AVERAGE**	**<0.25**	**<109.8**	**0.87**	**101.5**	**0.51**	**99.7**	**0.26**	**105.9**	**5.00**	**115.0**							
TOTALS	**AUGUST 2013**	**# BLAST**	**36**	**HIGHEST**	**<0.25**	**<109.8**	**1.23**	**111.2**	**0.60**	**102.5**	**0.45**	**110.6**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**36**	**AVERAGE**	**0.32**	**97.6**	**0.86**	**102.0**	**0.47**	**101.9**	**0.17**	**106.8**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**36**	**0%**	**0%**	**0%**	**2.8%**	**0%**	**2.8%**	**0%**	**2.8%**	**5%**	**5%**							

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS SEPTEMBER 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-61	2/09/2013	13:10	S16_5-8_Decoal_UG Collapse	TSB	<0.25	<109.8	0.51	102.4	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.5	181	2.1	1
2013-62	4/09/2013	13:14	S13-8-10_DE Coal UG Collapse	TSB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.3	38	2.0	0
2013-63	5/09/2013	13:04	S13_9-10_330	IB	<0.25	<109.8	0.29	92.9	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.6	342	2.8	0
2013-64	6/09/2013	13:15	S13_22_350	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.7	336	2.9	0
2013-65	6/09/2013	13:15	S12_14_330	IB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.7	336	2.9	0
2013-66	9/09/2013	12:18	S15_6-8_370	OB	<0.25	<109.8	0.77	103.4	0.29	102	0.28	93.3	10.00	120.0	Not Monitored		50.00	-3.1	344	6	0
2013-67	10/09/2013	14:48	S16_4-6_400_UG Collapse	TSB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	0.13	110.3	50.00	-2.2	332	9.3	0
2013-68A	11/09/2013	12:16	S13_330 (Cap Rocks)	OB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.3	138	1.4	0
2013-68	12/09/2013	13:18	S15_11-17_385_Blackseam	OB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.2	304	4.3	0
2013-69	18/09/2013	13:49	S15_2-6_DE UG Collapse & TSB40	TSB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	<0.25	<109.8	50.00	-3.0	312	6.2	0
2013-70	20/09/2013	15:16	S15_2-6_UG Collapse Pt2	TSB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.3	267	8.3	0
2013-71&72	25/09/2013	12:08	S13_18-21_350-330_TSB42_pt2 & S13_10-11-Hardig & S13 Redrill	TSB	<0.25	<109.8	0.61	97.7	0.29	96.5	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-2.5	340	3.9	0
2013-73	27/09/2013	15:20	S13_8-10_DEcoal_UG Collapse	TSB	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-1.5	325	0.4	0
TOTALS	**SEPTEMBER 2013**	**# BLAST**	**49**	**AVERAGE**	**<0.25**	**<109.8**	**0.55**	**99.1**	**0.29**	**99.3**	**0.28**	**93.3**	**5.00**	**115.0**							
TOTALS	**SEPTEMBER 2013**	**# BLAST**	**49**	**HIGHEST**	**<0.25**	**<109.8**	**0.77**	**103.4**	**0.29**	**102.0**	**0.28**	**93.3**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**49**	**AVERAGE**	**0.32**	**97.6**	**0.80**	**101.5**	**0.44**	**101.5**	**0.19**	**104.1**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**49**	**0%**	**0%**	**0%**	**2.0%**	**0%**	**2.0%**	**0%**	**2.0%**	**5%**	**5%**							

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS OCTOBER 2013																
					Glenara R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE		ARTC Culvert		COMPLIANCE	TEMPERATURE	WIND		FUME
					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	0 to 5
2013-74	1/10/2013	10:49	S15_19-23_370_TSB36_Pt1	TSB	<0.25	<109.8	<0.25	<109.8	0.55	87	0.34	107.1	10.00	120.0	Not Monitored		50.00	-1.6	345	9.7	0
2013-75	4/10/2013	15:41	S13_18-21_350-330_TSB41 Part1	TSB	<0.25	<109.8	0.88	101.3	0.60	97.4	0.39	100.6	10.00	120.0	Not Monitored		50.00	-3.4	196	4.4	0
2013-76	10/10/2013	10:46	S13_18-21_TSB42	TSB	<0.25	<109.8	0.79	105.0	0.37	101.5	0.42	105.6	10.00	120.0	Not Monitored		50.00	-2.8	343	4.7	0
2013-77	14/10/2013	13:16	S15_11-17_370_Blackseam_Part1	OB	<0.25	<109.8	0.74	107.0	0.37	103.5	0.41	105.0	10.00	120.0	Not Monitored		50.00	-4.2	268	3.3	0
2013-78	21/10/2013	12:11	S13_10-17_Ccoal West	IB	<0.25	<109.8	1.04	93.9	0.50	94.3	0.50	104.9	10.00	120.0	Not Monitored		50.00	-4.3	293	4.6	0
2013-79	25/10/2013	10:15	S13_10-17_Ccoal Decoal UG collapse pt1	TSB	<0.25	<109.8	1.54	97.7	0.66	83.5	0.40	101.6	10.00	120.0	Not Monitored		50.00	-4.2	290	1.7	0
2013-80	28/10/2013	13:08	S13_7_DECoal Wedge	IB	<0.25	<109.8	0.43	97.7	<0.25	<109.8	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-3.5	303	5.1	0
2013-81	31/10/2013	13:09	S13_11-DE Coal_UG Collapse	IB	<0.25	<109.8	0.61	108.4	0.34	109.5	<0.25	<109.8	10.00	120.0	Not Monitored		50.00	-4.1	151	2.5	0
TOTALS	**OCTOBER 2013**	**# BLAST**	**8**	**AVERAGE**	**<0.25**	**<109.8**	**0.86**	**101.6**	**0.48**	**96.7**	**0.41**	**104.1**	**5.00**	**115.0**							
TOTALS	**OCTOBER 2013**	**# BLAST**	**8**	**HIGHEST**	**<0.25**	**<109.8**	**1.54**	**108.4**	**0.66**	**109.5**	**0.50**	**107.1**	**10.00**	**120.0**							
TOTALS	**ANNUAL**	**# BLAST**	**57**	**AVERAGE**	**0.32**	**97.6**	**0.81**	**101.5**	**0.44**	**100.8**	**0.23**	**104.1**	**5.00**	**115.0**							
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**57**	**0%**	**0%**	**0%**	**1.8%**	**0%**	**1.8%**	**0%**	**1.8%**	**5%**	**5%**							

Appendix 6 – Groundwater Monitoring Results

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)

WO # 6600

ALS ACIRL

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)	cmbgl cmbtoc cm	cmbgl cmbtoc cm	m	Pump / Bailer	L	cmbgl cmbtoc cm	uS/cm	pH units	°C				
MW1	24/9	13 50	54 90		0.25	Bail			1175	6.95	22-6	Clear	Nil	Clear	6 Monthly Hill views
MW2	24/9	13:15	26.25		0.15	Bail			796	7.04	22.2	Clear	Nil	Clear	6 Monthly Railway view
MW3	25/9	14:10	15-30		0.195	Pump	16L		3080	6.74	23.0	Clear	Nil	Clear	6 Monthly Lowlandaree.
MW4	24/9	11:20	0.25		—		(Broken Stick up - Hole has water 25cm down.)								Mine - Front
MW4B	24/9	11:05	10.66		0.7	Bail			981	7.67	19.5	Clear	Nil	Clear	6 Monthly Mine - Front.
MW5	24/9	10:45	8.53		1.15	Bail			2280	7.55	21.0	Clear	Nil	Clear	6 Monthly Mine
MW5B	24/9	10:30	8.09		0.7										"
MW6	24/9	11:50	12.45		1.05	Bail			1730	7.14	21.8	Slight Hydrocarbon	Nil	Sand	6 Monthly 1111 W/C Rd.
MW9	24/9	9:50	—		1.05		" 1.48m Just Mud - Probably knocked down & stood up								* Mine - Rail Outload
MW10	25/9	9:30	16.93		0.2		* Pump over bore."								Escat. In.
MW11	—	—													Escat. In - Gap
MW14	24/9	9:40	17.55		0.95										* Mine - Rail Outload
MW14B	24/9	9:30	17.42		0.75										* Mine - / /
MW17B	25/9	12:10	9.94		0.5										* Windmill - Down Wabell In.
MW20	25/9/13	9:00	19.71		0.55										Tonsley Park Shed.
MW24A	25/9/13	10:35	14.40		0.15										Maranoa - In Kennel.
MW25A	24/9	13:30	—				Pump over bore								* Near Tanks.
MW25B	24/9	13:40	—				" "								Red shed.
P1	—	Under	Production area												mine.
P2	—	"	"												mine
PUG	—														mine
MW27	24/9	10.10	93.46		0.45		* Access to monitor.								Centre - Escat Jane
MW29	25/9	10:15	11.54		0.35				(Wind mill stopped)						Kyoomb - Windmill @ front.
~~MW31~~							* No maintenance required"								Tullawarra

SPECIAL COMMENTS: M

Sheet: of

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FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

CLIENT: WERRIS CREEK COAL PTY LTD

QUOTATION No: WO # 6600

ADDRESS/OFFICE:

ACIRL LABORATORY:

PROJECT ID: WERRIS CREEK COAL QUARTERLY GROUNDWATERS

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

SAMPLER NAME

SITE: WERRIS CREEK MINE AND SURROUNDS

Preservatives / 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	24/9	12:20	15.86		0.2										Rosereath
	MW12	25/9	10:50	8.91		0.5										Hazelden - Allensled
	MW13	25/9	13:20	4.63		0.4										* Wadell lane
	MW13B	25/9	13:10	3.26		0.3										Taylors lane - off Hayshed.
	MW13D	25/9	13:00	4.69		0.2										* Taylors lane - Windmill
	MW15	25/9	12:40	4.39		0.5										* Paynes lane - Windmill
	MW16	25/9	11.55	4.93		0.3										* Mountain View - Red Shed.
	MW17A	25/9	12:20	4.04		0.5										* 83 Wadell ln
	MW18A	25/9	12:30	3.85		—										* 82 Wadell ln.
	MW19A	24/9	12:50	5.82		0.15										* Lintana - pump
	MW21A	25/9	11:10	7.09		0.3										* Glenara
	MW22A	25/9	11:40	5.07		0.55										* 308 Payne ln - House
	MW22B	25/9	11:30	5.33		0.45										✓ ✓ Irrigation
	MW23A	25/9	13:35	3.95		0.2										Peggy Easy - Horse yard.
	MW23B	25/9	13:40	4.70		0.1										" " - Irrigation
	MW28A	24/9	12:50	11.75		0.25										* Woodlawn - LHS Windmill
	MW28B	24/9	12:40	—			0.8			Pump over bore — no SWL						* Woodlawn - RHS House paddock
	* Naranji	25/9	12:50	4.02.												Pump Shed.

SPECIAL COMMENTS

Sheet: of

SE12672

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1321110**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WCC 6 MONTHLY GROUNDWATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 6600		
C-O-C number	: ----	Date Samples Received	: 25-SEP-2013
Sampler	: BP	Issue Date	: 02-OCT-2013
Site	: ----		
		No. of samples received	: 5
Quote number	: SY/417/13	No. of samples analysed	: 5

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	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

- **AC01: Bore data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **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**)

Compound	CAS Number	LOR	Unit	Client sample ID	WER-MW1 114749	WER-MW2 114750	WER-MW4B 114751	WER-MW5 114752	WER-MW6 114753
				Client sampling date / time	24-SEP-2013 13:50	24-SEP-2013 13:15	24-SEP-2013 11:05	24-SEP-2013 10:45	24-SEP-2013 12:45
					ES1321110-001	ES1321110-002	ES1321110-003	ES1321110-004	ES1321110-005
AC01: Bore Data									
Standing Water Level	----	0.01	m		54.9	26.2	10.7	8.53	12.4
Stick up	----	0.01	m		0.25	0.15	0.70	1.15	1.05
AC02: Sampling Data									
Purge Type	----	-	--		Bail	Tap	Bail	Bail	Bail
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		1180	796	981	2280	1730
pH	----	0.01	pH Unit		6.95	7.04	7.67	7.55	7.18
Temperature	----	0.1	°C		22.6	22.2	19.5	21.0	21.8
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.64	7.77	8.01	7.81	7.77
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1250	835	1030	2440	1890
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	<0.01	0.06	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		7.05	2.36	1.01	1.30	4.72
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		7.05	2.36	1.01	1.36	4.72
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		2.5	1.3	0.6	5.0	1.3
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		9.6	3.7	1.6	6.4	6.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.81	0.07	0.11	1.03	0.96
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.08	0.07	0.03	1.01	0.08
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WER-MW1 114749	WER-MW2 114750	WER-MW4B 114751	WER-MW5 114752	WER-MW6 114753
				Client sampling date / time	24-SEP-2013 13:50	24-SEP-2013 13:15	24-SEP-2013 11:05	24-SEP-2013 10:45	24-SEP-2013 12:45
Compound	CAS Number	LOR	Unit		ES1321110-001	ES1321110-002	ES1321110-003	ES1321110-004	ES1321110-005
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
>C10 - C16 Fraction	>C10_C16	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	WER-MW1114749 - 24-SEP-2013 13:50	Clear
AC04: Appearance	WER-MW2114750 - 24-SEP-2013 13:15	Clear
AC04: Appearance	WER-MW4B114751 - 24-SEP-2013 11:05	Clear
AC04: Appearance	WER-MW5114752 - 24-SEP-2013 10:45	Clear
AC04: Appearance	WER-MW6114753 - 24-SEP-2013 12:45	Slight Turbid
AC04: Odour	WER-MW1114749 - 24-SEP-2013 13:50	Nil
AC04: Odour	WER-MW2114750 - 24-SEP-2013 13:15	Nil
AC04: Odour	WER-MW4B114751 - 24-SEP-2013 11:05	Nil
AC04: Odour	WER-MW5114752 - 24-SEP-2013 10:45	Nil
AC04: Odour	WER-MW6114753 - 24-SEP-2013 12:45	Nil
AC04: Colour	WER-MW1114749 - 24-SEP-2013 13:50	Clear
AC04: Colour	WER-MW2114750 - 24-SEP-2013 13:15	Clear
AC04: Colour	WER-MW4B114751 - 24-SEP-2013 11:05	Clear
AC04: Colour	WER-MW5114752 - 24-SEP-2013 10:45	Clear
AC04: Colour	WER-MW6114753 - 24-SEP-2013 12:45	Sandy

CERTIFICATE OF ANALYSIS

Work Order	: **ES1321205**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: LYNN DUNN	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lynn.dunn@alsglobal.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WCC 6 MONTHLY GROUNDWATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 6600		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2013
Sampler	: BP	Issue Date	: 03-OCT-2013
Site	: ----		
		No. of samples received	: 1
Quote number	: SY/417/13	No. of samples analysed	: 1

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Kim Phan	Sample Receipt Clerk	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

- **AC01: Bore data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **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	WER-MW3 114754	----	----	----	----
				Client sampling date / time	25-SEP-2013 14:10	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1321205-001	----	----	----	----
AC01: Bore Data									
Standing Water Level	----	0.01	m		15.3	----	----	----	----
Stick up	----	0.01	m		0.95	----	----	----	----
AC02: Sampling Data									
Purge Type	----	-	--		Pump	----	----	----	----
Purge Volume	----	0.01	L		160	----	----	----	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		3080	----	----	----	----
pH	----	0.01	pH Unit		6.74	----	----	----	----
Temperature	----	0.1	°C		23.0	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.45	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		3320	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		20.4	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		20.4	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		4.4	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		24.8	----	----	----	----
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	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WER-MW3 114754	----	----	----	----
			Client sampling date / time	25-SEP-2013 14:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1321205-001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	WER-MW3114754 - 25-SEP-2013 14:10	Clear
AC04: Odour	WER-MW3114754 - 25-SEP-2013 14:10	Nil
AC04: Colour	WER-MW3114754 - 25-SEP-2013 14:10	Clear

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1319047**	Page	: 1 of 7
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WCC QUARTERLY SURFACE WATER	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 6468		
C-O-C number	: ----	Date Samples Received	: 28-AUG-2013
Sampler	: BP	Issue Date	: 02-SEP-2013
Site	: ----		
		No. of samples received	: 11
Quote number	: SY/417/13	No. of samples analysed	: 11

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
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	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

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **EK071G: It has been noted that Reactive P is greater than Total P for sample ID(WER-QUIPOLLY CREEK UPSTREAM ()), however this difference is within the limits of experimental variation.**
- **EK071G: It has been noted that Reactive P is greater than Total P for sample ID(WER-SEDIMENT DETENTION 5()), however this difference is within the limits of experimental variation.**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID: WER-SEDIMENT BASIN 2() 113348	WER-SEDIMENT BASIN 9() 113349	WER-SEDIMENT DETENTION 4() 113350	WER-SEDIMENT DETENTION 5() 113351	WER-VOID WATER DAM 2(VWD2-FORM 113352
Client sampling date / time				27-AUG-2013 12:10	27-AUG-2013 11:05	27-AUG-2013 12:50	27-AUG-2013 12:30	27-AUG-2013 10:45
				ES1319047-001	ES1319047-002	ES1319047-003	ES1319047-004	ES1319047-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	987	208	238	280	936
pH	----	0.01	pH Unit	8.86	8.58	9.14	8.46	8.64
Temperature	----	0.1	°C	15.6	17.5	16.9	15.6	16.5
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.37	8.10	9.23	8.18	8.44
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1010	208	240	273	963
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	7	8	20	5	12
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.70	0.01	0.18	0.74
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.70	0.01	0.18	0.74
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.7	0.9	1.2	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.6	1.4	0.9	1.4	1.3
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.02	0.05	0.21	0.62	0.06
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.18	0.63	<0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	<5	<5
Oil & Grease	----	5	mg/L	----	----	<5	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	WER-WADWELLS LAND CAUSEWAY (BL 113353	WER-QUIPOLLY CREEK UPSTREAM () 113354	WER-QUIPOLLY CREEK UPSTREAM () 113355	WER-WERRIS CREEK UPSTREAM () 113356	WER-VOID WATER DAM 3 (VW3-200M 113357
				Client sampling date / time	27-AUG-2013 10:10	27-AUG-2013 09:35	27-AUG-2013 09:55	27-AUG-2013 09:00	27-AUG-2013 11:25
					ES1319047-006	ES1319047-007	ES1319047-008	ES1319047-009	ES1319047-010
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		610	469	803	1240	1020
pH	----	0.01	pH Unit		8.15	7.78	7.97	8.56	8.79
Temperature	----	0.1	°C		15.4	12.2	14.0	12.4	17.4
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.00	7.90	8.05	8.43	8.46
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		636	470	826	1270	1080
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		65	25	11	15	19
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		0.01	<0.01	<0.01	<0.01	0.04
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.03	0.22	0.03	<0.01	3.55
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.04	0.22	0.03	<0.01	3.59
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		5.6	0.5	0.1	0.3	1.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		5.6	0.7	0.1	0.3	5.2
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.49	0.05	0.04	0.07	0.08
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.26	<0.01	0.05	0.04	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	<5	<5	<5	<5
Oil & Grease	----	5	mg/L		<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WER-VOID WATER DAM 4 (VWD4-200 113358	----	----	----	----
				Client sampling date / time	27-AUG-2013 11:50	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1319047-011	----	----	----	----
AC03: Field Tests									
Electrical Conductivity (Non Compensated)	----	1	µS/cm		**934**	----	----	----	----
pH	----	0.01	pH Unit		**8.97**	----	----	----	----
Temperature	----	0.1	°C		**16.5**	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**8.60**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**992**	----	----	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		**36**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.22**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.22**	----	----	----	----
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		**0.8**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
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	WER-SEDIMENT BASIN 2()113348 - 27-AUG-2013 12:10	Clear
AC04: Appearance	WER-SEDIMENT BASIN 9()113349 - 27-AUG-2013 11:05	Slight Turbid
AC04: Appearance	WER-SEDIMENT DETENTION 4()113350 - 27-AUG-2013 12:50	Clear
AC04: Appearance	WER-SEDIMENT DETENTION 5()113351 - 27-AUG-2013 12:30	Clear
AC04: Appearance	WER-VOID WATER DAM 2(VWD2-FORM113352 - 27-AUG-2013 10:45	Clear
AC04: Appearance	WER-WADWELLS LAND CAUSEWAY (BL113353 - 27-AUG-2013 10:10	Slight Turbid
AC04: Appearance	WER-QUIPOLLY CREEK UPSTREAM ()113354 - 27-AUG-2013 09:35	Clear
AC04: Appearance	WER-QUIPOLLY CREEK UPSTREAM ()113355 - 27-AUG-2013 09:55	Clear
AC04: Appearance	WER-WERRIS CREEK UPSTREAM ()113356 - 27-AUG-2013 09:00	Clear
AC04: Appearance	WER-VOID WATER DAM 3 (VW3-200M113357 - 27-AUG-2013 11:25	Clear
AC04: Appearance	WER-VOID WATER DAM 4 (VWD4-200113358 - 27-AUG-2013 11:50	Clear
AC04: Odour	WER-SEDIMENT BASIN 2()113348 - 27-AUG-2013 12:10	Nil
AC04: Odour	WER-SEDIMENT BASIN 9()113349 - 27-AUG-2013 11:05	Nil
AC04: Odour	WER-SEDIMENT DETENTION 4()113350 - 27-AUG-2013 12:50	Nil
AC04: Odour	WER-SEDIMENT DETENTION 5()113351 - 27-AUG-2013 12:30	Nil
AC04: Odour	WER-VOID WATER DAM 2(VWD2-FORM113352 - 27-AUG-2013 10:45	Nil
AC04: Odour	WER-WADWELLS LAND CAUSEWAY (BL113353 - 27-AUG-2013 10:10	Nil
AC04: Odour	WER-QUIPOLLY CREEK UPSTREAM ()113354 - 27-AUG-2013 09:35	Nil
AC04: Odour	WER-QUIPOLLY CREEK UPSTREAM ()113355 - 27-AUG-2013 09:55	Nil

Sub-Matrix: **WATER**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
AC04: Odour	WER-WERRIS CREEK UPSTREAM ()113356 - 27-AUG-2013 09:00	Nil
AC04: Odour	WER-VOID WATER DAM 3 (VW3-200M113357 - 27-AUG-2013 11:25	Nil
AC04: Odour	WER-VOID WATER DAM 4 (VWD4-200113358 - 27-AUG-2013 11:50	Nil
AC04: Colour	WER-SEDIMENT BASIN 2()113348 - 27-AUG-2013 12:10	Clear
AC04: Colour	WER-SEDIMENT BASIN 9()113349 - 27-AUG-2013 11:05	Brown
AC04: Colour	WER-SEDIMENT DETENTION 4()113350 - 27-AUG-2013 12:50	Slight Green
AC04: Colour	WER-SEDIMENT DETENTION 5()113351 - 27-AUG-2013 12:30	Slight Brown
AC04: Colour	WER-VOID WATER DAM 2(VWD2-FORM113352 - 27-AUG-2013 10:45	Clear
AC04: Colour	WER-WADWELLS LAND CAUSEWAY (BL113353 - 27-AUG-2013 10:10	Muddy Brown
AC04: Colour	WER-QUIPOLLY CREEK UPSTREAM ()113354 - 27-AUG-2013 09:35	Clear
AC04: Colour	WER-QUIPOLLY CREEK UPSTREAM ()113355 - 27-AUG-2013 09:55	Clear
AC04: Colour	WER-WERRIS CREEK UPSTREAM ()113356 - 27-AUG-2013 09:00	Clear
AC04: Colour	WER-VOID WATER DAM 3 (VW3-200M113357 - 27-AUG-2013 11:25	Clear
AC04: Colour	WER-VOID WATER DAM 4 (VWD4-200113358 - 27-AUG-2013 11:50	Clear

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1317968**	Page	: 1 of 3
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WCC DIRTY WATER DISCHARGE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 6392		
C-O-C number	: ----	Date Samples Received	: 13-AUG-2013
Sampler	: ----	Issue Date	: 19-AUG-2013
Site	: ----		
		No. of samples received	: 3
Quote number	: SY/417/13	No. of samples analysed	: 3

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

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Senior Inorganic 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.

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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.

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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

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	113136 WER-SEDIMENT BASIN 2	113137 WER-QUIPOLLY CREEK UPSTREAM	113138 WER-QUIPOLLY CREEK DOWNSTREAM	----	----
				Client sampling date / time	12-AUG-2013 09:00	12-AUG-2013 09:30	12-AUG-2013 09:40	----	----
					ES1317968-001	ES1317968-002	ES1317968-003	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**8.44**	**7.93**	**8.14**	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**1010**	**467**	**827**	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		<5	**10**	**8**	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.08**	**0.14**	**0.04**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.08**	**0.14**	**0.04**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.5**	**0.2**	**0.2**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**0.6**	**0.3**	**0.2**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.02**	**0.06**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	**0.04**	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----