WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

August, September and October 2011

This Environmental Monitoring Report covers the period 1st August 2011 to 31st October 2011 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.

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APPENDICES

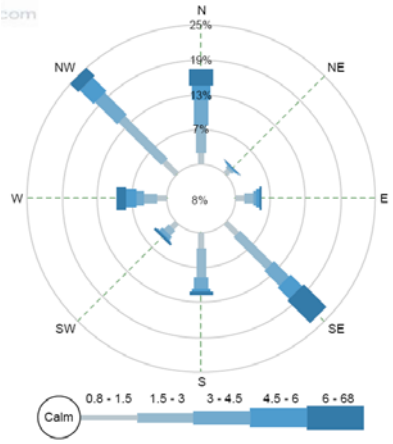
1.0 METEOROLOGY

1.1 WEATHER STATION

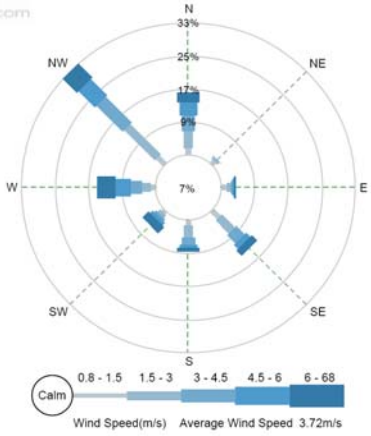
WCC collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring trailer located in the Quipolly Valley for August and September and at "Kyooma" for October. The following table summarises temperature, inversion and rainfall data for the last three months and wind data is presented below in windroses.

Month	Temp (°C) Trailer			Temp (°C) 10m Onsite			Lapse Rate (°C/100m)		Rainfall (mm)		
	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Trailer	Annual*
August	-1.9	10.1	23.7	3.8	12.7	23.3	2.9	8.9	31.2	25.2	155.8
September	-1.0	12.8	29.2	4.6	15.3	28.0	+2.7	+9.3	65.6	61.2	237.2
October	1.2	17.0	29.0	6.8	16.9	29.1	-4.9	+3.0	77.8	34.6	316.4

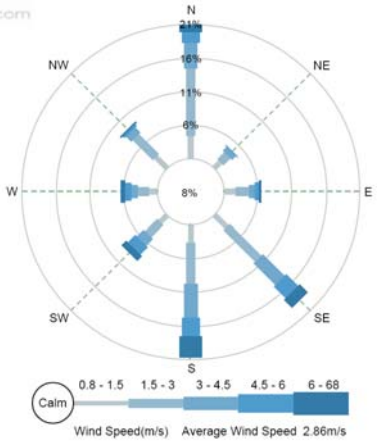
* Annual cumulative total since April 2011 for onsite Weather Station



August 2011



September 2011



October 2011

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10)

High Volume Air Sample (HVAS) monitoring for particulate matter less than 10 micron in size (PM10) and total suspended particulate (TSP) matter is conducted at five sites listed below.

WCHV1 – "Cintra" PM10
WCHV2 – "Tonsley Park" PM10
WCHV3 – "Railway View" PM10
WCHV4 – "Eurunderee" PM10
WCHV5 – "Railway View" TSP

Sampling is scheduled for 24 hours every 6 days in accordance with Department of Environment, Climate Change and Water (DECCW) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled.

2.1.1 Monitoring Data Results

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

Monitor Location	August (µg/m^3)	September (µg/m^3)	October (µg/m^3)	Annual (µg/m^3)	Criteria (µg/m^3)
WCHV1	13.7	20.3	17.5	21.3	30
WCHV2	9.2	17.6	13.5	16.8	30
WCHV3	13.1	24.2	16.8	23.1	30
WCHV4	10.0	17.2	10.0	12.1	30
WCHV5	37.8	50.8	36.3	58.1	90

2.1.2 Discussion - Compliance / Non Compliance

The daily and monthly averages for August, September and October were all within the compliance limit. A regional dust event (not related to WCC) on 23rd September 2011 resulted in all HVAS to record elevated results.

The annual PM10 sites averages are below the long term impact annual criteria of 30µg/m^3.

The TSP site is below the long term impact annual criteria of 90µg/m^3.

2.2 DEPOSITED DUST

Deposited dust monitoring is for particulate matter generally greater than 30 micron in size which readily settles out of the air and is monitored at seven locations.

WC2 – “Cintra”
WC5 – “Railway View”
WC7 – “Tonsley Park”
WC8 – “Plain View”
WC9 – “Marengo”
WC10 – “Mountain View”
WC11 – “Glenara”

Sampling is scheduled monthly in accordance with DECCW 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 (g/m^2/month)	September (g/m^2/month)	October (g/m^2/month)	Annual (g/m^2/month)	Criteria (g/m^2/month)
WC2	0.8	1.5	1.1	1.7	3.6
WC5	0.9	1.4	1.2	1.2	3.6
WC7	0.4	1.2	0.9	0.5	3.6
WC8	1.1	1.4	0.5	0.9	3.6
WC9	0.5	0.5	0.8	0.4	3.6
WC10	0.5	0.5	0.8	0.9	3.6
WC11	c20.0	c19.8	1.0	0.7	3.6

c - sample contaminated with dust from a non-mining source and is excluded from the average

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge results were within the monthly criteria of 3.6g/m^2/month. The August and September results for WC11 “Glenara” recorded excessive dust deposition results due to the plowing in an adjacent paddock to the gauge.

2.3 AIR QUALITY COMPLAINTS

There was one dust related complaints for the period. A complainant on the 3rd August 2011 stated that the mine was in general very dusty and visually intrusive from the road affecting the sale of their property in Werris Creek. Specific actions taken in relation to this complaint is outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring undertaken at the following locations:

- "Almawille" (private agreement);
- "Glenara" (private agreement);
- "Tonsley Park" (private agreement);
- "Railway Cottage";
- "Greenslopes";
- "Kyooma" (private agreement);
- Punyarra St, Werris Creek; and
- Kurrara St, Werris Creek.

Three sets of measurements are made at each location; one during the day time period (before 6pm); one during the evening period (from 6pm – 10pm) and one at night (after 10pm).

The noise emission criterion for WCC is 35dB(A) unless otherwise subject to a current, legally binding agreement between WCC and the occupant of the affected residential property.

WCC environmental protection licence (EPL) conditions indicate that compliance with noise emission criteria is not applicable under atmospheric conditions where wind speeds are greater than 3m/s and/or there is a temperature inversion greater than +3°C/100m.

3.1.1 Monitoring Data Results

The results for the last three months attended noise monitoring are outlined below for noise levels from Werris Creek Coal operations only (not ambient noise); however see Monthly Noise Monitoring Reports under **Appendix 3** for more detail.

Thursday 11th & Friday 12th August 2011

Location	Day	Evening	Night	Criteria
"Almawillee"*	*Inaudible	*Inaudible#	*27#	35 dB(A) $L_{eq\ 15min}$
"Glenara"*	*<30	*Inaudible#	*29#	35 dB(A) $L_{eq\ 15min}$
"Railway Cottage"	30#	Inaudible	28#	35 dB(A) $L_{eq\ 15min}$
"Tonsley Park"*	*Inaudible#	*34#	*32#	35 dB(A) $L_{eq\ 15min}$
"Greenslopes"	Barely audible#	42#	38#	35 dB(A) $L_{eq\ 15min}$
"Kyooma"*	*28#	*40#	*35#	35 dB(A) $L_{eq\ 15min}$
Kurrara St	33	34#	38#	35 dB(A) $L_{eq\ 15min}$
Punyarra St	Inaudible#	30#	35#	35 dB(A) $L_{eq\ 15min}$
Rail Spur	NM			55 dB(A) $L_{eq\ 24hr}$
	NM			80 dB(A) L_{MAX}

* - Project Related Property or Private Agreement; Yellow Bold – Elevated noise; # - Temperature Inversion >3°C/100m or Wind Speed >3m/s; NM – Not monitored

Wednesday 14th & Thursday 15st September 2011

Location	Day	Evening	Night	Criteria
"Almawillee"*	*<25#	*32#	*32#	35 dB(A) $L_{eq\ 15min}$
"Glenara"*	*barely audible#	*33#	*33#	35 dB(A) $L_{eq\ 15min}$
"Railway Cottage"	Inaudible#	32#	Inaudible#	35 dB(A) $L_{eq\ 15min}$
"Tonsley Park"*	*Inaudible#	*31#	*Inaudible#	35 dB(A) $L_{eq\ 15min}$
"Greenslopes"	Inaudible#	36#	31#	35 dB(A) $L_{eq\ 15min}$
"Kyooma"*	*<30#	*32#	*41#	35 dB(A) $L_{eq\ 15min}$
Kurrara St	Inaudible#	32#	30#	35 dB(A) $L_{eq\ 15min}$
Punyarra St	Inaudible#	Inaudible#	30#	35 dB(A) $L_{eq\ 15min}$
Rail Spur	NM			55 dB(A) $L_{eq\ 24hr}$
	NM			80 dB(A) L_{MAX}

* - Project Related Property or Private Agreement; Yellow Bold – Elevated noise; # - Temperature Inversion >3°C/100m or Wind Speed >3m/s; NM – Not monitored

Monday 31st October & Tuesday 1st November 2011

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) L_{eq} 15min	Evening dB(A) L_{eq} 15min	Night dB(A) L_{eq} 15min	Criteria dB(A) L_{eq} 15min
"Rosehill" R5	Inaudible#	35	Inaudible#	Inaudible	35
West Quipolly (R7, R8*, R9 & R22)	Inaudible#	37/36[1]	Inaudible#	29	37/36[1]
Central Quipolly (R10*, R11*)	Inaudible#	39	Inaudible#	<20	39
"Hazeldene" R24	Inaudible#	37	Inaudible#	Inaudible#	37
"Railway Cottage" R12	Inaudible#	38	Inaudible#	Inaudible#	38
"Talavera" R96	<30	38	Inaudible#	24#	37
"Kyooma" R98*	Barely Audible	36	Barely Audible#	23#	36
Kurrara St, WC	30	35	Inaudible	30#	35
Coronation Ave, WC	Inaudible	35	Inaudible	25#	35
"Greenslopes" R14	34	39	34	33#	39
South St, WC (R20*, R21*)	Inaudible#	39	30	34#	37
West St, WC (R103, R105, R3, R102, R101)	Inaudible#	35	Inaudible	Inaudible#	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

WC – Werris Creek; * - Project Related Property or Private Agreement; Yellow Bold – Elevated noise; # - Adverse weather with wind >3m/s; NM – Not monitored; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R7, R8 and R9 is 37 dB(A) $L_{eq\ 15min}$

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during August, September and October. During August, elevated noise levels due to mining operations were recorded at "Kyooma" and "Greenslopes" for the evening period; and "Greenslopes" and "Kurrara St" for the night time period. During September, elevated noise levels were recorded at "Greenslopes" for the evening period and "Kyooma" for the night time period. These elevated noise levels did not result in an exceedance because of the adverse (noise enhancing) weather conditions at the time of monitoring.

On 25th October 2011, Department of Planning and Infrastructure approved PA10_0059 for the WCC Life Of Mine Project which outlines revised noise criteria for a number of existing and new properties to be monitored for noise. For the October attended monitoring, the program was expanded from 8 locations to include 12 monitoring locations representative of 21 adjacent properties with the monitoring results and criteria outlined above.

3.2 NOISE COMPLAINTS

There were 8 complaints for noise impacts from Werris Creek Coal operations, with 6 complaints from a Quipolly resident and 2 complaints from a Werris Creek resident. The majority of the complaints occurred during adverse weather conditions (temperature inversions or high wind speeds) that could potentially enhancing noise levels experience by the complainant. No exceedance of noise criteria was identified because noise levels measured under "enhancing" adverse weather conditions cannot be compared against the noise criteria. Each complaint was thoroughly investigated with meteorological conditions analysed, continuous noise monitoring data and audio reviewed and any mining (and other activities) documented. In addition, WCC has been undertaking specific attended monitoring from Kurrara St, Werris Creek to determine noise levels from operations at the Rail Load-out Facility that have been the source of a number of noise complaints. To date, monitoring has found noise levels to be in compliance below 35dB(A). Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring is undertaken at "Glenala", "Talavera", "Werris Creek", "Tonsley Park", "Greenslopes" and "Cintra". 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 21 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 blasting results database under **Appendix 4** for more detail.

August	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.91	86.7	1.03	98.4	1.65	104.3	0.79	98.0	0.54	94.3
Monthly Maximum	NM	NM	1.62	101.7	1.98	104.8	3.75	110.0	0.94	103.3	0.55	105.5
Annual Average	<0.37	<109.9	0.56	102.9	0.71	101.3	0.98	107.5	0.55	101.6	0.54	94.3
Criteria	5	115	5	115	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	5.7%	0%	0%	0%	5.6%	0%	0%	0%	0%
# Triggered this Month	0/0		5/5		8/8		8/8		3/8		2/3	

September	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	1.58	100.9	1.08	98.4	2.31	104.0	0.62	99.1	0.47	111.0
Monthly Maximum	NM	NM	2.19	111.6	1.69	104.5	3.47	108.2	0.89	106.6	0.47	111.0
Annual Average	<0.37	<109.9	0.73	102.6	0.77	100.8	1.22	106.9	0.57	100.7	0.50	102.6
Criteria	5	115	5	115	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	5.1%	0%	0%	0%	5.1%	0%	0%	0%	0%
# Triggered this Month	0/0		4/4		4/4		3/3		4/4		1/1	

October	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.75	93.9	0.78	103.1	1.24	108.9	0.30	99.5	0.67	102.2
Monthly Maximum	NM	NM	1.24	113.3	1.25	106.3	1.65	110.6	0.44	103.3	0.67	102.2
Annual Average	<0.37	<109.9	0.68	101.1	0.77	101.3	1.16	107.3	0.49	100.3	0.56	102.5
Criteria	5	115	5	115	5	115	5	115	5	115	5	115
% >115dB(L) or 5mm/s	0%	0%	0%	4.2%	0%	0%	0%	4.7%	0%	0%	0%	0%
# Triggered this Month	0/0		5/7		5/7		3/3		4/7		1/4	

* Indicates project related properties not subject to blasting criteria; Yellow Highlight – Elevated result.

4.1.2 Discussion - Compliance / Non Compliance

"Greenslopes" was averaging over 5% of blasts (since April 2011) greater than 115dB(L) due to the two blasts in June however, has now dropped back below 5% during October with no further blasts above 115d(B)L. 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.

A number of blast monitors did not trigger during the period due to the overpressure and/or vibration levels from the blast being below the trigger level of the monitor. No blasts were missed.

4.2 BLAST COMPLAINTS

There were 29 complaints from 10 different blasts undertaken by Werris Creek Coal, with the blasts on the 3rd August 2011 and 17th August receiving 10 complaints and 7 complaints respectively. These two blasts generated higher than normal vibration levels however all results including the Werris Creek monitor were in compliance. Whitehaven Coal is to review the recommendations from three blast investigations reports to determine if improvements to practices are required. Specific actions taken for all blasting complaints are outlined in **Section 6**.

5.0 WATER

The quarterly groundwater quality monitoring was undertaken on 12th and 13th September 2011. Surface Quarterly surface water monitoring was undertaken on 18th August 2011. There were four 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. Werris Creek Coal monitor 41 groundwater bores and piezometers in the

vicinity of the mine, with the key aquifers being Quipolly Creek Alluvium (MW12 upstream and MW7 downstream) and Werrie Basalt (MW5 south and MW14 north).

5.1.1 Monitoring Data Results

Brief summary of groundwater monitoring results is provided below with detailed monitoring data outlined in **Appendix 5**.

Site	pH	EC	Dip	Change from Previous Quarter
Quipolly Creek Alluvium				
MW7	7.36	603	4.29	Groundwater level rose 0.04m, pH rose 0.07 and EC increased 38.
MW12	7.52	468	6.13	Groundwater level dropped 1.21m, pH rose 0.04 and EC decreased 29.
Werrie Basalt				
MW5	7.80	1730	7.66	Groundwater level dropped 0.38m, pH rose 0.69 and EC decreased 960.
MW14	7.21	1340	15.60	Groundwater level dropped 0.53m, pH rose 0.35 and EC decreased 150.

5.1.2 Discussion - Compliance / Non Compliance

Groundwater levels generally decreased and the pH increased during the period due to the drier prevailing conditions since the start of the year. Groundwater levels at the start of the year were at record levels due to 2010 being a wet year. Mining continues not to impact on groundwater aquifers.

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.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with detailed monitoring data outlined in **Appendix 6**.

Site	pH	EC	TSS	O&G	Change
ONSITE					
SB2	-	-	-	-	Dry – Not Sampled.
SB9	9.19	681	7	<5	Water level very low. pH rose 1.24, EC rose 47, TSS dropped 21, O&G no change.
SB10	8.00	416	70	<5	pH rose 0.33, EC dropped 41, TSS increased 63, O&G no change.
OFFSITE					
QCU	7.76	442	18	<5	pH rose 0.56, EC rose 66, TSS rose 11, O&G no change.
QCD	8.05	869	16	<5	pH rose 0.45, EC dropped 25, TSS rose 10, O&G no change.
WCU	8.01	1410	<5	<5	pH rose 0.59, EC dropped 90, TSS & O&G no change.
WCD	8.41	1370	26	<5	pH rose 41, EC dropped 30, TSS & O&G negligible change.

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 was one wet weather discharge event and three controlled discharge events during the period. A summary of discharge monitoring results is provided below with detailed monitoring data outlined in **Appendix 7**.

Date	Site	pH	EC	TSS	O&G	Compliance	Type
27/9/2011	**SB9**	8.16	683	6	<5	Water quality within compliance	Controlled
16/10/2011	**SB9**	7.72	658	6	<5	Water quality within compliance	Wet Weather
18/10/2011	**SB9**	7.77	641	16	<5	Water quality within compliance	Controlled
25/10/2011	**SB10**	7.43	352	<5	<5	Water quality within compliance	Controlled
Criteria		**8.5**	**N/A**	**50**	**10**		

5.3.2 Discussion - Compliance / Non Compliance

All surface water discharge results were within WCC Environmental Protection Licence 12290 criteria and there were no impacts on water quality monitored in Quipolly and Werris Creeks' catchments as a result of the discharge events.

5.3 WATER COMPLAINTS

There were no water related complaints during the period.

6.0 COMPLAINTS SUMMARY

There were 39 complaints received during the period with the details summarized below. In total there were 29 issues related to blasting; 8 issues related to noise, four issues with lights, one issue with dust and one related to coal spillage. There were 20 different complainants during the period with 7 complaints from one Werris Creek resident and 6 complaints from a Quipolly resident.

#	Date	Complainant	Complaint	Investigation	Action Taken
157	2/8/2011 10:15pm	L Quipolly	The trains and mine were very noisy tonight 2nd August 2011 as well as last night 1st August 2011.	Dump location was the centre of RL430m dump. Adverse weathers conditions could have enhanced mining noise levels towards Quipolly but not applicable against compliance criteria. Continuous noise monitor recorded elevated noise levels with mining noise a major component.	No other dump options so OCE instructed truck operators to keep revs below 1500 rpm. The continuous noise monitor is stationed at complainant's residence "Hazeldene". Written response to complainant provided.
158	3/8/2011 10:45am	T Werris Creek	The mine is in general very dusty and visually intrusive from the road and the dust some mornings causes a haze over the top of the mine.	No specific dates provided so no investigation undertaken.	A letter response will be provided to the complainant outlining rehabilitation and dust monitoring programs and results.
159 to 168	3/8/2011 Various	OEH/ Various (10 Werris Creek residents)	Blast #51 (S10_12-13_GCoal) was fired at 13:24 on 3rd August 2011 in Strip 10 in the bottom of the pit resulted in higher than normal vibration causing excessive shaking of houses.	Blast performed as designed. Weather conditions did not enhance overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to OEH and complainant provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal. EO to inspect alleged house defects.
169	9/8/2011 8:30am	A Werris Creek	Lights shining into her backyard on Friday night 5th August 2011 up until 11:30pm but by 12am they appeared to have been redirected in pit.	The Light camera on Friday night all night a light source moving around and varying in intensity. OCE Lighting Plant Set Up and Inspection form confirms that the lighting plant was set up correctly on the RL430m dump. Probable source of light was dozers working at the dump face.	Operators to confirm that lights are set up correctly on dozers. Written response to complainant provided.
170 to 175, 177	17/8/2011 Various	Various (7 Werris Creek residents)	Blast #55 (S10_14-15_GCoal) was fired at 10:39 on 17th August 2011 in Strip 10 in the bottom of the pit resulted in higher than normal vibration causing excessive shaking of houses.	Blast performed as designed. Weather conditions did not enhance overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to complainant provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal. EO to inspect alleged house defects.
176	17/8/2011 8:23pm	L Quipolly	The mine is very noisy tonight 17th August 2011 as well as the previous nights 15th/16th August 2011.	Dump location was the centre of RL430m dump. Adverse weathers conditions could have enhanced mining noise levels towards Quipolly but not applicable against compliance criteria. Continuous noise monitor recorded elevated noise levels with mining noise a major component.	PM & OCE relocated dump to RL300m in pit. The continuous noise monitor is stationed at complainant's residence "Hazeldene". Written response to complainant provided.
178	24/8/2011 9:33pm	L Quipolly	The mine is very noisy tonight 24th August 2011 and that the mine might be able to do something about it.	Dump location was the centre of RL430m dump. Adverse weathers conditions could have enhanced mining noise levels towards Quipolly but not applicable against compliance criteria. Continuous noise monitor recorded elevated noise levels with mining noise a major component.	OCE relocated dump to RL360m in pit. The continuous noise monitor is stationed at complainant's residence "Hazeldene". Written response to complainant provided.

179	29/8/2011 7:45pm	L Quipolly	The mine is very noisy tonight 29th August 2011.	Dump location was in pit to RL360m dump. Adverse weathers conditions could have enhanced mining noise levels towards Quipolly but not applicable against compliance criteria. Continuous noise monitor recorded elevated noise levels with mining noise a major component.	OCE requested Coal trucks to minimise revs to 1500 rpm when tipping off. The continuous noise monitor is stationed at complainant's residence "Hazeldene". Written response to complainant provided.
180	30/8/2011 3:46pm	U Werris Creek	Blast #58 (S10_16_GCoal) was fired at 15:42 on 30th August 2011 in Strip 10 in the bottom of the pit resulted in higher than normal vibration causing excessive shaking of house.	Blast performed as designed. Weather conditions could have enhanced overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to complainant provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal. EO to inspect alleged house defects.
181 & 182	12/9/2011 Various	O & OEH/A Werris Creek	Blast #59 (S10_12_GCoal) was fired at 13:09 on 12th September 2011 in Strip 10 in the bottom of the pit resulted in higher than normal vibration causing excessive shaking of house.	Blast performed as designed. Weather conditions were unlikely to enhance overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to complainants provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal.
183 & 184	16/9/2011 Various	L & M Quipolly	Blast #60 (S10_7-11_GCoal) was fired at 13:18 on 16th September 2011 in Strip 10 in the bottom of the pit resulted in higher than normal vibration causing excessive shaking of house.	Blast performed as designed. Weather conditions could have enhanced overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to complainants provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal.
185 to 187	21/9/2011 Various	Anonymous, V & W Werris Creek	Blast #61 (S11_9-10_385) was fired at 14:10 on 21st September 2011 in Strip 11 in the upper horizon of the pit resulted in higher than normal vibration causing excessive shaking of house.	Blast performed as designed. Weather conditions were unlikely to enhance overpressure effects of the blast. Blast monitoring results were in compliance at all community monitors.	Written response to complainants provided. Several investigations into blasting practices launched by Orica and Whitehaven Coal.
188	20/9/2011 10:00am	A/OEH Werris Creek	Rail Load Out was loud from 10:15pm to 12am and noisy until 3:30am on 20th September 2011. Rail Load Out lights flashed all over the place at 2:40am on 20th September 2011. On 16th September 2011 at 11am, coal from truck "M21" fell onto Werris Creek Road in front of their vehicle.	One train loaded between 7pm and 9pm. South westerly wind and temperature inversion likely to enhance noise propagation to Werris Creek. Adverse weather conditions not applicable against compliance criteria. Lighting camera did not identify any lights from open cut on 20th September and lighting plants set up to the west at Rail Load Out, dozers on stockpile were the only potential source of light. Based on the information provided by Mountain Industries, it is unlikely that coal could spill from the trailer of "M21" on 16th September 2011, WCC was not able to confirm whether coal was actually spilled or not.	Written response to complainant provided. Mountain Industries to review induction and work method statement to strengthen tarping and cleaning off hang up coal procedures and haul route via Taylors Lane.
189	14/10/2011 10:02am	OEH/ Anonymous	Blast #66 (S11_11-14_Aseam) was fired at 13:09 on 13th October 2011 was louder than normal.	All blast results were in compliance with blasting criteria and performed as designed. The weather conditions were unlikely to enhance overpressure effects of the blast towards Werris Creek.	Written response to OEH provided.
190	17/10/2011 9:47am	OEH/ Anonymous	Complainant alleged to OEH that a blast on either 11th or 12th October 2011 broke the windows of his step fathers home	WCC did not blast on 11th or 12th October 2011. Given the low levels of the blasts on 10th and 13th October, they were unlikely to have caused any windows to break.	Written response to OEH provided.
191	24/10/2011 9:47pm	L Quipolly	Complainant indicated that the mine was noisy tonight (Monday night 24th October 2011) for the first time in many weeks. The noise wasn't unbearable but significantly noiser than last week.	Based on current in-pit blasted overburden inventory, the location of excavators and the in-pit dump location represents the "quietest" available configuration for mining operations. The prevailing northerly winds would have enhanced noise emissions towards the complainant's residence. The noise levels measured under adverse weather conditions (high winds) are not subject to noise criteria.	Letter response will be provided to the complainant.
192	25/10/2011 9:10am	X Quipolly	Complainant stated that the last couple of weeks there have been cracks appearing in her house in Quipolly and is most likely due to the mine's blasts.	No specific blasts or periods of blasts identified by the complainant.	EO inspected complainant's property and took photos of the building defects. Letter response will be provided to the complainant.

193	18/10/2011 3:25pm	A/OEH Werris Creek	Complainant stated that Monday night 17th October was impacted by intrusive lighting from the overburden dump from 9:10pm until 0:30am in bursts of 15 to 20 minutes at a time. Also the train shunting noise was loud all evening until 0:30am.	Lighting camera did not identify any lights from the overburden dump area on 17th and 18th October. There were no trains loaded or on the WCC rail spur during the time period, indicating that the source of the rail shunting noise was from ARTC/Pacific National rail yards at Werris Creek.	A written response sent to OEH and the complainant.
194	26/10/2011 12:26pm	A/OEH Werris Creek	Sunday and Monday mornings 23rd and 24th October at 1:15am and 1:45am respectively there was a lot of noise and very bright lights from the coal loader. Also on 25th October from 7:45pm to 1:45am the noise from the coal loader and the train was amazing loud.	Lighting camera did not identify any lights from the overburden dump area on 23rd and 24th October. There were no trains loaded 23rd October but a train was loaded on 24th October at 1:15am and 25th October at 6:27pm. The meteorological conditions in the early mornings of the 23rd and 24th October were unlikely to have enhanced noise emissions from WCC, however the prevailing wind direction on 25th October could have enhanced noise emissions from WCC.	A written response sent to OEH and the complainant.
195	28/10/2011 4:11pm	A/OEH Werris Creek	Complainant alleged that a loud blast shook the whole house on Thursday 27th October 2011 at 1:27pm and the coal mine closed the Werris Creek Road for 20 minutes while blasting.	All blast results were in compliance with blasting criteria and performed as designed. The weather conditions could have enhanced overpressure effects of the blast towards Werris Creek. Discussions with onsite personnel involved with the road closure said that the road was closed for 12 minutes.	A written response sent to OEH and 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 – PM10 Dust Monitoring Data.

Werris Creek Coal
HVAS Dust Monitoring
2011-2012

Site / Date	WCHV1 Cintra	Monthly Monthly Average	Rolling Annual Average	WCHV2 Tonsley Park	Monthly Monthly Average	Rolling Annual Average	WCHV3 Railway View	Monthly Monthly Average	Rolling Annual Average	WCHV4 Eurunderee	Monthly Monthly Average	Rolling Annual Average	WCTSP Railway View	Monthly Monthly Average	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
02-Apr-11	11		11.2	15		15.4	11		10.8	13		13.3	19		18.8	50	30	90
08-Apr-11	25		18.2	11		13.1			10.8	9		11.1			18.8	50	30	90
14-Apr-11	24		20.2	20		15.3	39		24.7	15		12.2	97		57.8	50	30	90
20-Apr-11	51		27.8	21		16.6	50		33.1	18		13.6	114		76.5	50	30	90
26-Apr-11	11	**24.5**	24.5	7	**14.7**	14.7	12	**27.8**	27.8	7	**12.2**	12.2	28	**64.3**	64.3	50	30	90
02-May-11	38		26.7	26		16.6	35		29.1	16		12.9	85		68.4	50	30	90
08-May-11	13		24.8	16		16.5	12		26.2	12		12.8	20		60.4	50	30	90
14-May-11	7		22.5	5		15.1	14		24.5	7		12.1	50		58.9	50	30	90
20-May-11	34		23.9	34		17.2	50		27.8	28		13.8	100		64.0	50	30	90
26-May-11	27	**23.9**	24.2	17	**19.6**	17.1	13	**24.7**	26.1	16.1	**15.9**	14.0	25.7	**56.1**	59.8	50	30	90
01-Jun-11	58		27.2	52		20.3	50		28.4	7.7		13.5	95		63.2	50	30	90
07-Jun-11	62		30.2	56		23.2	80		33.1	9		13.1	256		80.8	50	30	90
13-Jun-11	49		31.6	48		25.1	47		34.3	5.4		12.5			80.8	50	30	90
19-Jun-11	7		29.8	8		23.9	7		32.2	5.5		12.0	155		87.0	50	30	90
25-Jun-11	18	**38.7**	29.0	13	**35.2**	23.2	14	**39.5**	30.9	13.1	**8.1**	12.1	25	**132.5**	82.1	50	30	90
01-Jul-11	11		27.9	8		22.2	4		29.1	4		11.6	10.1		77.0	50	30	90
07-Jul-11	10		26.8	4		21.1	35		29.5	5		11.2	105		78.9	50	30	90
13-Jul-11	15		26.2	15		20.8	19		28.8	25		12.0	47.5		76.9	50	30	90
19-Jul-11	8		25.2	4		19.9	14		28.0	4		11.6	44.3		75.0	50	30	90
25-Jul-11	8	**10.3**	24.3	8	**7.8**	19.3	10	**16.3**	27.0	19	**11.5**	11.9	16.9	**44.8**	71.8	50	30	90
31-Jul-11	9		23.6	11		18.9	10		26.2	15		12.1	24.5		69.3	50	30	90
06-Aug-11	9		23.0	10		18.5	12		25.5	20		12.5	31.3		67.4	50	30	90
12-Aug-11	21		22.9	12		18.2	17		25.1	7		12.2	38.7		66.0	50	30	90
18-Aug-11	5		22.1	2		17.5	13		24.6	3		11.8	46.8		65.1	50	30	90
24-Aug-11	25	**13.7**	22.2	11	**9.2**	17.3	13	**13.1**	24.1	5	**10.0**	11.6	47.8	**37.8**	64.4	50	30	90
30-Aug-11	30		22.5	21		17.4	22		24.0	13		11.6	47		63.7	50	30	90
05-Sep-11	15		22.2	12		17.2	32		24.4	15		11.8	65		63.7	50	30	90
11-Sep-11	5		21.6	5		16.8	6		23.7	5		11.5	14		61.8	50	30	90
17-Sep-11	12		21.2	18		16.8	15		23.4	17		11.7	37		60.9	50	30	90
23-Sep-11	41	**20.3**	21.9	32	**17.6**	17.3	46	**24.2**	24.1	36	**17.2**	12.5	91	**50.8**	62.0	50	30	90
29-Sep-11	8		21.5	7		17.0	8		23.6	7		12.3	16		60.4	50	30	90
05-Oct-11	27		21.6	17		17.0	16		23.3	10		12.2	36		59.6	50	30	90
11-Oct-11	22		21.6	11		16.8	32		23.6	7		12.1	67		59.8	50	30	90
17-Oct-11	15		21.4	12		16.7	10		23.2	11		12.0	19		58.5	50	30	90
23-Oct-11	16	**17.5**	21.3	21	**13.5**	16.8	18	**16.8**	23.1	16	**10.0**	12.1	44	**36.3**	58.1	50	30	90
29-Oct-11			21.3			16.8			23.1			12.1			58.1	50	30	90
04-Nov-11			21.3			16.8			23.1			12.1			58.1	50	30	90
10-Nov-11			21.3			16.8			23.1			12.1			58.1	50	30	90
16-Nov-11			21.3			16.8			23.1			12.1			58.1	50	30	90
22-Nov-11		**#DIV/0!**	21.3		**#DIV/0!**	16.8		**#DIV/0!**	23.1		**#DIV/0!**	12.1		**#DIV/0!**	58.1	50	30	90
28-Nov-10			21.3			16.8			23.1			12.1			58.1	50	30	90
04-Dec-10			21.3			16.8			23.1			12.1			58.1	50	30	90
10-Dec-10			21.3			16.8			23.1			12.1			58.1	50	30	90
16-Dec-10			21.3			16.8			23.1			12.1			58.1	50	30	90
22-Dec-10		**#DIV/0!**	21.3		**#DIV/0!**	16.8		**#DIV/0!**	23.1		**#DIV/0!**	12.1		**#DIV/0!**	58.1	50	30	90
28-Dec-10			21.3			16.8			23.1			12.1			58.1	50	30	90
03-Jan-11			21.3			16.8			23.1			12.1			58.1	50	30	90
09-Jan-11			21.3			16.8			23.1			12.1			58.1	50	30	90
15-Jan-11			21.3			16.8			23.1			12.1			58.1	50	30	90
21-Jan-11		**#DIV/0!**	21.3		**#DIV/0!**	16.8		**#DIV/0!**	23.1		**#DIV/0!**	12.1		**#DIV/0!**	58.1	50	30	90
27-Jan-11			21.3			16.8			23.1			12.1			58.1	50	30	90
02-Feb-11			21.3			16.8			23.1			12.1			58.1	50	30	90
08-Feb-11			21.3			16.8			23.1			12.1			58.1	50	30	90
14-Feb-11			21.3			16.8			23.1			12.1			58.1	50	30	90
20-Feb-11		**#DIV/0!**	21.3		**#DIV/0!**	16.8		**#DIV/0!**	23.1		**#DIV/0!**	12.1		**#DIV/0!**	58.1	50	30	90
26-Feb-11			21.3			16.8			23.1			12.1			58.1	50	30	90
04-Mar-11			21.3			16.8			23.1			12.1			58.1	50	30	90
10-Mar-11			21.3			16.8			23.1			12.1			58.1	50	30	90
16-Mar-11			21.3			16.8			23.1			12.1			58.1	50	30	90
22-Mar-11			21.3			16.8			23.1			12.1			58.1	50	30	90
28-Mar-11		**#DIV/0!**	21.3		**#DIV/0!**	16.8		**#DIV/0!**	23.1		**#DIV/0!**	12.1		**#DIV/0!**	58.1	50	30	90
Min	**4.5**			**2.2**			**4.2**			**2.7**			**10.1**					
Max	**62.2**			**55.9**			**80.4**			**36.2**			**256.0**					
Capture	**57%**			**57%**			**56%**			**57%**			**54%**					

Appendix 2 – Deposited Dust Monitoring Data.

Deposited Dust - Werris Creek Coal Mine 2011-2012

MONTH (g/m2/month)	EPL #7		EPL #4		EPL #1		EPL #8		-		-		-		ANNUAL AVERAGE LIMIT
	WC-2 Cintra		WC-5 Railway View		WC-7 Tonsley Park		WC-8 Plain View		WC-9 Marengo		WC-10 Mountain View		WC-11 Glenara		
	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	
April 2011	1.5	1.0	1.1	0.7	0.6	0.5	1.1	0.9	0.5	0.4	c2.3	1.6	0.6	0.6	3.6
May 2011	c0.6*	0.2	0.6	0.3	0.1	0.1	0.2	0.2	0.1	0.1	5.9*	2.0	0.2	0.2	3.6
June 2011	3.0	1.8	2.4	1.5	0.9	0.5	1.3	0.8	0.8	0.5	0.8	0.4	1.4	0.8	3.6
July 2011	0.5	0.3	0.5	0.4	0.3	0.2	0.8	0.5	0.2	0.2	0.9	0.5	0.6	0.5	3.6
August 2011	0.8	0.6	0.9	0.7	0.4	0.3	1.1	0.8	0.5	0.4	0.5	0.4	c20	c17.6	3.6
September 2011	1.5	1.0	1.4	0.9	1.2	0.8	1.4	1.0	0.5	0.5	0.5	0.3	c19.8	c17.1	3.6
October 2011	1.1	0.8	1.2	0.8	0.9	0.5	0.5	0.5	0.8	0.5	0.8	0.5	1.0	0.8	3.6
November 2011															3.6
December 2011															3.6
January 2012															3.6
February 2012															3.6
March 2012															3.6
ANNUAL AVERAGE	**1.4**		**1.2**		**0.6**		**0.9**		**0.5**		**0.7**		**0.8**		**3.6**
MINIMUM	**0.5**		**0.5**		**0.1**		**0.2**		**0.1**		**0.5**		**0.2**		**3.6**
MAXIMUM	**3.0**		**2.4**		**1.2**		**1.4**		**0.8**		**0.9**		**1.4**		**3.6**

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 – Noise Monitoring Results.

15 August 2011

Ref: 04035/4083

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

RE: AUGUST 2011 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 11 and Friday 12 August 2011.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Mine's Noise Management Plan (revised November 2010). The locations are listed below and attached in **Figure 1**:

"Almawillee"
"Glenara"
"Railway Cottage" (previously denoted as "Fletcher")
"Tonsley Park"
"Greenslopes/Banool"
"Kyooma"

Additional measurements were also made on the road side near residential locations in Punyarra Street and at the reserve behind houses in Kurrara Street, Werris Creek. These locations are shown in **Figure 2**.

Three sets of measurements were made over the "circuit", one during the day time period (before 6 pm), one during the evening period (from 6 pm – 10 pm) and one at night (after 10 pm).

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data shows that at the beginning of the survey on August 11 winds were moderate from the north west. During the evening and night periods winds dropped in intensity and became variable from the north west to the south east.

The data showed that there was a moderate to strong temperature inversion from early evening which persisted throughout the night survey.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible the Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. The noise criterion for the operational phase of the WCC project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times. Mine noise from WCC is shown in bold type. Where noise from WCC is listed as inaudible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

Table 1
WCC Noise Monitoring Results – 11 and 12 August 2011 (Day)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	4:38 pm	38	n/a	2.3/222	Birds (35), traffic (33), tractor (28), dogs (27), WCC inaudible
Glenara	4:20 pm	36	n/a	2.9/272	Birds (34), traffic (32), WCC (<30)
Railway Cottage	2:30 pm	49	n/a	4.6/294	Traffic (48), birds (43), WCC (30)
Tonsley Park	3:58 pm	39	n/a	3.3/282	Birds (39), train in werris creek (28), WCC inaudible
Greenslopes	3:40 pm	46	n/a	3.7/284	Traffic (43), rail works (43),birds (30) WCC barely audible
Kyooma	2:55 pm	50	n/a	4.3/296	Birds (50), WCC (28)
Kurrara St	8:35 am (12/8)	43	n/a	0.3/180	Traffic (40), rail works (40), WCC (33), birds (29)
Punyarra St	3:19 pm	45	n/a	3.9/290	Trains in Werris Ck (40), domestic noise (38), dogs (38), traffic (38), WCC inaudible

Table 2
WCC Noise Monitoring Results – 11 August 2011 (Evening)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	7:38 pm	32	+4.0	2.4/179	Traffic (29), irrigator (29), WCC inaudible
Glenara	7:55 pm	33	+4.3	2.3/170	Traffic (33), WCC inaudible
Railway Cottage	7:20 pm	36	+2.7	2.8/185	Traffic (36), WCC inaudible
Tonsley Park	8:17 pm	37	+5.4	2.2/168	WCC (34), traffic (33), plane (28)
Greenslopes	8:35 pm	43	+5.7	1.1/156	WCC (42), traffic (35)
Kyooma	9:35 pm	40	+7.2	0.9/162	WCC (40)
Kurrara St	8:54 pm	38	+6.8	2.2/168	Traffic (36), WCC (34)
Punyarra St	9:13 pm	36	+6.7	0.5/181	Traffic (33), WCC (30), domestic noise (30)

Table 3
WCC Noise Monitoring Results – 11/12 August 2011 (Night)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	12:10 am	27	+8.4	0.5/202	WCC (27)
Glenara	12:27 am	30	+8.2	0.6/108	WCC (29), traffic (23)
Railway Cottage	12:50 am	28	+8.2	1.0/300	WCC (28)
Tonsley Park	10:02 pm	38	+7.4	0.8/154	Traffic (36), WCC (32)
Greenslopes	10:22 pm	40	+7.4	0.8/207	WCC (38), traffic (35)
Kyooma	11:05 pm	35	+7.9	0.9/291	WCC (35)
Kurrara St	11:45 pm	38	+8.1	1.0/174	WCC (38)
Punyarra St	11.25 pm	40	+7.7	0.6/274	Traffic (37), WCC (35), domestic noise (30)

The results shown in **Tables 1 - 3** indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC exceeded the criterion of 35 dB(A) Leq at the Greenslopes monitoring location during the evening and night, the Kyooma monitoring location during the evening and the Kurrara Street monitoring location during the night.

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 all of the elevated noise levels were measured whilst there was a strong temperature inversion in place (i.e. >+3° C/100m). The elevated noise levels were, therefore, measured 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) Lmax** 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.

During the night time measurement circuit Lmax noise from WCC did not exceed the Lmax criterion at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

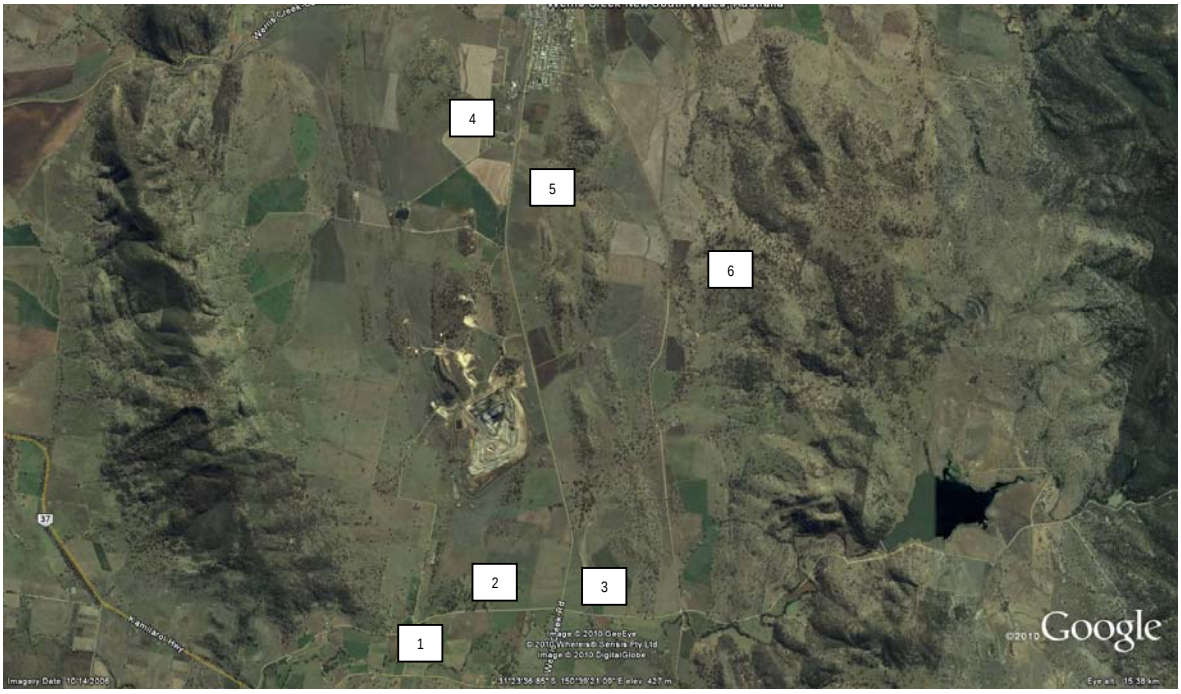


Figure 1 – Noise Monitoring Locations

Key

1 Almawillee
2 Glenara
3 Railway Cottage
4 Tonsley Park
5 Greenslopes/Banool
6 Kyooma

Figure 2 – Additional Noise Monitoring Locations

Key

7 Kurarra Street

8 Punyarra Street

16 September 2011

Ref: 04035/4117

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

RE: SEPTEMBER 2011 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 14 and Thursday 15 September 2011.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Mine's Noise Management Plan (revised November 2010). The locations are listed below and attached in **Figure 1**:

"Almawillee"
"Glenara"
"Railway Cottage" (previously denoted as "Fletcher")
"Tonsley Park"
"Greenslopes/Banool"
"Kyooma"

Additional measurements were also made on the road side near residential locations in Punyarra Street and at the reserve behind houses in Kurrara Street, Werris Creek. These locations are shown in **Figure 2**.

Three sets of measurements were made over the "circuit", one during the day time period (before 6 pm), one during the evening period (from 6 pm – 10 pm) and one at night (after 10 pm).

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data shows that at the beginning of the survey on September 14 winds were moderate from the west north west to north west. During the evening and night periods winds dropped in intensity and became variable from the north west to the north.

The data showed that there was a moderate to strong temperature inversion from early evening which persisted throughout the night survey.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible the Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. The noise criterion for the operational phase of the WCC project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times. Mine noise from WCC is shown in bold type. Where noise from WCC is listed as inaudible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

Table 1
WCC Noise Monitoring Results – 14 September 2011 (Day)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	4:42 pm	34	n/a	5.7/299	Wind (31), birds (30), WCC (<25)
Glenara	4:23 pm	41	n/a	5.7/303	Wind in trees (38), birds (36), traffic (32), WCC barely audible
Railway Cottage	5:00 pm	38	n/a	4.8/283	Traffic (38), birds (28), WCC inaudible
Tonsley Park	2:40 pm	39	n/a	4.4/293	Traffic (39), WCC inaudible
Greenslopes	3:00 pm	46	n/a	4.5/299	Traffic (45), birds (40), WCC inaudible
Kyooma	4:00 pm	42	n/a	5.3/308	Birds (42), WCC (<30)
Kurrara St	3:18 pm	44	n/a	5.1/302	Traffic (43), birds (36), WCC inaudible
Punyarra St	3:35 pm	40	n/a	3.8/289	Traffic (38), birds (33), trains (32), WCC inaudible

Table 2
WCC Noise Monitoring Results – 15 September 2011 (Evening)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	9:43 pm	32	+11.1	2.7/342	WCC (32), frogs (24)
Glenara	9:22 pm	36	+10.0	3.1/333	Traffic (33), WCC (33)
Railway Cottage	7:15 pm	46	+8.0	3.4/305	Traffic (46), WCC (32)
Tonsley Park	8:57 pm	31	+10.6	3.1/330	WCC (31)
Greenslopes	8:37 pm	40	+10.3	3.0/325	Traffic (38), WCC (36)
Kyooma	7:35 pm	32	+9.9	3.6/303	WCC (32)
Kurrara St	8:18 pm	36	+9.5	3.2/317	Birds (33), WCC (32), traffic (28)
Punyarra St	8:01 pm	40	+9.8	2.9/315	Traffic (39), trains (32), WCC inaudible

Table 3
WCC Noise Monitoring Results – 14/15 September 2011 (Night)

Location	Time	dB(A),Leq	Inversion ^{O}C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	12:15 am	32	+10.0	0.7/97	WCC (32)
Glenara	11:56 pm	34	+9.7	0.1/23	WCC (33), traffic (27)
Railway Cottage	12:35 am	28	+10.4	0.9/132	Traffic (28), WCC inaudible
Tonsley Park	11:30 pm	41	+9.5	2.0/303	Trains (41), WCC inaudible
Greenslopes	11:11 pm	31	+9.9	2.0/310	WCC (31)
Kyooma	10:10 pm	41	+11.3	2.2/335	WCC (41)
Kurrara St	10:53 pm	38	+9.9	2.0/320	Trains (38), WCC (30)
Punyarra St	10.35 pm	38	+11.2	1.9/333	Traffic (35), trains (35), WCC (30)

The results shown in **Tables 1 - 3** indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC exceeded the criterion of 35 dB(A) Leq at the Greenslopes monitoring location during the evening and at Kyooma monitoring location during the night.

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 all of the elevated noise levels were measured whilst there was a strong temperature inversion in place (i.e. >+3° C/100m). The elevated noise levels were, therefore, measured 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) Lmax** 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.

During the night time measurement circuit Lmax noise from WCC did not exceed the Lmax criterion at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

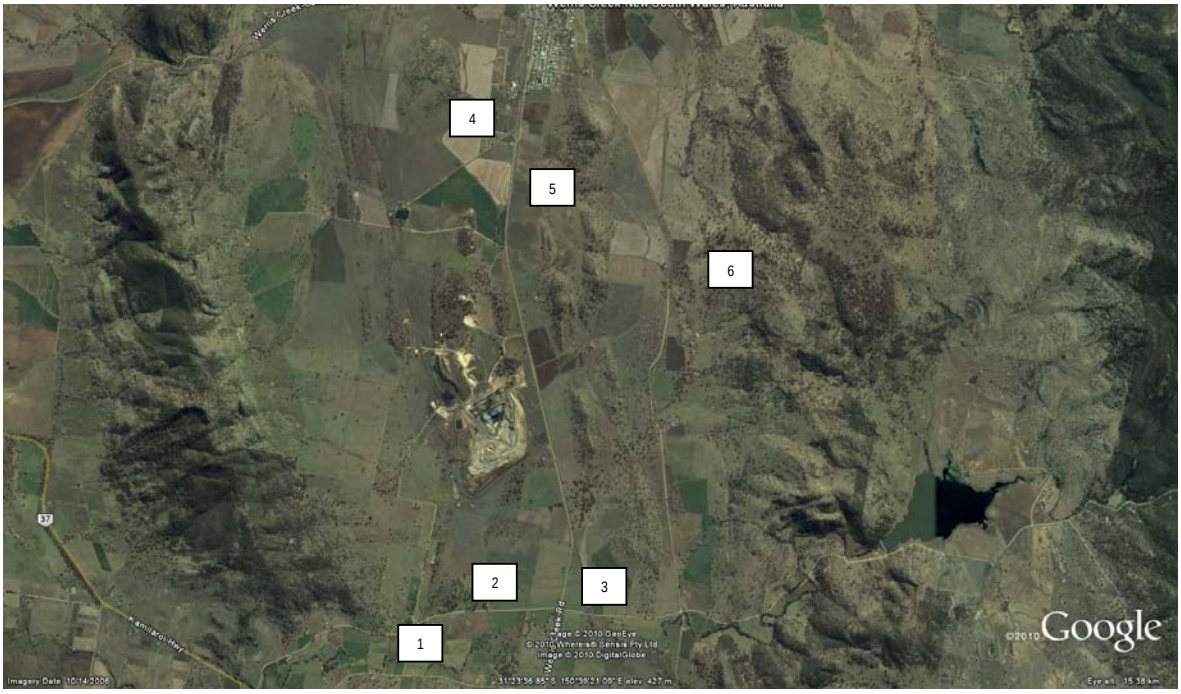


Figure 1 – Noise Monitoring Locations

Key

1 Almawillee
2 Glenara
3 Railway Cottage
4 Tonsley Park
5 Greenslopes/Banool
6 Kyooma

Figure 2 – Additional Noise Monitoring Locations

Key

7 Kurarra Street

8 Punyarra Street

3 November 2011

Ref: 04035/4173

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

RE: OCTOBER 2011 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 31st October and Tuesday 1st November, 2011.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Project Approval PA10_0059. The monitoring locations and noise criteria for each are detailed below in extract from the Approval and shown on the attached **Figure 1**. The actual monitoring locations representative of the various receptor areas are shown in bold and underlined in the extract below (note that R18 is now mine owned).

Location	***Day*** ***dB(A) $L_{Aeq(15\ min)}$***	***Evening & Night*** ***dB(A) $L_{Aeq(15\ min)}$***	***Night*** ***dB(A) $L_{A1\ (1\ min)}$***
R18	40	37	45
R10, **R11**, **R14**	39	39	45
R20, R21	39	37	45
R12	38	38	45
R96	38	37	45
R7, R8, **R9**, **R24**	37	37	45
R22, **R98**	36	36	45
All other privately-owned land, (incl. **R5, R103** and **locations in Werris Creek**)	35	35	45

*Notes: To interpret the locations referred to in the table, see **Figure 1**; and*
Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

Three sets of measurements were made over the "circuit", one during the day time period (before 6 pm), one during the evening period (from 6 pm – 10 pm) and one at night (after 10 pm). Note that the day time circuit was commenced on the afternoon of October 31 and completed during the morning of November 1.

Attended noise monitoring was conducted with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and has current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-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.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that throughout the survey on October 31 (and early morning of November 1) winds were moderate, generally from the south. During the evening and night periods the wind dropped in intensity. Wind speeds measured at approximately 2m above ground level (with a hand held anemometer) were consistently lower than those at the automatic weather station. The data showed that a temperature inversion was not a significant feature of the atmosphere throughout the night survey.

The total measured Leq noise level 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 inaudible, 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.

Table 1
WCC Noise Monitoring Results – 31 October (pm) and 1 November (am) 2011 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	3:05 pm	43	35	n/a	6.5/175	Birds (42), traffic (35), **WCC inaudible**
R9 Gedhurst	3:22 pm	42	37	n/a	6.2/186	Birds (42), traffic (30), **WCC inaudible**
R11 Glenara	3:40 pm	42	39	n/a	6.6/201	Traffic (38), wind (37), birds (37), **WCC inaudible**
R12 Railway Cottage	4:18 pm	37	38	n/a	6.5/197	Traffic (37), **WCC inaudible**
R14 Greenslopes	7:09 am	39	39	n/a	0.6/353	Traffic (36), **WCC (34)**, insects (32)
R20 Tonsley Park	4:40 pm	48	39	n/a	7.0/192	Traffic (46), train (41), birds (40), **WCC inaudible**
R24 Hazeldene	4:00 pm	40	37	n/a	6.0/185	Traffic (39), birds (32), **WCC inaudible**
R96 Kyooma	8:07 am	43	38	n/a	1.4/237	Birds (43), **WCC barely audible**
R98 Talavera	8:30 am	40	36	n/a	0.9/298	Birds (40), WCC (<30)
R103 Parsons	5:10 pm	45	35	n/a	6.7/193	Train in Werris Creek (45), **WCC inaudible**
Kurrara St	7:28 am	43	35	n/a	1.5/258	Birds & insects (42), train (34), traffic (33), WCC (30)

Coronation Avenue	7:46 am	44	35	n/a	1.6/253	Birds (44), road works (35), WCC inaudible

Table 2
WCC Noise Monitoring Results – 31 October (Evening)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	6:48 pm	37	35	n/a	5.0/183	Birds & insects (35), traffic (32), WCC inaudible
R9 Gedhurst	7:07 pm	35	37	n/a	3.9/173	Birds (35), traffic (25), WCC inaudible
R11 Glenara	7:25 pm	40	39	n/a	3.7/161	Birds (39), traffic (33), WCC inaudible
R12 Railway Cottage	8:00 pm	38	38	n/a	3.7/186	Traffic (37), birds & insects (30), WCC inaudible
R14 Greenslopes	9:01 pm	46	39	n/a	2.8/172	Traffic (45), WCC (34), insects (33)
R20 Tonsley Park	9:20 pm	43	37	n/a	2.2/194	Insects (42), traffic (33), train (33), WCC (30)
R24 Hazeldene	7:42 pm	39	37	n/a	3.8/166	Birds & insects (39), traffic (28), WCC inaudible
R96 Kyooma	6:00 pm	40	37	n/a	5.6/195	Birds (40), WCC barely audible
R98 Talavera	6:23 pm	36	36	n/a	5.8/190	Birds (36), WCC inaudible
R103 Parsons	9:40 pm	44	35	n/a	2.9/193	Train (43), insects (37), WCC inaudible
Kurrara St	8:25 pm	45	35	n/a	2.2/172	Frogs (43), traffic (38), birds (35), domestic noise (36), WCC inaudible
Coronation Avenue	8:42 pm	47	35	n/a	2.5/179	Insects (46), dogs (39), traffic (32), WCC inaudible

Table 3
WCC Noise Monitoring Results – 31 October (pm) and 1 November (am) (Night)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	10:02 pm	30	35	n/a	2.5/199	Traffic (29), insects (22), WCC inaudible
R9 Gedhurst	10:21 pm	30	37	n/a	2.9/199	WCC (29), insects (22)
R11 Glenara	10:38 pm	27	39	n/a	3.2/197	Insects (25), traffic (22), WCC (<20)
R12 Railway Cottage	11:12 pm	21	38	n/a	3.2/183	Insects (21), WCC inaudible
R14 Greenslopes	12:26 am	34	39	n/a	4.4/181	WCC (33), insects (27)
R20 Tonsley Park	12:50 am	34	37	n/a	3.9/196	WCC (34), insects (21)
R24 Hazeldene	10:55 pm	40	37	n/a	3.1/187	Traffic (39), birds (32), WCC inaudible
R96 Kyooma	11:54 pm	25	37	n/a	3.6/175	WCC (23), insects (20)
R98 Talavera	11:33 pm	26	36	n/a	3.1/167	WCC (24), insects (22)
R103 Parsons	1:10 am	43	35	n/a	3.7/195	Train (43), WCC inaudible
Kurrara St	1:30 am	47	35	n/a	3.9/185	Frogs (47), train (37), WCC (30)
Coronation Avenue	1:50 am	30	35	n/a	4.1/181	Train (28), WCC (25)

The results shown in **Tables 1 - 3** indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC did not exceed the relevant criterion at any monitoring location at any time during the survey.

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.

During the night time measurement circuit the L1 (1 min) noise from WCC did not exceed the criterion at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

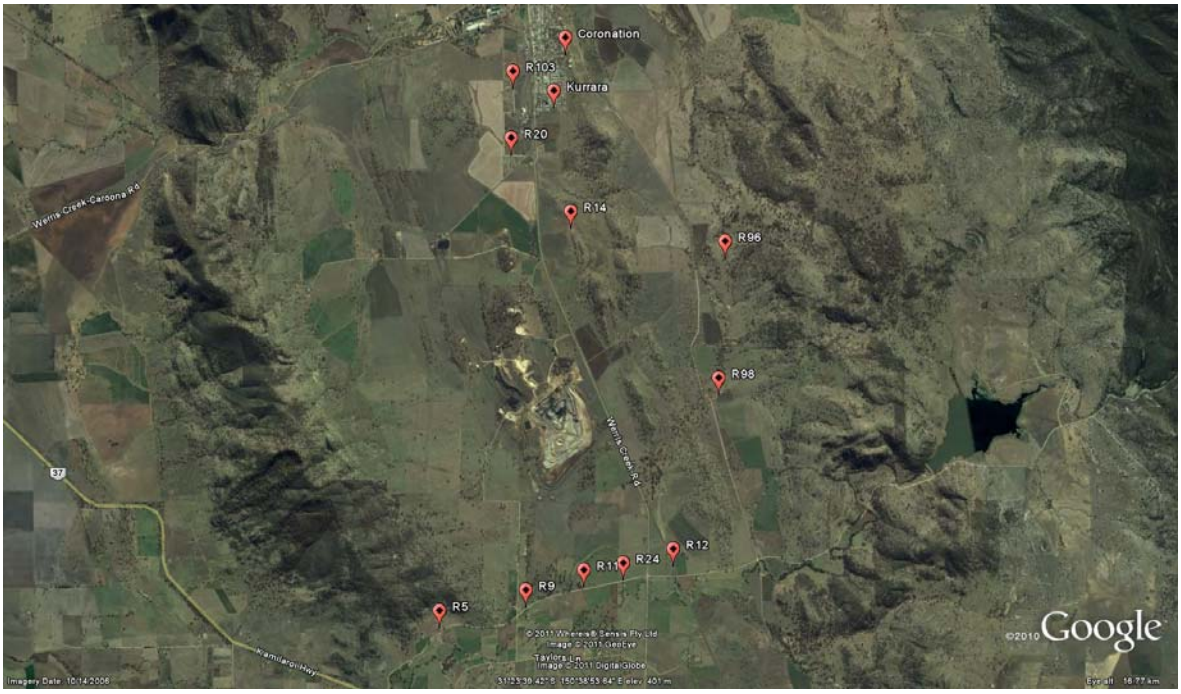


Figure 1 – Noise Monitoring Locations

Appendix 4 – Blasting Monitoring Data.

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		Talavera		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)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-50	1/08/2011	13:12	S13_9-13_385	OB	NM	NM	0.77	83.0	0.50	99.4	1.12	108.6	<0.20	<109.9	NM	NM	10.00	120.0
11-51	3/08/2011	13:20	S10_12-13_Gcoal	IB	NM	NM	NM	NM	1.79	101.5	3.75	108.0	0.94	101.4	0.52	83.0	10.00	120.0
11-52	5/08/2011	13:23	S11_3-4_365 TSB10	TS	NM	NM	0.87	101.7	0.67	97.4	1.92	104.5	<0.20	<109.9	NM	NM	10.00	120.0
11-53	11/08/2011	13:22	S13_7-8_385	OB	NM	NM	NM	NM	0.40	94.7	0.80	101.7	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-54	10/08/2011	13:08	S11_9-10_350 P/S	PS	NM	NM	0.55	83.0	0.62	99.9	1.05	101.3	<0.20	<109.9	NM	NM	10.00	120.0
11-55	17/08/2011	10:38	S10_14-15_Gcoal	IB	NM	NM	1.62	83.0	1.98	96.8	2.20	101.3	0.69	89.4	NM	NM	10.00	120.0
11-56	25/08/2011	13:15	S10_18_Gcoal	IB	NM	NM	0.72	83.0	0.72	93.0	1.12	99.1	<0.20	<109.9	NM	NM	10.00	120.0
11-58	30/08/2011	15:42	S10_16_Gcoal	IB	NM	NM	NM	NM	1.59	104.8	1.90	110.0	0.73	103.3	0.55	105.5	10.00	120.0
TOTALS	**AUGUST**	**# BLAST**	**8**	**AVERAGE**	**NM**	**NM**	**0.91**	**86.7**	**1.03**	**98.4**	**1.73**	**104.3**	**0.79**	**98.0**	**0.54**	**94.3**	**5.00**	**115.0**
TOTALS	**AUGUST**	**# BLAST**	**8**	**HIGHEST**	**NM**	**NM**	**1.62**	**101.7**	**1.98**	**104.8**	**3.75**	**110.0**	**0.94**	**103.3**	**0.55**	**105.5**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**40**	**AVERAGE**	**<0.37**	**<109.9**	**0.56**	**102.9**	**0.71**	**101.3**	**1.00**	**107.5**	**0.55**	**101.6**	**0.54**	**94.3**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**40**	**0%**	**0%**	**0%**	**5.7%**	**0%**	**0%**	**0%**	**5.6%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		Talavera		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)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-57	5/09/2011	13:10	S10_11_Gcoal	IB	NM	NM	1.07	83.0	1.22	96.2	1.55	101.3	0.42	95.4	NM	NM	10.00	120.0
11-59	12/09/2011	13:10	S10_12_Gcoal	IB	NM	NM	1.82	111.6	0.82	104.5	NM	NM	0.89	106.6	0.47	111.0	10.00	120.0
11-60	16/09/2011	13:18	S10_7-11_Gcoal	IB	NM	NM	1.22	99.0	0.60	89.4	1.92	102.6	0.58	92.9	NM	NM	10.00	120.0
11-61	21/09/2011	14:10	S11_9-10_365 TSB11	TS	NM	NM	2.19	109.8	1.69	103.4	3.47	108.2	0.58	101.4	NM	NM	10.00	120.0
11-62	29/09/2011	13:29	S11_18-22_375	OVBD	NM	NM	0.07	111.4	0.72	105.2	0.52	105.4	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-63	28/09/2011	13:15	S11_11-14_350 P/S Pt1	PS	NM	NM	0.85	83	1.07	95.5	NM	NM	0.34	97.3	<0.37	<109.9	10.00	120.0
TOTALS	**SEPTEMBER**	**# BLAST**	**6**	**AVERAGE**	**NM**	**NM**	**1.20**	**99.6**	**1.02**	**99.0**	**1.87**	**104.4**	**0.56**	**98.7**	**0.47**	**111.0**	**5.00**	**115.0**
TOTALS	**SEPTEMBER**	**# BLAST**	**6**	**HIGHEST**	**NM**	**NM**	**2.19**	**111.6**	**1.69**	**105.2**	**3.47**	**108.2**	**0.89**	**106.6**	**0.47**	**111.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**46**	**AVERAGE**	**<0.37**	**<109.9**	**0.67**	**102.4**	**0.76**	**101.0**	**1.14**	**107.0**	**0.55**	**100.6**	**0.50**	**102.6**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**46**	**0%**	**0%**	**0%**	**4.9%**	**0%**	**0%**	**0%**	**5.0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		Talavera		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)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-64	4/10/2011	13:13	S11_11-14_350 P/S Pt2	PS	NM	NM	1.24	83	<0.37	<109.9	1.65	106.5	0.29	94.2	NM	NM	10.00	120.0
11-65	10/10/2011	13:16	S11_3-4_350 TSB12	THRU	NM	NM	<0.37	<109.9	0.45	103.1	NM	NM	<0.20	<109.9	0.67	102.2	10.00	120.0
11-66	13/10/2011	13:09	S11_11-14_350 Aseam	IB	NM	NM	0.87	83	0.92	99.0	1.07	109.6	0.44	98.9	NM	NM	10.00	120.0
11-67	14/10/2011	13:20	S13_2-3_385 + rocks	OVBD	NM	NM	<0.37	<109.9	<0.37	<109.9	NM	NM	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-68	19/10/2011	13:24	S11_16-17_370	IB	NM	NM	0.35	79.5	0.67	104.0	1.00	110.6	<0.20	<109.9	NM	NM	10.00	120.0
11-69	27/10/2011	13:27	S12S13_20-22_375	OVBD	NM	NM	0.7	113.3	1.25	106.3	NM	NM	0.24	103.3	<0.37	<109.9	10.00	120.0
11-70	31/10/2011	14:02	S11_14_15_370	IB	NM	NM	0.57	110.6	0.60	103.1	NM	NM	0.21	101.4	<0.37	<109.9	10.00	120.0
TOTALS	**OCTOBER**	**# BLAST**	**7**	**AVERAGE**	**NM**	**NM**	**0.75**	**93.9**	**0.78**	**103.1**	**1.24**	**108.9**	**0.30**	**99.5**	**0.67**	**102.2**	**5.00**	**115.0**
TOTALS	**OCTOBER**	**# BLAST**	**7**	**HIGHEST**	**NM**	**NM**	**1.24**	**113.3**	**1.25**	**106.3**	**1.65**	**110.6**	**0.44**	**103.3**	**0.67**	**102.2**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**53**	**AVERAGE**	**<0.37**	**<109.9**	**0.68**	**101.1**	**0.77**	**101.3**	**1.16**	**107.3**	**0.49**	**100.3**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**53**	**0%**	**0%**	**0%**	**4.2%**	**0%**	**0%**	**0%**	**4.7%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

Appendix 5 – Groundwater Monitoring Data.

CERTIFICATE OF ANALYSIS

Work Order	: **ES1119507**	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 GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 2563		
C-O-C number	: ----	Date Samples Received	: 08-SEP-2011
Sampler	: AW	Issue Date	: 15-SEP-2011
Site	: ----		
		No. of samples received	: 1
Quote number	: SY/261/10	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
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Phalak Inthaksone	Laboratory Manager - Organics	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 insuffient 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				Client sample ID	MW7	----	----	----	----
				Client sampling date / time	07-SEP-2011 12:10	---	---	---	---
Compound	CAS Number	LOR	Unit		ES1119507-001	---	---	---	---
EA005P: pH by PC Titrator									
pH Value	---	0.01	pH Unit		**7.36**	---	---	---	---
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	---	1	µS/cm		**603**	---	---	---	---
EG020T: Total Metals by ICP-MS									
Lead	7439-92-1	0.001	mg/L		<0.001	---	---	---	---
Manganese	7439-96-5	0.001	mg/L		**0.003**	---	---	---	---
Nickel	7440-02-0	0.001	mg/L		<0.001	---	---	---	---
Vanadium	7440-62-2	0.01	mg/L		<0.01	---	---	---	---
Zinc	7440-66-6	0.005	mg/L		**0.036**	---	---	---	---
Iron	7439-89-6	0.05	mg/L		<0.05	---	---	---	---
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	---	---	---	---
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		**0.92**	---	---	---	---
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L		**0.92**	---	---	---	---
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L		**0.8**	---	---	---	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	---	0.1	mg/L		**1.7**	---	---	---	---
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		**0.07**	---	---	---	---
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	---	0.01	mg/L		**0.06**	---	---	---	---
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	---	20	µg/L		<20	---	---	---	---
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	---	---	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	---	20	µg/L		<20	---	---	---	---
>C10 - C16 Fraction	---	100	µg/L		<100	---	---	---	---
>C16 - C34 Fraction	---	100	µg/L		<100	---	---	---	---

Analytical Results

Sub-Matrix: WATER				Client sample ID	MW7	----	----	----	----
				Client sampling date / time	07-SEP-2011 12:10	---	---	---	---
Compound	CAS Number	LOR	Unit		ES1119507-001	---	---	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued									
>C34 - C40 Fraction	---	100	µg/L		<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	---	100	µg/L		<100	---	---	---	---
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**101**	---	---	---	---
Toluene-D8	2037-26-5	0.1	%		**104**	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%		**115**	---	---	---	---

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	76.4	133.1
Toluene-D8	2037-26-5	79.6	126.8
4-Bromofluorobenzene	460-00-4	79.1	125.0

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1119823**	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 GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 2587		
C-O-C number	: ----	Date Samples Received	: 13-SEP-2011
Sampler	: BP	Issue Date	: 19-SEP-2011
Site	: ----		
		No. of samples received	: 11
Quote number	: SY/261/10	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

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

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

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 insuffient 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

- **EK071G: It has been noted that Reaqctive P is greater than TP on various samples, however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW1	MW2	MW6	MW8	MW10
				Client sampling date / time: 12-SEP-2011 10:40	12-SEP-2011 11:00	12-SEP-2011 11:30	12-SEP-2011 12:00	12-SEP-2011 09:30
				ES1119823-001	ES1119823-002	ES1119823-003	ES1119823-004	ES1119823-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.53	7.75	7.65	7.91	8.02
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1220	877	1910	1240	1250
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	1.82	0.72	2.88	3.92	6.92
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	1.82	0.72	2.88	3.92	6.92
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.3	1.1	1.0	1.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.5	1.0	4.0	4.9	8.3
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.12	0.04	0.06	<0.01	0.04
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.11	0.03	0.06	0.01	0.01

Analytical Results

Sub-Matrix: WATER				Client sample ID	MW11	MW13	MW15	MW16	MW17A
				Client sampling date / time	12-SEP-2011 10:00	12-SEP-2011 12:50	12-SEP-2011 12:20	12-SEP-2011 14:00	12-SEP-2011 13:10
Compound	CAS Number	LOR	Unit		ES1119823-006	ES1119823-007	ES1119823-008	ES1119823-009	ES1119823-010
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.94	7.54	7.69	7.55	7.73
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1300	749	1060	812	907
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		8.25	1.33	0.89	6.50	0.81
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		8.25	1.33	0.89	6.50	0.81
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.3	0.3	0.4	0.7	0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		9.6	1.6	1.3	7.2	1.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.06	0.06	0.14	0.08
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.03	0.07	0.07	0.08	0.08

Analytical Results

Sub-Matrix: WATER				Client sample ID	MW17B	----	----	----	----
				Client sampling date / time	12-SEP-2011 13:40	---	---	---	---
Compound	CAS Number	LOR	Unit		ES1119823-011	---	---	---	---
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.37	---	---	---	---
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		2310	---	---	---	---
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		<0.01	---	---	---	---
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	---	---	---	---
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.5	---	---	---	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.5	---	---	---	---
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	----	0.01	mg/L		<0.01	---	---	---	---

CERTIFICATE OF ANALYSIS

Work Order	: **ES1119933**	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 GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 2587		
C-O-C number	: ----	Date Samples Received	: 14-SEP-2011
Sampler	: BP	Issue Date	: 19-SEP-2011
Site	: ----		
		No. of samples received	: 7
Quote number	: SY/261/10	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

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Accredited for compliance with ISO/IEC 17025.

Signatories

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Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics

General Comments

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Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient 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				Client sample ID	MW4	MW5	MW9	MW12	MW14
				Client sampling date / time	13-SEP-2011 11:15	13-SEP-2011 12:20	13-SEP-2011 10:40	13-SEP-2011 13:20	13-SEP-2011 10:20
Compound	CAS Number	LOR	Unit		ES1119933-001	ES1119933-002	ES1119933-003	ES1119933-004	ES1119933-005
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.79	7.80	7.68	7.56	7.56
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1020	1730	988	437	1190
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.02	<0.01	<0.01	0.03
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		1.10	9.18	4.62	0.69	10.9
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		1.10	9.20	4.62	0.69	10.9
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	7.6	0.5	0.2	4.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.4	16.8	5.1	0.9	15.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	1.67	0.02	0.04	0.24
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.01	1.60	0.02	0.04	0.03

Analytical Results

Sub-Matrix: WATER				Client sample ID	P1	P2	----	----	----
				Client sampling date / time	13-SEP-2011 11:00	13-SEP-2011 11:30	----	----	----
Compound	CAS Number	LOR	Unit		ES1119933-006	ES1119933-007	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.36	7.68	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1530	1230	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		0.64	5.28	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.64	5.28	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.2	0.7	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.8	6.0	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	0.08	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	----	----	----

Appendix 6 – Surface Water Monitoring Data.

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1118021**	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	: 2451		
C-O-C number	: ----	Date Samples Received	: 19-AUG-2011
Sampler	: BP	Issue Date	: 26-AUG-2011
Site	: ----		
		No. of samples received	: 12
Quote number	: SY/261/10	No. of samples analysed	: 12

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
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Signatories

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Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	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 insuffient sample for analysis.

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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

- **EK061G/067G: LOR raised for TKN TP analysis on various sample due to sample matrix**
- **EP020, LCS recovery for (Oil and Grease) fall outside ALS dynamic control limits. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
- **LCS recovery for NoX falls outside ALS dynamic control limits. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB6	SB9	SB10	SD4	SD5
				Client sampling date / time: 18-AUG-2011 11:00	18-AUG-2011 10:30	18-AUG-2011 10:10	18-AUG-2011 11:50	18-AUG-2011 12:10
				ES1118021-001	ES1118021-002	ES1118021-003	ES1118021-004	ES1118021-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.07**	**9.19**	**8.00**	**8.37**	**7.95**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**778**	**681**	**416**	**306**	**343**
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	**78**	**7**	**70**	**46**	**56**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.08**	**0.12**	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	**25.3**	**3.67**	<0.01	**0.02**	**0.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**25.4**	**3.79**	<0.01	**0.02**	**0.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<1.0	**0.9**	<0.1	<0.1	**1.0**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**25.4**	**4.7**	<0.1	<0.1	**1.0**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.10	<0.01	**0.04**	**0.49**	**0.26**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	**0.37**	**0.16**
EP020: Oil and Grease (O&G)								
^ Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: VWD1	VWD2	200MLD - NORTH	QCU	QCD
				Client sampling date / time: 18-AUG-2011 11:40	18-AUG-2011 10:50	18-AUG-2011 11:20	18-AUG-2011 09:40	18-AUG-2011 10:00
				ES1118021-006	ES1118021-007	ES1118021-008	ES1118021-009	ES1118021-010
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.19**	**8.21**	**8.29**	**7.76**	**8.05**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1050**	**996**	**1040**	**442**	**869**
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	**11**	**6**	**8**	**18**	**16**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.03**	**0.09**	**0.08**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	**3.80**	**4.24**	**4.98**	**0.31**	**0.15**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.83**	**4.33**	**5.06**	**0.31**	**0.15**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**3.4**	**1.8**	<0.1	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.2**	**7.7**	**6.9**	**0.3**	**0.2**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.10	<0.10	**0.09**	**0.05**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	**0.02**	**0.04**
EP020: Oil and Grease (O&G)								
^ Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER			Client sample ID	WCU	WCD	----	----	----
			Client sampling date / time	18-AUG-2011 09:00	18-AUG-2011 08:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1118021-011	ES1118021-012	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.01**	**8.41**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1410**	**1370**	----	----	----
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	<5	**26**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.02**	**0.02**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	**3.28**	**0.71**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.30**	**0.73**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.3**	**0.2**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.6**	**0.9**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.08**	**0.24**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.03**	**0.05**	----	----	----
EP020: Oil and Grease (O&G)								
^ Oil & Grease	----	5	mg/L	<5	<5	----	----	----

Appendix 7 – Surface Water Discharge Monitoring Data

CERTIFICATE OF ANALYSIS

Work Order	: **ES1121149**	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	: 28-SEP-2011
Sampler	: AW	Issue Date	: 05-OCT-2011
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/261/10	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

This document is issued in accordance with NATA accreditation requirements.

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	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 insuffient 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.

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Analytical Results

Sub-Matrix: WATER			Client sample ID	SB2	SB9	QCU	QCD	----
			Client sampling date / time	27-SEP-2011 06:00	27-SEP-2011 06:15	27-SEP-2011 07:00	27-SEP-2011 07:15	---
Compound	CAS Number	LOR	Unit	ES1121149-001	ES1121149-002	ES1121149-003	ES1121149-004	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.64	8.16	8.02	8.35	---
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	536	683	448	902	---
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	18	6	14	26	---
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.02	0.22	<0.01	<0.01	---
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.25	2.13	0.09	<0.01	---
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.27	2.35	0.09	<0.01	---
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	1.2	0.2	0.3	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.8	3.6	0.3	0.3	---
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	0.06	---
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	0.03	---
EP020: Oil and Grease (O&G)								
^ Oil & Grease	----	5	mg/L	<5	<5	<5	----	---
Oil & Grease	----	5	mg/L	----	----	----	<5	---

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1122794**	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 GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 2792		
C-O-C number	: ----	Date Samples Received	: 20-OCT-2011
Sampler	: AW	Issue Date	: 27-OCT-2011
Site	: ----		
		No. of samples received	: 8
Quote number	: SY/261/10	No. of samples analysed	: 8

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Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

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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.

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Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	QCU	QCD	SB9	QCU
				Client sampling date / time: 16-OCT-2011 08:30	16-OCT-2011 09:00	16-OCT-2011 09:15	18-OCT-2011 08:00	18-OCT-2011 08:30
				ES1122794-001	ES1122794-002	ES1122794-003	ES1122794-004	ES1122794-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.72	7.51	7.99	7.77	7.63
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	658	466	895	641	464
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	6	34	24	16	21
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.10	<0.01	<0.01	0.10	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.22	<0.01	0.02	2.09	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.32	<0.01	0.02	2.19	0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.3	1.5	1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.3	1.0	0.3	3.7	1.0
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.05	0.19	0.09	0.06	0.20
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.03	0.01	0.05	0.02	0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER				Client sample ID	QCD	SB2	SB10	----	----
				Client sampling date / time	18-OCT-2011 08:45	18-OCT-2011 08:30	18-OCT-2011 08:45	----	----
Compound	CAS Number	LOR	Unit		ES1122794-006	ES1122794-007	ES1122794-008	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.02	8.21	7.71	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		884	608	349	----	----
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		18	19	62	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.03	0.04	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.02	0.53	1.41	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.56	1.45	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	0.6	2.6	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.3	1.2	4.0	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.08	0.06	0.17	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.05	0.02	0.09	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1123318**	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	: WERRI CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 26-OCT-2011
Sampler	: AW	Issue Date	: 03-NOV-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: SY/261/10	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.

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Signatories

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Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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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

- **EK061G:/EK067G: Spike failed for TKN and TP due to matrix interference.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB10	WCU	WCD	----	----
				Client sampling date / time: 25-OCT-2011 07:00	25-OCT-2011 07:30	25-OCT-2011 07:45	----	----
				ES1123318-001	ES1123318-002	ES1123318-003	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.43	7.77	8.11	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	352	1330	1150	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	<5	44	16	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.06	0.03	0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.76	3.25	0.12	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.82	3.28	0.13	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	1.0	0.9	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.6	4.3	1.0	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.02	0.14	0.31	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.02	0.08	0.28	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----