



WERRIS CREEK COAL PTY LTD

**QUARTERLY ENVIRONMENTAL MONITORING
REPORT**

February, March and April 2011

This Environmental Monitoring Report covers the period 1st February 2011 to 30th April 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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1.0 METEOROLOGY

1.1 WEATHER STATION AVAILABILITY

Weather data was available for 100% of February 2011.

Weather data was available for 100% of March 2011.

Weather data was available for 100% of April 2011.

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 ($\mu\text{g}/\text{m}^3$) 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	February ($\mu\text{g}/\text{m}^3$)	March ($\mu\text{g}/\text{m}^3$)	April ($\mu\text{g}/\text{m}^3$)	Criteria ($\mu\text{g}/\text{m}^3$)
WCHV1	17.7	12.8	24.5	30
WCHV2	16.6	9.5	14.7	30
WCHV3	19.3	12.9	27.8	30
WCHV4	23.1	9.7	12.2	30
WCHV5	37.0	35.3	64.3	90

2.1.2 Discussion - Compliance / Non Compliance

There was one PM10 24 hour exceedance at “Cintra” on 20th April 2011 recording $51\mu\text{g}/\text{m}^3$, given the north west to south westerly winds on that day, the dust levels were mostly likely to be as a result of activities at the Rail Load-out Facility. “Cintra” is a project related property and air quality criteria do not apply. All other 6 day PM10 24 hour results were below the short term 24 hour impact criteria of $50\mu\text{g}/\text{m}^3$.

All PM10 sites monthly averages are below the long term impact annual criteria of $30\mu\text{g}/\text{m}^3$.

The TSP site is below the long term impact annual criteria of $90\mu\text{g}/\text{m}^3$.

Due to a likely black out, the Railway View PM10 and TSP did not run on 8th April 2011 missing a 6 day sample that is not in compliance with EPL 12290.

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/m²/month).

2.2.1 Monitoring Data Results

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

Monitor Location	February (g/m ² /month)	March (g/m ² /month)	April (g/m ² /month)	Criteria (g/m ² /month)
WC2	1.4	1.6	1.5	3.6
WC5	0.8	1.6	1.1	3.6
WC7	0.6	0.7	0.6	3.6
WC8	0.7	0.7	1.1	3.6
WC9	0.4	0.9	0.5	3.6
WC10	1.2	2.2	c2.3	3.6
WC11	1.0	0.6	0.6	3.6

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

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge results were below the monthly amenity criteria of 3.6g/m²/month. There was one sample for “Mountain View” (WC9) that has been excluded due to excessive dust from non-mining sources.

2.3 AIR QUALITY COMPLAINTS

There were two dust related complaints for the period. The first complaint was from a Werris Creek resident that could see excessive dust coming from the mine on Monday 14th March 2011 at 6pm. On the evening of the complaint, there were very strong winds (peaking at 10.1m/s at 7:15pm) from the north west to the south west. The PM10 HVAS ran on the 15th March 2011, with “Cintra” recording the highest sample of 14µg/m³ that is below the 24 hour criteria of 50µg/m³. The second complaint was from a Quipolly resident that observed dust from the mine in the early evening of 14th April 2011 drifting from the mine site. There was a temperature inversion present from 5pm onwards on the 14th April 2011, which appeared to be trapping dust and concentrating so that it was visible. The PM10 HVAS ran on 14th April 2011, with “Railway View” recording the highest sample of 39µg/m³ that is below the 24 hour criteria of 50µg/m³. Specific actions taken in relation to these complaints are 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.

Due to a number of complaints regarding noise from mining operations, the April 2011 monitoring period included monitoring at Kurrara St and Punyarra St (near Coronation Ave) in Werris Creek.

3.1.1 Monitoring Data Results

The results from February, March and April 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.

24th February 2011

Location	Day	Evening	Night	Criteria
“Almawillee”*	Inaudible*	Inaudible [#] *	Inaudible [#] *	35
“Glenara”*	20	Inaudible [#]	<20	35
“Railway Cottage”	Inaudible	Inaudible [#]	Inaudible	35
“Tonsley Park”*	Inaudible*	25 [#] *	Inaudible*	35
“Greenslopes”	Inaudible	26 [#]	Inaudible	35
“Kyooma”*	27*	Inaudible [#] *	Inaudible*	35

* - Project Related Property or Private Agreement; Yellow Bold – Elevated noise above criteria; # - Temperature Inversion >3°C/100m or Wind Speed >3m/s

25th March 2011

Location	Day	Evening	Night	Criteria
“Almawillee”*	Inaudible* [#]	Inaudible* [#]	Inaudible* [#]	35
“Glenara”*	<25 [#]	Inaudible [#]	Inaudible [#]	35
“Railway Cottage”	Inaudible [#]	Inaudible [#]	Inaudible [#]	35
“Tonsley Park”*	<25* [#]	36*[#]	34* [#]	35
“Greenslopes”	36[#]	40[#]	42[#]	35
“Kyooma”*	37*[#]	38*[#]	38*[#]	35

* - Project Related Property or Private Agreement; Yellow Bold – Elevated noise above criteria; # - Temperature Inversion >3°C/100m or Wind Speed >3m/s

29th & 30th April 2011

Location	Day	Evening	Night	Criteria
“Almawillee”*	Inaudible* [#]	Inaudible* [#]	30*	35
“Glenara”*	Inaudible* [#]	Inaudible* [#]	<25* [#]	35
“Railway Cottage”	Inaudible [#]	Inaudible [#]	Inaudible [#]	35
“Tonsley Park”*	Inaudible* [#]	33* [#]	38*[#]	35
“Greenslopes”	Barely audible [#]	35 [#]	39[#]	35
“Kyooma”*	Inaudible* [#]	Inaudible* [#]	Inaudible* [#]	35
Kurrara St	Inaudible [#]	32 [#]	34 [#]	35
Punyarra St	Inaudible [#]	32 [#]	34	35

* - Project Related Property or Private Agreement; Yellow Bold – Elevated noise above criteria; # - Temperature Inversion >3°C/100m or Wind Speed >3m/s

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during February, March and April.

Elevated noise levels were recorded at “Tonsley Park”, “Greenslopes” and “Kyooma” for the March monitoring period. The elevated noise levels did not result in an exceedance because of the adverse (noise enhancing) weather conditions at the time of monitoring.

Elevated noise levels were recorded at “Tonsley Park” and “Greenslopes” for the April monitoring period. The elevated noise levels did not result in an exceedance because of the adverse (noise enhancing) weather conditions at the time of monitoring.

WCC has a private agreement in place with “Almawillee”, “Glenara”, “Tonsley Park” and “Kyooma” for mining noise related impacts at those properties and the noise criteria does not apply.

3.2 NOISE COMPLAINTS

There were 12 complaints for noise impacts from Werris Creek Coal operations, with 10 complaints from Werris Creek residents (seven from one complainant and three from another complainant) and two complaints were from the Quipolly area. 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. 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 115dB(L) (and up to 120dB(L) 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

A summary table of blasting results from February, March and April are provided below; however see blasting results database under **Appendix 4** for more detail.

Month	# of Blasts	Overpressure		Vibration	
		Max dB(L)	Location	Max mm/s	Location
February	6	113.0	“Cintra”*	1.82	“Cintra”*
March	6	110.3	“Cintra”*	1.44	“Cintra” *
April	9	113.2	“Cintra”*	1.12	“Cintra”*
TOTAL/MAX	21	113.2	“Cintra”*	1.82	“Cintra”*

* Indicates project related properties not subject to blasting criteria

4.1.2 Discussion - Compliance / Non Compliance

All blasts complied with licence limits with no blasts overpressure level above 115dB(L) and no blast vibration levels greater than 5mm/s. 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 four complaints from two blasts undertaken by Werris Creek Coal. All blast complaints were from Werris Creek residents. The blast on the 9th February 2011 resulted in two complaints relating to the dust cloud generated by the blast. The blast was one of the largest ever fired by Werris Creek Coal and the prevailing dry weather prior to the blast would have resulted in increased dust generation. Any dust generated by the blast dissipated over Werris Creek Coal owned land. The blast on the 23rd February 2011 generated two complaints regarding vibrations experienced at the complainants’ home resulting in window rattling. While it was a larger blast fired, it was not expected to cause any impacts because it was fired in the bottom of the pit. The blast results at all locations including Werris Creek were within compliance limits. The blasting contractor at Werris Creek Coal, Orica Mining Services has been requested to review the last 12 months of blasting complaints to identify any blast design/s that could be improved to reduce the potential for complaints. Specific actions taken in relation to these complaints are outlined in **Section 6**.

5.0 WATER

Groundwater monitoring was undertaken on the 15th & 16th March and 7th April 2011. Surface water monitoring was undertaken on the 3rd March 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	7.29	565	4.33	Level decreased 0.17m but negligible change in quality
MW12	7.35	418	6.13	Level increase 0.3m but negligible change in quality.
Werrie Basalt				
MW5	7.00	2390	7.19	Groundwater level rose 0.62m but negligible change in quality.
MW14	6.98	1020	15.29	Groundwater level rose 0.3m and EC decreased.

5.1.2 Discussion - Compliance / Non Compliance

Both aquifers are continuing to recharge and rise following the good rain late last year. Only MW7 went against the trend recording a small decrease indicating that further water level rises are dwindling, returning back to steady state fluctuations.

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	8.06	388	37	<5	pH and EC have decreased. TSS slightly increased.
SB9	8.00	149	30	<5	No significant change to water quality.
SB10	7.99	176	153	<5	No significant change to water quality.
VWD1	8.43	808	19	<5	No significant change to water quality.
VWD2	8.81	659	51	<5	No significant change to water quality.
200ML	8.31	830	11	<5	No significant change to water quality.
OFFSITE					
BGD	8.35	408	173	<5	EC has decreased with TSS has increased.
QCU	7.33	493	6	<5	EC, pH and TSS have decreased.
QCD	7.75	729	17	<5	EC, pH and TSS have increased.
WCU	7.62	1170	15	<5	EC has significantly increased.
WCD	8.23	1050	20	<5	pH and EC have significantly increased.

5.2.2 Discussion - Compliance / Non Compliance

Surface water monitoring results were within the trigger levels of the Site Water Management Plan response plan.

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were no wet weather discharge events and four 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	Type	Compliance
7/3/2011	SB2	7.95	333	18	<5	Controlled	Compliant – water quality within criteria
7/3/2011	SB9	7.81	148	15	<5	Controlled	Compliant – water quality within criteria
12/4/2011	SB2	7.90	444	34	<5	Controlled	Compliant – water quality within criteria
12/4/2011	SB9	8.13	148	15	<5	Controlled	Compliant – water quality within criteria
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 21 complaints received during the reporting period with the details summarized below. In total there were 25 issues raised – 12 related to noise (from four separate complainants), five related to lighting, four related to blasting, two related to dust and two related to unauthorized access. There were nine different complainants during the period with 11 individual complaints originating from one complainant in Werris Creek.

#	Date	Location	Complaint	Investigation	Action Taken
90	3/2/11	Werris Creek	Noise from dozers on Product Coal Stockpile previous two nights. Loud shunting from coal train at Werris Creek Station.	Weather conditions could have enhanced noise towards Werris Creek. No unusual activities occurred at Train Loud Out with one dozer operating except when a second dozer is used during train loading. WCC does not manage trains at Werris Creek Station.	Coal Processing Manager to reinforce dozer first gear policy. Pacific National contact given for Werris Creek Station. Written response sent to Complainant.
91	8/2/11	Werris Creek	Lights directed at house last night from 11:30pm until about 5am. Noise from dozer at Train Load Out facility.	Weather conditions unlikely to enhance noise towards Werris Creek and dozers were complying with 1 st gear reverse policy. A cross section from the mine to Werris Creek showed that highest lighting plant would have been behind the hill and not visible to town.	Offer to Complainant to view lighting plant locations, a second engineer inspection and noise monitoring was declined. Written response provided to Complainant.
92	4/2/11	"Rosehill"	Tenant complained to property owner of general noise from the mine.	No specific event or date outlined.	Encouraged owners/tenants to register complaints as soon as possible.
93	9/2/11	Werris Creek	Blast created "massive black dust cloud".	Blast results were in compliance and weather conditions unlikely to have influenced blast result. The blast was one of the largest ever firer at WCC and the shot surface was dry and dusty. The through-seam style blast would likely have added to the black dust cloud, which would have dissipated out over WCC owned land.	Verbal and written response provided to Complainant.
94	9/2/11	Werris Creek	Blast caused significant shaking in their house and rattling windows and floor. Big blast dust cloud looked like a bush fire and had the shape of a nuclear mushroom cloud.	Blast results were in compliance and weather conditions unlikely to have influenced blast result. The blast was one of the largest ever firer at WCC and the shot surface was dry and dusty. The through-seam style blast would likely have added to the black dust cloud, which would have dissipated out over WCC owned land.	Written response sent to Complainant.
95	23/2/11	Werris Creek	Noise from Train Load Out Area due to dozers was excessive at 9:15pm. Children were observed riding bikes at the mine site entrance on the weekend.	Weather data indicated temperature inversion present however SE wind would limit noise enhancement. Dozers were operated in accordance with normal practice with one dozer operating in between trains.	Written response sent to Complainant. I&I NSW requested WCC to review site security.
96	23/2/11	Werris Creek	The blast frightened the husband by "shaking the house and rattling all the windows".	Blast results were in compliance. Shot was a larger blast but at bottom of pit.	Written response sent to Complainant.
97	23/2/11	Werris Creek	Blast "shook whole house" frightening his wife and himself.	Blast results were in compliance. Shot was a larger blast but at bottom of pit.	Written response sent to Complainant.
98	25/2/11	Werris Creek	Lights directed at house last night from midnight.	No change to lighting plants locations occurred. Highest lighting plant is at RL~410m behind ridge crest RL~423m preventing light towards Werris Creek.	Written response sent to Complainant.

#	Date	Location	Complaint	Investigation	Action Taken
99	28/2/11	Werris Creek	Children seen at mine site entrance and risk of unauthorized access.	Could not independently confirm the presence of children onsite.	Review security patrols. Review options for camera. Close gate during periods of limited operations.
100	7/3/11	Werris Creek	Lights shining brightly at her house only after 12:15am on 3rd & 4th March 2011.	The highest lighting plant is located on RL410m dump which is below the ridgeline RL423m which is between the mine and her house and therefore unlikely that any of the stationary lighting plants are causing the issue. A review of her complaints indicates lights only impact between 11pm and 2am. A review of train arrivals into Werris Creek station from the south was inconclusive.	A response letter was sent to the complainant.
101	10/3/11	Werris Creek	Noise was heard from the rail load out facility from 9pm to 1am and lights from the open cut area last night 9th March 2011.	There was one train arriving in that time period together with the weak inversion and south westerly winds it is possible that noise from the rail load out facility was audible at her residence. No change to the highest lighting plant which is below the ridgeline and unlikely to be the source of her lighting complaint.	Environmental Manager spoke to complainant at the time of her complaint.
102	14/3/11	Werris Creek	Excessive dust coming from mining operations blowing towards Werris Creek on Monday 6pm 14th March 2011.	Very strong south easterly winds started suddenly at 5:30pm. Mining operations were as protected in pit as possible and the dump was also in pit. Scrappers ended shift at 5:30pm. ARTC contractors were known to be operating on the rail line around that time.	Complainant to get photos developed and EO to organize meeting.
103	25/3/11	Werris Creek	Excessive noise from mining operations on 22nd, 23rd and 25th March.	All three nights had strong temperature inversions and south westerly winds which would enhance and propagate noise levels towards Werris Creek township. No exceedance of noise levels due to adverse weather conditions.	A response letter was sent to the complainant.
104	28/3/11	Werris Creek	Loud and annoying noise from the rail load-out facility from 9pm to 2:30am.	Weak to moderate inversion however north east to south easterly winds unlikely to propagate noise towards Werris Creek township. No trains, but coal haulage and one dozer operated until 3:30am.	Email response provided to DECCW. A response letter was sent to the complainant. Monthly attended noise monitoring to now include Kurrara St in Werris Creek.
105	30/3/11	Werris Creek	Excessive noise from the rail load-out facility until 11:30pm and lights from the "pit area" were very bright on Wednesday night 30th March 2011.	Strong temperature inversion present but moderate south east winds until 10pm, after which light winds changing between south east and north west. Unlikely that there were ongoing noise impacts but after 10pm possible as there was a train being loaded at that time. The highest lighting plant is unchanged located below the ridgeline and unlikely to be the source of her complaint.	Email response provided to DECCW. A response letter was sent to the complainant.
106	11/4/11	Werris Creek	Noise heard from mine during evening only 11/4/11 and specifically can hear dozer tracks.	North westerly winds and temperature inversion probably enhanced noise towards Werris Creek. Night shift mining locations were the quietest possible configuration.	Property immediately visited. Written response sent.
107	14/4/11	Werris Creek	Noise heard from mine during evening only 13/4/11 and specifically can hear dozer tracks.	North westerly winds and temperature inversion probably enhanced noise towards Werris Creek. Night shift mining locations were the quietest possible configuration.	Attended noise monitoring to be undertaken at residence in April. Written response sent.
108	14/4/11	"Wilminena"	Dust observed on 14/4/11 from the coal mine observed moving to the east.	Temperature inversion was present that evening trapping dust and concentrating so that it was visible. Wind was blowing away from complainant's residence.	Property immediately inspected and tank water sample taken for analysis of potable water quality. Written response sent.
109	20/4/11	"Hazeldene"	Noise heard from mine during evening only 20/4/11.	Westerly winds probably enhanced noise towards Quipolly. Night shift mining locations were the quietest possible configuration.	Property immediately visited. Written response sent.
110	28/4/11	Werris Creek	Noise heard from rail load out facility during evening and nights on weekend 16&17/4/11.	South easterly wind unlikely to enhance noise towards Werris Creek. Only operations were dozers working on coal stockpile. Continuous noise monitor measured levels with compliance criteria.	Attended noise monitoring to be undertaken at residence in April. Written response sent.

7.0 GENERAL

The second southern 200ML Dam cell was constructed and commissioned in April 2011.

The new Orica explosives loading facility was constructed and commissioned in April 2011.

In March approximately ~15ha of temporary rehabilitation (cover crop sown with oats) was completed and ~18ha of White Box Woodland rehabilitation was completed.

Approximately 11km of new fencing for the Biodiversity Offset Area was completed.

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.

Site Date	WCHV1 Cintra	Monthly Average	Rolling Annual Average	WCHV2 Tonsley Park	Monthly Average	Rolling Annual Average	WCHV3 Railway View	Monthly Average	Rolling Annual Average	WCHV4 Eurunder ee	Monthly Average	Rolling Annual Average	WCTSP Railway View	Monthly Average	Rolling Annual Average	PM10 24hr Limit	M10 annual Average	SP 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
01-May-10			24.5			14.7			27.8			12.2			64.3	50	30	90
07-May-10			24.5			14.7			27.8			12.2			64.3	50	30	90
13-May-10			24.5			14.7			27.8			12.2			64.3	50	30	90
19-May-10			24.5			14.7			27.8			12.2			64.3	50	30	90
25-May-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
31-May-10			24.5			14.7			27.8			12.2			64.3	50	30	90
06-Jun-10			24.5			14.7			27.8			12.2			64.3	50	30	90
12-Jun-10			24.5			14.7			27.8			12.2			64.3	50	30	90
18-Jun-10			24.5			14.7			27.8			12.2			64.3	50	30	90
24-Jun-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
30-Jun-10			24.5			14.7			27.8			12.2			64.3	50	30	90
06-Jul-10			24.5			14.7			27.8			12.2			64.3	50	30	90
12-Jul-10			24.5			14.7			27.8			12.2			64.3	50	30	90
18-Jul-10			24.5			14.7			27.8			12.2			64.3	50	30	90
24-Jul-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
30-Jul-10			24.5			14.7			27.8			12.2			64.3	50	30	90
05-Aug-10			24.5			14.7			27.8			12.2			64.3	50	30	90
11-Aug-10			24.5			14.7			27.8			12.2			64.3	50	30	90
17-Aug-10			24.5			14.7			27.8			12.2			64.3	50	30	90
23-Aug-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
29-Aug-10			24.5			14.7			27.8			12.2			64.3	50	30	90
04-Sep-10			24.5			14.7			27.8			12.2			64.3	50	30	90
10-Sep-10			24.5			14.7			27.8			12.2			64.3	50	30	90
16-Sep-10			24.5			14.7			27.8			12.2			64.3	50	30	90
22-Sep-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
28-Sep-10			24.5			14.7			27.8			12.2			64.3	50	30	90
04-Oct-10			24.5			14.7			27.8			12.2			64.3	50	30	90
10-Oct-10			24.5			14.7			27.8			12.2			64.3	50	30	90
16-Oct-10			24.5			14.7			27.8			12.2			64.3	50	30	90
22-Oct-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
28-Oct-10			24.5			14.7			27.8			12.2			64.3	50	30	90
03-Nov-10			24.5			14.7			27.8			12.2			64.3	50	30	90
09-Nov-10			24.5			14.7			27.8			12.2			64.3	50	30	90
15-Nov-10			24.5			14.7			27.8			12.2			64.3	50	30	90
21-Nov-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
27-Nov-10			24.5			14.7			27.8			12.2			64.3	50	30	90
03-Dec-10			24.5			14.7			27.8			12.2			64.3	50	30	90
09-Dec-10			24.5			14.7			27.8			12.2			64.3	50	30	90
15-Dec-10			24.5			14.7			27.8			12.2			64.3	50	30	90
21-Dec-10		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
27-Dec-10			24.5			14.7			27.8			12.2			64.3	50	30	90
02-Jan-11			24.5			14.7			27.8			12.2			64.3	50	30	90
08-Jan-11			24.5			14.7			27.8			12.2			64.3	50	30	90
14-Jan-11			24.5			14.7			27.8			12.2			64.3	50	30	90
20-Jan-11		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
26-Jan-11			24.5			14.7			27.8			12.2			64.3	50	30	90
01-Feb-11			24.5			14.7			27.8			12.2			64.3	50	30	90
07-Feb-11			24.5			14.7			27.8			12.2			64.3	50	30	90
13-Feb-11			24.5			14.7			27.8			12.2			64.3	50	30	90
19-Feb-11		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
25-Feb-11			24.5			14.7			27.8			12.2			64.3	50	30	90
03-Mar-11			24.5			14.7			27.8			12.2			64.3	50	30	90
09-Mar-11			24.5			14.7			27.8			12.2			64.3	50	30	90
15-Mar-11			24.5			14.7			27.8			12.2			64.3	50	30	90
21-Mar-11			24.5			14.7			27.8			12.2			64.3	50	30	90
27-Mar-11		#DIV/0!	24.5		#DIV/0!	14.7		#DIV/0!	27.8		#DIV/0!	12.2		#DIV/0!	64.3	50	30	90
Min		11.2		7.0			10.8			6.6			18.8					
Max		50.5		20.5			50.0			17.8			114.0					
Capture		8%		8%			7%			8%			7%					

Appendix 2 – Deposited Dust Monitoring Data.

Deposited Dust - Werris Creek Coal Mine 2010-2011

MONTH	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	ANNUAL AVERAGE LIMIT
April 2010	2.0	1.6	0.9	0.7	0.4			3.6
May 2010	1.2	1.0	1.0	c5.1*	0.4			3.6
June 2010	2.1	1.6	1.2	2.0	2.0			3.6
July 2010	0.7	0.8	0.7	0.5	0.4			3.6
August 2010	0.5	0.9	0.6	0.9	0.3	0.7		3.6
September 2010	1.4*	0.6	0.5	0.8	0.5	0.7		3.6
October 2010	6.6*	0.5	0.6	0.9	0.9	0.9		3.6
November 2010	2.0	1.0	0.9	1.0	0.8	0.9	2.1	3.6
December 2010	0.6	3.9	0.6	0.6	c7.8	0.4	1.6	3.6
January 2011	1.5	0.7	0.7	0.6	0.6	0.4	1.0	3.6
February 2011	1.4	0.8	0.6	0.7	0.4	1.2	1.0	3.6
March 2011	1.6	1.6	0.7	0.7	0.9	2.2	0.6	3.6
ANNUAL AVERAGE	1.4	1.3	0.8	0.9	0.7	0.9	1.3	3.6
MINIMUM	0.5	0.5	0.5	0.5	0.3	0.4	0.6	3.6
MAXIMUM	2.1	3.9	1.2	2.0	2.0	2.2	2.1	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

Deposited Dust - Werris Creek Coal Mine 2011-2012

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	
April 2011	1.5	1.1	0.6	1.1	0.5	c2.3	0.6	3.6
May 2011								3.6
June 2011								3.6
July 2011								3.6
August 2011								3.6
September 2011								3.6
October 2011								3.6
November 2011								3.6
December 2011								3.6
January 2012								3.6
February 2012								3.6
March 2012								3.6
ANNUAL AVERAGE	1.5	1.1	0.6	1.1	0.5	#DIV/0!	0.6	3.6
MINIMUM	1.5	1.1	0.6	1.1	0.5	0.0	0.6	3.6
MAXIMUM	1.5	1.1	0.6	1.1	0.5	0.0	0.6	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.



2 March 2011

Ref: 04035/3886

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

RE: FEBRUARY 2011 NOISE MONITORING RESULTS

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Thursday 24 February 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”

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). WCC activities were audible at low levels on occasion at various monitoring locations throughout the survey.

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 on February 24 winds were moderate from the south to south west during the day turning to the south east during the evening and early night. After midnight the wind decreased in strength and blew from the north east.

The data showed that there was a mild temperature inversion during the evening and early parts of 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 minimum level during the measurement and not measurable.

Table 1
WCC Noise Monitoring Results – 24 February 2011 (Day)

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	3:50 pm	43	n/a	1.1/208	Birds & insects (40), traffic (39), horse (30), WCC inaudible
Glenara	4:07 pm	37	n/a	1.8/191	Birds & insects (37), WCC (20)
Railway Cottage	3:33 pm	55	n/a	2.4/225	Traffic (55), insects (40), WCC inaudible
Tonsley Park	4:33 pm	34	n/a	2.1/217	Traffic (32), birds & insects (28), train (21), WCC inaudible
Greenslopes	4:55 pm	40	n/a	0.8/200	Insects (39), traffic (33), WCC inaudible
Kyooma	3:10 pm	38	n/a	2.4/179	Birds & insects (38), WCC (27)

Table 2
WCC Noise Monitoring Results – 24 February 2011 (Evening)

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	8:22 pm	42	<3	4.2/116	Insects (42), traffic (25), cattle (24), WCC inaudible
Glenara	8:40 pm	48	<3	3.4/125	Insects (48), traffic (32), WCC inaudible
Railway Cottage	9:00 pm	52	>3	3.1/145	Traffic (50), insects (48), WCC inaudible
Tonsley Park	8:00 pm	46	<3	4.7/114	Insects (46), traffic (35) WCC (25)
Greenslopes	7:38 pm	62	<3	4.0/129	Insects (62), WCC (26)
Kyooma	9:24 pm	41	>3	3.9/117	Birds & insects (41), WCC inaudible

Table 3
WCC Noise Monitoring Results – 24/25 February 2011 (Night)

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	10:01 pm	36	>3	3.9/125	Insects (35), traffic (28), WCC inaudible
Glenara	10:18 pm	47	<3	1.6/78	Insects (47), traffic (30) WCC (<20)
Railway Cottage	10:37 pm	39	Lapse	2.1/81	Traffic (38), insects (30), WCC inaudible
Tonsley Park	12:29 am	43	Lapse	0.1/267	Insects (43), WCC inaudible
Greenslopes	12:10 am	44	Lapse	0.2/315	Insects (44), traffic (30), WCC inaudible
Kyooma	11:03 pm	50	Lapse	1.5/345	Insects (50), WCC inaudible

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 criterion of 35 dB(A) Leq at any monitoring location during any monitoring period.

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

In addition to the operational noise, the noise from WCC must not exceed **45 dB(A) 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

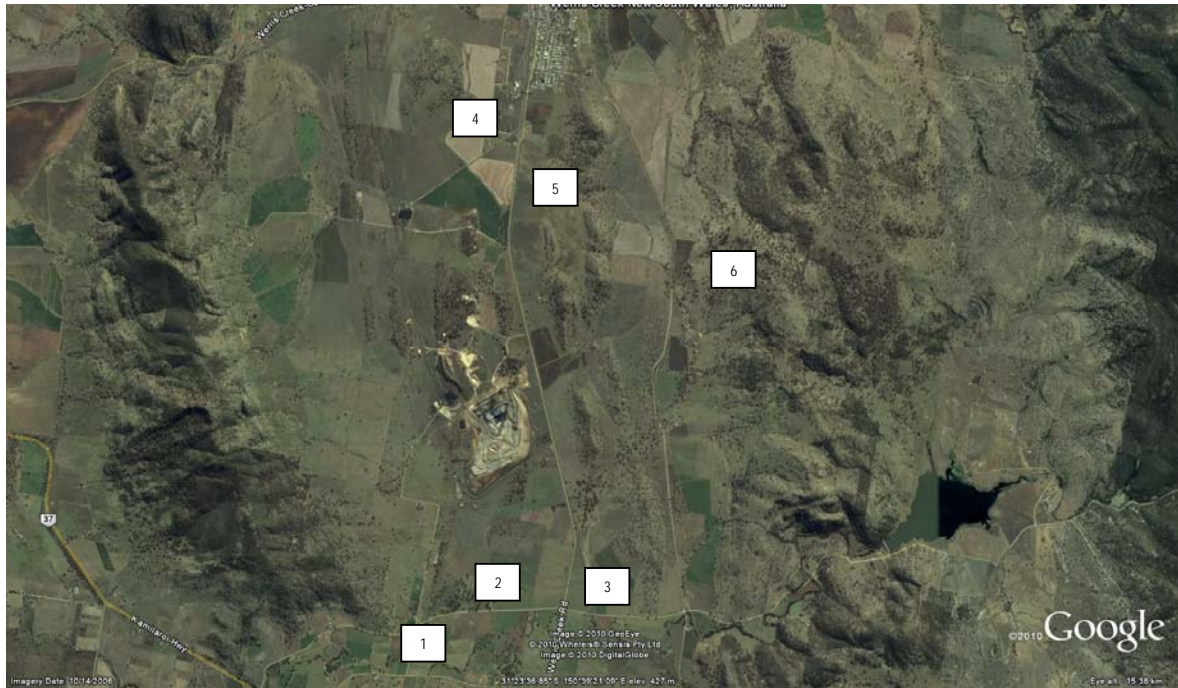


Figure 1 – Noise Monitoring Locations

Key

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



31 March 2011

Ref: 04035/3930

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

RE: MARCH 2011 NOISE MONITORING RESULTS

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Friday 25 March 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”

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 stations. Wind speed and direction have been determined as the arithmetic average of the measurements, taken from the permanent weather station, over each monitoring period. The data show that on March 25 winds were light from the west during the day increasing in strength to come from the south during the evening before dropping in intensity from the south east at night.

Wind speed data is taken from the weather station at 10m above ground level as this relates to the noise propagation path.

The mine has a relocatable weather station which at the time of the survey was located at Tonsley Park (at r.l. 385.7m). The 2m temperature logger at the permanent weather station is at r.l. 445.5m. Temperature inversion information in this report has been calculated as an extrapolation as the difference between the temperature at these two stations.

The data showed that there was a mild to strong temperature inversion during the evening and night surveys.

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 background level during the measurement and not measurable.

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	4:37 pm	41	n/a	3.7/216	Birds & insects (40), wind (35), WCC inaudible
Glenara	4:20 pm	38	n/a	4.1/219	Birds & insects (38), WCC (<25)
Railway Cottage	4:02 pm	45	n/a	3.8/255	Wind in grass (43), traffic (39), insects (30), WCC inaudible
Tonsley Park	2:45 pm	42	n/a	3.7/251	Traffic (38), birds & insects (38), wind (33), WCC (<25)
Greenslopes	3:06 pm	46	n/a	3.8/250	Traffic (45), WCC (36), birds & insects (30)
Kyooma	3:38 pm	39	n/a	5.4/268	WCC (37), birds & insects (35)

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	9:25 pm	34	+4.1	4.2/186	Insects (34), traffic (25), WCC inaudible
Glenara	9:06 pm	44	+2.9	4.6/189	Insects (44), WCC inaudible
Railway Cottage	8:45 pm	48	+3.9	4.6/194	Traffic (47), insects (40), WCC inaudible
Tonsley Park	7:30 pm	44	+4.2	7.4/188	Birds & insects (40), traffic (40) WCC (36)
Greenslopes	7:53 pm	47	+4.2	6.5/180	Insects (44), traffic (41), WCC (40)
Kyooma	8:18 pm	41	+3.4	4.8/179	Birds & insects (38), WCC (38)

Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	12:10 am	32	+5.6	3.0/148	Traffic (29), insects (29), dogs (25), WCC inaudible
Glenara	11:19 pm	34	+6.1	2.2/143	Traffic (33), insects (30), WCC inaudible
Railway Cottage	11:03 pm	24	+6.3	3.0/160	Insects (24), WCC inaudible
Tonsley Park	10:18 pm	58	+9.4	2.4/163	Train (58), traffic (39), WCC (34), insects (33)
Greenslopes	10:00 pm	45	+9.5	2.5/168	WCC (42), traffic (41), insects (38)
Kyooma	10:42 pm	40	+9.4	3.0/159	WCC (38), insects (36)

The results shown in Tables 1-3 indicate that, under the operational and atmospheric conditions at the time, noise emissions from WCC were higher than 35 dB(A) Leq at Kyooma and Greenslopes during each of the day, evening and night time monitoring periods and at Tonsley Park during the night.

The elevated noise at each location was due to general mine hum and plant noise (haul trucks and dozers). Noise from dozers on the stockpile at the rail load out facility was also a contributor to the received noise at the Tonsley Park and Greenslopes monitoring locations during the day and evening.

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 at each location during the evening and night were measured whilst there was a strong temperature inversion in place.

The elevated noise levels during the day at Kyooma and Greenslopes were measured whilst there was a westerly wind blowing at greater than 3m/s.

WCC has private agreements in place with the landowners at Kyooma, Tonsley Park and Almawillee which allow for received noise levels between 35 and 40 dB(A) Leq (15 min) to be considered a noise management zone.

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

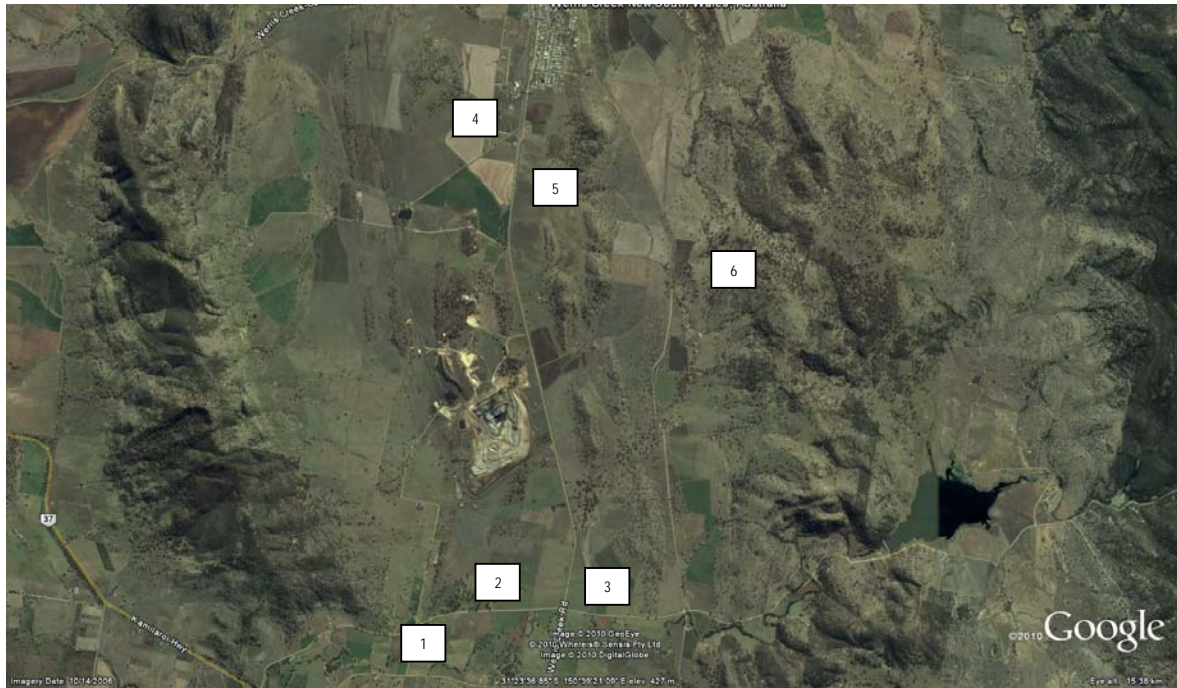


Figure 1 – Noise Monitoring Locations

Key

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



2 May 2011

Ref: 04035/3965

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

RE: MAY 2011 NOISE MONITORING RESULTS

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Friday 29 and Saturday 30 April 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 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 on April 29 winds were moderate from the south east. The data from the met station shows wind speeds were generally higher than 5m/s during the day and evening. Observations at ground level were that winds at this height were at lower speeds than this (range 1 to 3m/s). The wind strength dropped during the night survey and swung to be more from the east.

The data showed that there was a temperature inversion for some parts of 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 background level during the measurement and not measurable.

Table 1 WCC Noise Monitoring Results – 29 April 2011 (Day)					
Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	2:13 pm	39	n/a	5.8/147	Wind (36), birds & insects (35), WCC inaudible
Glenara	2:30 pm	45	n/a	5.6/149	Birds & insects (44), wind (35), traffic (30), WCC inaudible
Railway Cottage	1:54 pm	39	n/a	5.1/132	Traffic (39), WCC inaudible
Tonsley Park	2:55 pm	43	n/a	5.7/136	Traffic (41), birds & insects (39), WCC inaudible
Greenslopes	3:36 pm	55	n/a	5.3/139	Train (52), birds & insects (50) traffic (45), WCC barely audible
Kyooma	1:30 pm	40	n/a	5.8/157	Birds & insects (38), wind (36), WCC inaudible
Kurrara St	1:05 pm	52	n/a	6.9/152	Traffic (52), birds & insects (37), WCC inaudible
Punyarra St	3:15 pm	44	n/a	5.1/133	Insects (41), traffic (40), wind (35), WCC inaudible

Table 2 WCC Noise Monitoring Results – 29 April 2011 (Evening)					
Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	7:00 pm	36	Lapse	6.0/134	Insects (35), traffic (30), WCC inaudible
Glenara	7:17 pm	38	Lapse	6.0/121	Traffic (38), insects (28), WCC inaudible
Railway Cottage	7:37 pm	41	Lapse	5.0/124	Insects (38), traffic (37), wind (30), WCC inaudible
Tonsley Park	9:18 pm	38	+2.1	3.5/133	Traffic (35), WCC (33), insects (31)
Greenslopes	8:57 pm	43	Lapse	3.8/147	Traffic (42), WCC (35), insects (32)
Kyooma	7:59 pm	37	Lapse	4.7/129	Insects (35), wind (32), WCC inaudible
Kurrara St	8:20 pm	36	Lapse	5.2/137	Traffic (32), WCC (32), insects (27)
Punyarra St	8:37 pm	60	Lapse	5.1/140	Insects (60), traffic (33), WCC (32)

Table 3 WCC Noise Monitoring Results – 29/30 April 2011 (Night)					
Location	Time	dB(A),Leq	Inversion °C/ 100m	Wind speed/ direction	Identified Noise Sources
Almawillee	1:15 am	30	Lapse	2.6/121	WCC (30)
Glenara	12:57 am	36	Lapse	3.1/113	Traffic (36), WCC (<25)
Railway Cottage	12:37 am	29	+3.9	2.7/104	Traffic (29), WCC inaudible
Tonsley Park	11:15 pm	44	+3.2	2.6/136	Traffic (43), WCC (38), insects (30)
Greenslopes	10:57 pm	45	+4.7	1.8/122	Traffic (43), WCC (39), insects (34)
Kyooma	10:01 pm	25	+4.1	2.6/119	Insects (25), WCC inaudible
Kurrara St	10:21 pm	36	+3.1	1.9/129	WCC (34), traffic (30), insects (26)
Punyarra St	10:38 pm	39	+2.6	1.6/140	Traffic (36), WCC (34), insects (31)

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 Tonsley Park and Greenslopes monitoring locations during the night monitoring period.

WCC environmental licence conditions indicate that compliance with noise emission criteria is not applicable under atmospheric conditions where winds speeds are higher than 3m/s and/or there is a temperature inversion of greater than +3° C/100m. Data from the mine operated weather station indicated that all of the elevated noise levels were measured whilst there was a strong temperature inversion in place.

WCC has an agreement in place with the landowner at Tonsley Park to allow for noise up to 45 dB(A) Leq (15 min).

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

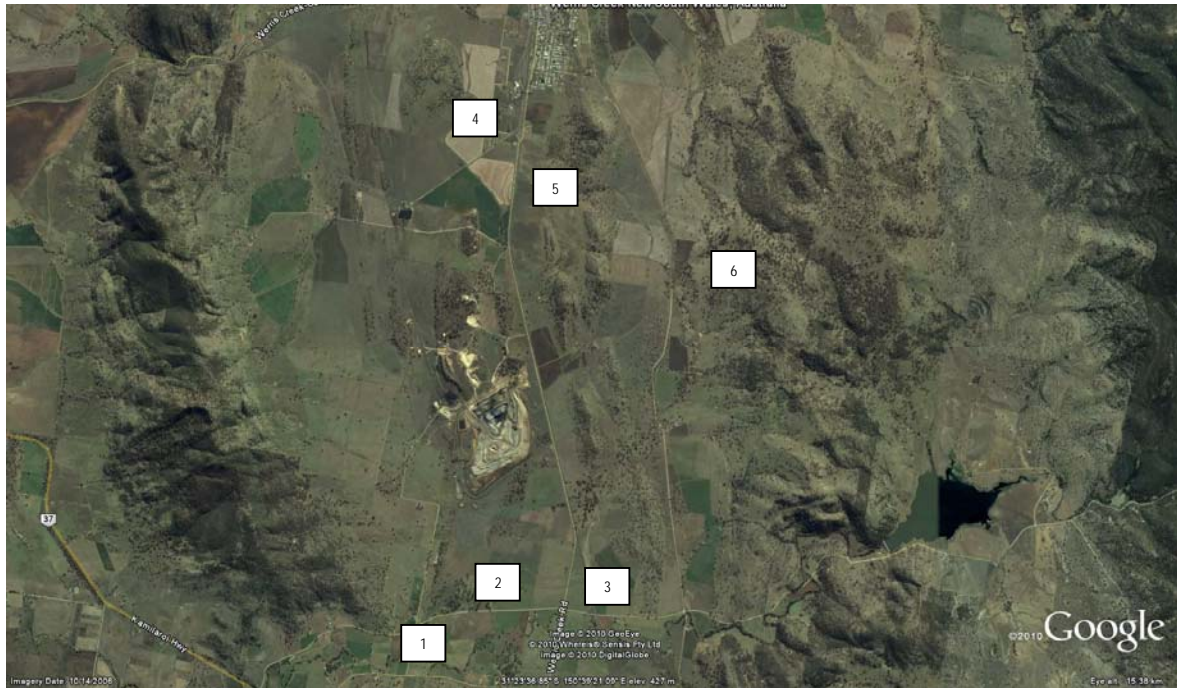


Figure 1 – Noise Monitoring Locations

Key

- 1 Alkawillee
- 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



Appendix 4 – Blasting Monitoring Data.

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results											
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		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)
11-06	1/02/2011	11:16	S9_10-15_300	IB	NM	NM	<0.37	<111.9	0.4	89.7	0.47	102	<0.37	<111.9	10.00	120.0
11-07	9/02/2011	13.51	S10_18_330TSB5	THRU S	NM	NM	<0.37	<111.9	1.1	108.8	1.82	113	0.51	94.1	10.00	120.0
11-08	14/02/2011	15.18	S9_6-7_Gseam	IB	NM	NM	0.7	110.1	0.65	109.5	0.75	111.5	<0.23	<109.9	10.00	120.0
11-09	17/02/2011	13.51	S10_8-9R_Ccoal	IB	NM	NM	<0.37	<111.9	<0.37	<111.9	<0.37	<111.9	<0.23	<109.9	10.00	120.0
11-10	23/02/2011	16.15	S9_8-12_Gcoal	IB	NM	NM	<0.37	<111.9	0.73	100.6	1.25	104.5	<0.23	<109.9	10.00	120.0
11-11	25/02/2011	15.34	S10_11-12R_Ccoal	IB	NM	NM	<0.37	<111.9	<0.37	<111.9	<0.37	<111.9	<0.23	<109.9	10.00	120.0
TOTALS	FEBRUARY	# BLAST	6	AVERAGE	<0.37	<111.9	0.70	110.1	0.72	102.2	1.07	107.8	0.51	94.1	5.00	115.0
TOTALS	FEBRUARY	# BLAST	6	HIGHEST	<0.37	<111.9	0.70	110.1	1.10	109.5	1.82	113.0	0.51	94.1	10.00	120.0
TOTALS	ANNUAL	# BLAST	96	AVERAGE	0.10	114.7	0.70	110.1	0.67	102.9	0.87	108.4	0.51	94.1	5.00	115.0

KEY

NT - Not Triggered

NM - Not Monitored

* - Project Related Property

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results											
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		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)
11-12	4/03/2011	14.51	S10_11-12_Fcoal Pt1	IB	NM	NM	<0.37	<111.9	<0.37	<111.9	0.45	100.3	<0.23	<109.9	10.00	120.0
11-13	10/03/2011	13.22	S9_8-12_Gcoal Pt2	IB	NM	NM	1.01	101.5	0.73	99.3	0.8	102.2	0.42	94.2	10.00	120.0
11-14	17/03/2011	13.53	S10_11-12_Fcoal Pt2	IB	NM	NM	<0.37	<111.9	0.48	87.2	0.47	105.7	<0.23	<109.9	10.00	120.0
11-15	22/03/2011	13.12	S9_8-12_Gcoal Pt3	IB	NM	NM	1.07	99.7	1.01	94.2	1.44	101.5	0.48	99.8	10.00	120.0
11-16	24/03/2011	13.27	S10_11-13_DE coal	IB	NM	NM	<0.37	<111.9	<0.37	<111.9	<0.37	<111.9	<0.23	<109.9	10.00	120.0
11-17	29/03/2011	15.3	S9_13-15_Gcoal	IB	NM	NM	<0.37	<111.9	0.81	100.2	1.15	110.3	<0.23	<109.9	10.00	120.0
TOTALS	MARCH	# BLAST	6	AVERAGE	<0.37	<111.9	1.04	100.6	0.76	95.2	0.86	104.0	0.45	97.0	5.00	115.0
TOTALS	MARCH	# BLAST	6	HIGHEST	<0.37	<111.9	1.07	101.5	1.01	100.2	1.44	110.3	0.48	99.8	10.00	120.0
TOTALS	ANNUAL	# BLAST	102	AVERAGE	0.10	114.7	0.59	106.7	0.68	102.2	0.87	108.0	0.48	95.6	5.00	115.0

KEY

NT - Not Triggered

NM - Not Monitored

* - Project Related Property

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)
11-18	4/04/2011	13:40	S10_8-9_Deseam	IB	NM	NM	<0.37	<109.9	<0.20	<109.9	<0.37	<109.9	<0.20	<109.9	NM	NM	10.00	120.0
11-19	4/04/2011	13:40	S9_14-15_Fcoal	IB	NM	NM	<0.37	<109.9	<0.20	<109.9	<0.37	<109.9	<0.20	<109.9	NM	NM	10.00	120.0
11-20	7/04/2011	14:12	S9_13_Gcoal	IB	<0.37	<109.9	0.28	110.2	0.34	108.7	0.58	113.2	NM	NM	<0.37	<109.9	10.00	120.0
11-21	11/04/2011	15:22	S10_11-12_Fseam	IB	<0.37	<109.9	<0.37	<109.9	<0.20	<109.9	0.48	108.2	NM	NM	<0.37	<109.9	10.00	120.0
11-22	15/04/2011	13:17	S9_17_Gseam	IB	NM	NM	0.35	111.5	0.53	109.8	0.42	106.2	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-23	14/04/2011	13:16	S10_11-12_Fseam	IB	NM	NM	<0.37	<109.9	<0.20	<109.9	<0.37	<109.9	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-24	18/04/2011	13:18	S10_19_330	IB	NM	NM	0.29	110.7	0.27	106.7	0.42	110.4	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-25	21/04/2011	13:17	S11_12_385	OB	NM	NM	<0.37	<109.9	0.83	107.6	1.12	110.2	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-26	29/04/2011	13:12	S10_8-9_Deseam Pt2	IB	<0.37	<109.9	<0.37	<109.9	<0.20	<109.9	<0.37	<109.9	NM	NM	NM	NM	10.00	120.0
TOTALS	APRIL	# BLAST	9	AVERAGE	<0.37	<109.9	0.31	110.8	0.49	108.2	0.60	109.6	<0.20	<109.9	<0.37	<109.9	5.00	115.0
TOTALS	APRIL	# BLAST	9	HIGHEST	<0.37	<109.9	0.35	111.5	0.83	109.8	1.12	113.2	<0.20	<109.9	<0.37	<109.9	10.00	120.0
TOTALS	ANNUAL	# BLAST	9	AVERAGE	<0.37	<109.9	0.31	110.8	0.49	108.2	0.60	109.6	<0.20	<109.9	<0.37	<109.9	5.00	115.0

Appendix 5 – Groundwater Monitoring Data.



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1105615	Page	: 1 of 8
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	: 1698	Date Samples Received	: 17-MAR-2011
C-O-C number	: ----	Issue Date	: 24-MAR-2011
Sampler	: BPHILLIPS	No. of samples received	: 11
Site	: ----	No. of samples analysed	: 11
Quote number	: SY/261/10		

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Luke Witham	Senior Inorganic Chemist	Sydney Inorganics
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A Campbell Brothers Limited Company



General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **ED093F: LCS recovery for Magnesium falls outside ALS Dynamic Control Limit. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
- **EG020: LCS recovery for vanadium fall outside ALS dynamic control limits. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
- **EK071: It has been noted that RP is greater than TP for sample MW10 and MW13, however this difference is within the limits of experimental variation.**



Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				MW1	MW6	MW8	MW10	MW11
				16-MAR-2011 11:10	16-MAR-2011 12:00	16-MAR-2011 12:30	16-MAR-2011 09:40	16-MAR-2011 10:30
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	ES1105615-001	ES1105615-002	ES1105615-003	ES1105615-004	ES1105615-005
EA005: pH								
pH Value	----	0.01	pH Unit	7.01	7.25	7.58	7.34	7.53
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1090	1780	868	1770	1060
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	547	655	293	334	408
Total Alkalinity as CaCO3	----	1	mg/L	547	655	293	334	408
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7	34	39	48	25
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	68	262	108	406	123
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	128	78	76	115	70
Magnesium	7439-95-4	1	mg/L	60	87	45	112	55
Sodium	7440-23-5	1	mg/L	55	271	67	116	120
Potassium	7440-09-7	1	mg/L	1	<1	<1	<1	<1
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.002
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.016	0.042	0.002	0.023	0.004
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0003
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.025	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.028	0.016	0.004	0.001	0.023
Lead	7439-92-1	0.001	mg/L	0.008	0.001	<0.001	<0.001	0.003
Manganese	7439-96-5	0.001	mg/L	0.055	0.010	0.004	<0.001	0.002
Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.061	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.02	0.04	0.02	0.02	0.04
Zinc	7440-66-6	0.005	mg/L	0.098	0.059	0.007	<0.005	0.056
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	1.61	0.16	0.13	0.07	0.29
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.10	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								



Analytical Results

Sub-Matrix: WATER

Client sample ID
 Client sampling date / time

				MW1	MW6	MW8	MW10	MW11
				16-MAR-2011 11:10	16-MAR-2011 12:00	16-MAR-2011 12:30	16-MAR-2011 09:40	16-MAR-2011 10:30
Compound	CAS Number	LOR	Unit	ES1105615-001	ES1105615-002	ES1105615-003	ES1105615-004	ES1105615-005
EK058G: Nitrate as N by Discrete Analyser - Continued								
^ Nitrate as N	14797-55-8	0.01	mg/L	4.68	3.57	2.78	19.8	6.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.78	3.57	2.78	19.8	6.23
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.7	1.5	1.3	2.9	2.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	9.5	5.1	4.1	22.7	8.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.24	0.11	0.09	<0.01	0.08
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.24	0.06	0.02	0.01	0.04
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	13.0	21.2	9.73	19.1	12.1
^ Total Cations	----	0.01	meq/L	13.8	22.8	10.4	20.0	13.2
^ Ionic Balance	----	0.01	%	2.81	3.67	3.35	2.22	4.18
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				MW12	MW13	MW15	MW16	MW17A
				16-MAR-2011 14:20	16-MAR-2011 13:00	16-MAR-2011 14:00	16-MAR-2011 13:50	16-MAR-2011 13:15
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	ES1105615-006	ES1105615-007	ES1105615-008	ES1105615-009	ES1105615-010
EA005: pH								
pH Value	----	0.01	pH Unit	7.35	7.28	7.28	7.24	7.30
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	418	866	967	672	761
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	174	195	281	230	267
Total Alkalinity as CaCO3	----	1	mg/L	174	195	281	230	267
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	35	34	44	30
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	28	150	150	66	91
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	39	77	73	57	62
Magnesium	7439-95-4	1	mg/L	15	38	39	27	30
Sodium	7440-23-5	1	mg/L	37	50	100	55	70
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	<1
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	<0.001	0.002
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.012	0.026	0.023	0.016	0.019
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.042	0.006	0.008	0.032	0.008
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.003	0.008	0.004	0.002	0.002
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	0.02	0.01	0.02
Zinc	7440-66-6	0.005	mg/L	0.019	0.027	0.026	0.066	<0.005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.23	0.15	0.09	0.09
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								



Analytical Results

Sub-Matrix: WATER

Client sample ID
 Client sampling date / time

				MW12	MW13	MW15	MW16	MW17A
				16-MAR-2011 14:20	16-MAR-2011 13:00	16-MAR-2011 14:00	16-MAR-2011 13:50	16-MAR-2011 13:15
Compound	CAS Number	LOR	Unit	ES1105615-006	ES1105615-007	ES1105615-008	ES1105615-009	ES1105615-010
EK058G: Nitrate as N by Discrete Analyser - Continued								
^ Nitrate as N	14797-55-8	0.01	mg/L	1.32	2.56	1.26	4.34	0.76
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	1.32	2.56	1.26	4.34	0.76
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	1.1	0.5	2.1	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.9	3.7	1.8	6.4	1.2
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.12	0.07	0.10	0.14	0.05
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.05	0.08	0.09	0.09	0.08
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	4.73	8.88	10.5	7.36	8.51
^ Total Cations	----	0.01	meq/L	4.80	9.10	11.2	7.45	8.65
^ Ionic Balance	----	0.01	%	0.74	1.23	2.87	0.58	0.78
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: **WATER**

			Client sample ID	MW17B				
			Client sampling date / time	16-MAR-2011 13:30				
Compound	CAS Number	LOR	Unit	ES1105615-011				
EA005: pH								
pH Value		0.01	pH Unit	8.32				
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C		1	µS/cm	1920				
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1				
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	16				
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	327				
Total Alkalinity as CaCO3		1	mg/L	343				
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39				
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	495				
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	27				
Magnesium	7439-95-4	1	mg/L	38				
Sodium	7440-23-5	1	mg/L	392				
Potassium	7440-09-7	1	mg/L	1				
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001				
Beryllium	7440-41-7	0.001	mg/L	<0.001				
Barium	7440-39-3	0.001	mg/L	0.017				
Cadmium	7440-43-9	0.0001	mg/L	<0.0001				
Chromium	7440-47-3	0.001	mg/L	<0.001				
Cobalt	7440-48-4	0.001	mg/L	<0.001				
Copper	7440-50-8	0.001	mg/L	0.008				
Lead	7439-92-1	0.001	mg/L	<0.001				
Manganese	7439-96-5	0.001	mg/L	0.005				
Nickel	7440-02-0	0.001	mg/L	<0.001				
Vanadium	7440-62-2	0.01	mg/L	0.02				
Zinc	7440-66-6	0.005	mg/L	0.013				
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001				
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.16				
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0.01	mg/L	<0.01				
EK058G: Nitrate as N by Discrete Analyser								



Analytical Results

Sub-Matrix: **WATER**

Client sample ID

MW17B

Client sampling date / time

16-MAR-2011 13:30

Compound	CAS Number	LOR	Unit	ES1105615-011	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser - Continued								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.11	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.11	----	----	----	----
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	0.6	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.01	----	----	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	21.6	----	----	----	----
^ Total Cations	----	0.01	meq/L	21.6	----	----	----	----
^ Ionic Balance	----	0.01	%	0.05	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1105506	Page	: 1 of 7
Client	: ACIRL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 1698	Date Samples Received	: 16-MAR-2011
C-O-C number	: ----	Issue Date	: 24-MAR-2011
Sampler	: BP	No. of samples received	: 7
Site	: ----	No. of samples analysed	: 7
Quote number	: SY/261/10		

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Spectroscopist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics

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A Campbell Brothers Limited Company



General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020: LCS recoveries for some elements fall outside ALS Dynamic Control Limit. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
- **EK071: It has been noted that RP is greater than Tp for samples MW3 and MW4 however this difference is within the limits of experimental variation.**



Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				MW3	MW4	MW5	MW9	MW14
				15-MAR-2011 12:20	15-MAR-2011 13:40	15-MAR-2011 13:20	15-MAR-2011 11:10	15-MAR-2011 10:30
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	ES1105506-001	ES1105506-002	ES1105506-003	ES1105506-004	ES1105506-005
EA005: pH								
pH Value	----	0.01	pH Unit	6.52	7.41	7.00	7.22	6.98
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2	874	2390	601	1020
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	410	309	285	462
Total Alkalinity as CaCO3	----	1	mg/L	<1	410	309	285	462
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	9	45	36	20
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	<1	78	627	37	73
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	68	179	53	92
Magnesium	7439-95-4	1	mg/L	<1	43	106	32	63
Sodium	7440-23-5	1	mg/L	<1	94	162	58	72
Potassium	7440-09-7	1	mg/L	<1	2	<1	<1	1
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.007	0.092	0.013	0.012	0.021
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	0.001	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.003	<0.001
Copper	7440-50-8	0.001	mg/L	0.003	0.035	0.002	0.003	0.005
Lead	7439-92-1	0.001	mg/L	0.009	0.010	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.080	0.051	0.010	0.010	0.040
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	<0.001	0.002	0.003
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.02	0.02	0.02	0.01
Zinc	7440-66-6	0.005	mg/L	30.7	0.122	<0.005	<0.005	0.010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055A-NH4: Ammonium as N by FIA								
Ammonium as N	----	0.01	mg/L	<0.01	0.10	0.01	<0.01	<0.01
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								



Analytical Results

Sub-Matrix: WATER

Client sample ID
 Client sampling date / time

Compound	CAS Number	LOR	Unit	MW3	MW4	MW5	MW9	MW14
				15-MAR-2011 12:20	15-MAR-2011 13:40	15-MAR-2011 13:20	15-MAR-2011 11:10	15-MAR-2011 10:30
				ES1105506-001	ES1105506-002	ES1105506-003	ES1105506-004	ES1105506-005
EK058G: Nitrate as N by Discrete Analyser - Continued								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.28	1.27	2.42	3.14	13.4
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.28	1.27	2.42	3.14	13.4
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.8	0.5	1.8	4.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.5	2.1	2.9	4.9	17.5
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	0.03	0.12
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.02	0.02	<0.01	<0.01	<0.01
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	<0.01	10.6	24.8	7.50	11.7
^ Total Cations	----	0.01	meq/L	<0.01	11.0	24.7	7.77	12.9
^ Ionic Balance	----	0.01	%	----	2.19	0.22	1.76	4.81
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	111	129	131	115	120
Toluene-D8	2037-26-5	0.1	%	112	112	102	107	110
4-Bromofluorobenzene	460-00-4	0.1	%	106	104	102	100	103



Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				P1	P2	---	---	---
				15-MAR-2011 11:50	15-MAR-2011 12:50	---	---	---
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	ES1105506-006	ES1105506-007	---	---	---
EA005: pH								
pH Value	----	0.01	pH Unit	6.58	7.25	---	---	---
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1410	889	---	---	---
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	---	---	---
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	---	---	---
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	294	308	---	---	---
Total Alkalinity as CaCO3	----	1	mg/L	294	308	---	---	---
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	86	64	---	---	---
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	299	109	---	---	---
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	293	70	---	---	---
Magnesium	7439-95-4	1	mg/L	11	42	---	---	---
Sodium	7440-23-5	1	mg/L	43	91	---	---	---
Potassium	7440-09-7	1	mg/L	6	<1	---	---	---
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	---	---	---
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	---	---	---
Barium	7440-39-3	0.001	mg/L	0.089	0.024	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	---	---	---
Cobalt	7440-48-4	0.001	mg/L	0.002	0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	0.006	0.024	---	---	---
Lead	7439-92-1	0.001	mg/L	0.012	0.036	---	---	---
Manganese	7439-96-5	0.001	mg/L	1.04	0.065	---	---	---
Nickel	7440-02-0	0.001	mg/L	0.007	0.003	---	---	---
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.03	---	---	---
Zinc	7440-66-6	0.005	mg/L	0.030	0.072	---	---	---
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	---	---	---
EK055A-NH4: Ammonium as N by FIA								
Ammonium as N	----	0.01	mg/L	0.12	0.02	---	---	---
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								



Analytical Results

Sub-Matrix: **WATER**

				Client sample ID				
				P1	P2	---	---	---
				15-MAR-2011 11:50	15-MAR-2011 12:50	---	---	---
				Client sampling date / time	Client sampling date / time	---	---	---
Compound	CAS Number	LOR	Unit	ES1105506-006	ES1105506-007	---	---	---
EK058G: Nitrate as N by Discrete Analyser - Continued								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.03	3.36	---	---	---
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	3.36	---	---	---
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1.8	---	---	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	5.2	---	---	---
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	0.09	---	---	---
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	---	---	---
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	16.1	10.6	---	---	---
^ Total Cations	----	0.01	meq/L	17.6	11.0	---	---	---
^ Ionic Balance	----	0.01	%	4.51	1.86	---	---	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	<50	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	<100	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	<50	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	---	---	---
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	130	129	---	---	---
Toluene-D8	2037-26-5	0.1	%	101	107	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	99.0	103	---	---	---



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



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1108036	Page	: 1 of 4
Client	: ACIRL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: Unit 2, Lot 6 Industrial Close MUSWELLBROOK NSW, AUSTRALIA 2333	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 6542 2400	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6543 4121	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 15-APR-2011
C-O-C number	: ----	Issue Date	: 27-APR-2011
Sampler	: AW	No. of samples received	: 1
Site	: ----	No. of samples analysed	: 1
Quote number	: SY/261/10		

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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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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Wisam.Marassa	Metals Coordinator	Sydney Inorganics

Environmental Division Sydney
Part of the **ALS Laboratory Group**

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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



Analytical Results

Sub-Matrix: **WATER**

			Client sample ID	MW 7				
			Client sampling date / time	13-APR-2011 15:00				
Compound	CAS Number	LOR	Unit	ES1108036-001				
EA005: pH								
pH Value		0.01	pH Unit	7.29				
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C		1	µS/cm	565				
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1				
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1				
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	181				
Total Alkalinity as CaCO3		1	mg/L	181				
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	32				
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	50				
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	41				
Magnesium	7439-95-4	1	mg/L	19				
Sodium	7440-23-5	1	mg/L	48				
Potassium	7440-09-7	1	mg/L	<1				
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001				
Beryllium	7440-41-7	0.001	mg/L	<0.001				
Barium	7440-39-3	0.001	mg/L	0.013				
Cadmium	7440-43-9	0.0001	mg/L	0.0001				
Chromium	7440-47-3	0.001	mg/L	<0.001				
Cobalt	7440-48-4	0.001	mg/L	<0.001				
Copper	7440-50-8	0.001	mg/L	<0.001				
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	1.08				
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N		0.01	mg/L	1.08				
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N		0.1	mg/L	0.6				
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N		0.1	mg/L	1.7				
EK067G: Total Phosphorus as P by Discrete Analyser								



Analytical Results

Sub-Matrix: **WATER**

			Client sample ID	MW 7				
			Client sampling date / time	13-APR-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1108036-001	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	0.10	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.05	----	----	----	----
EN055: Ionic Balance								
^ Total Anions	----	0.01	meq/L	5.69	----	----	----	----
^ Total Cations	----	0.01	meq/L	5.71	----	----	----	----
^ Ionic Balance	----	0.01	%	0.19	----	----	----	----

Appendix 6 – Surface Water Monitoring Data.



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1104647	Page	: 1 of 5
Client	: ACIRL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Charlie Pierce
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.enviro.services@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	: 1662	Date Samples Received	: 04-MAR-2011
C-O-C number	: ----	Issue Date	: 11-MAR-2011
Sampler	: BP	No. of samples received	: 14
Site	: ----	No. of samples analysed	: 14
Quote number	: SY/261/10		

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- Analytical Results



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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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics

Environmental Division Sydney
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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.

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	SB2	SB6	SB9	SB10	VWD1
				Client sampling date / time	03-MAR-2011 13:10	03-MAR-2011 12:40	03-MAR-2011 12:10	03-MAR-2011 11:50	03-MAR-2011 13:20
Compound	CAS Number	LOR	Unit		ES1104647-001	ES1104647-002	ES1104647-003	ES1104647-004	ES1104647-005
EA005: pH									
pH Value	----	0.01	pH Unit		8.06	7.76	8.00	7.99	8.43
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		388	434	149	176	808
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		37	20	30	153	19
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.24	0.01	<0.01	0.02
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		0.02	9.94	<0.01	0.17	0.81
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	10.2	0.02	0.17	0.84
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.1	3.1	<0.1	<0.1	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.1	13.3	<0.1	0.2	0.8
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	0.05	<0.01	0.07	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	<0.01	0.05	<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				
				VWD2	BGD	QCU	QCD	WCU
				03-MAR-2011 12:30	03-MAR-2011 10:50	03-MAR-2011 11:10	03-MAR-2011 11:30	03-MAR-2011 10:20
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	ES1104647-006	ES1104647-007	ES1104647-008	ES1104647-009	ES1104647-010
EA005: pH								
pH Value	----	0.01	pH Unit	8.81	8.35	7.33	7.75	7.62
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	659	408	493	729	1170
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	51	173	6	17	----
Suspended Solids (SS)	----	5	mg/L	----	----	----	----	15
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.02	<0.01	<0.01	<0.01	0.03
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.02	0.07	0.54	0.12	3.38
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.07	0.54	0.12	3.41
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1.6	<0.1	0.1	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	1.7	0.5	0.2	3.8
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.55	0.09	0.22	0.07
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	0.29	0.08	0.08	0.03
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER

				Client sample ID	WCD	200MLD	SD4	SD5	----
				Client sampling date / time	03-MAR-2011 10:00	03-MAR-2011 12:50	03-MAR-2011 13:40	03-MAR-2011 14:00	----
Compound	CAS Number	LOR	Unit		ES1104647-011	ES1104647-012	ES1104647-013	ES1104647-014	----
EA005: pH									
pH Value	----	0.01	pH Unit		8.23	8.31	8.33	9.55	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1050	830	220	250	----
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		20	11	15	36	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	0.02	<0.01	0.01	----
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		0.05	0.92	0.03	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.05	0.94	0.03	0.02	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.1	0.4	0.6	1.0	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.2	1.3	0.6	1.0	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.23	0.09	0.78	0.24	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.14	<0.01	0.76	0.20	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----

Appendix 7 – Surface Water Discharge Monitoring Data



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1104822	Page	: 1 of 3
Client	: ACIRL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Charlie Pierce
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.enviro.services@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUND WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 08-MAR-2011
Sampler	: AW	Issue Date	: 11-MAR-2011
Site	: ----		
Quote number	: SY/261/10	No. of samples received	: 4
		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.

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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Sarah Millington	Senior Inorganic Chemist	Inorganics

Environmental Division Sydney
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LOR = Limit of reporting

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	SB2	SB9	QCU	QCD	----
				Client sampling date / time	07-MAR-2011 09:30	07-MAR-2011 09:00	07-MAR-2011 09:45	07-MAR-2011 10:00	----
Compound	CAS Number	LOR	Unit		ES1104822-001	ES1104822-002	ES1104822-003	ES1104822-004	----
EA005: pH									
pH Value	----	0.01	pH Unit		7.95	7.81	7.04	7.77	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		333	148	414	686	----
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		18	15	6	17	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		0.02	0.03	0.57	0.12	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.03	0.57	0.12	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	1.4	0.4	0.2	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.3	1.4	1.0	0.3	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	0.14	0.15	0.20	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	0.05	0.08	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1107777	Page	: 1 of 3
Client	: ACIRL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK DISCHARGE SAMPLES	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 13-APR-2011
Sampler	: BP	Issue Date	: 15-APR-2011
Site	: ----		
Quote number	: SY/261/10	No. of samples received	: 4
		No. of samples analysed	: 4

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Signatories

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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

Environmental Division Sydney
Part of the **ALS Laboratory Group**

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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	QCU	QCD	SB2	SB9	----
				Client sampling date / time	12-APR-2011 10:00	12-APR-2011 10:15	12-APR-2011 07:00	12-APR-2011 09:30	----
Compound	CAS Number	LOR	Unit		ES1107777-001	ES1107777-002	ES1107777-003	ES1107777-004	----
EA005: pH									
pH Value	----	0.01	pH Unit		7.37	7.93	7.90	8.13	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		509	839	444	528	----
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		31	8	34	20	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	----	0.01	mg/L		<0.01	<0.01	0.03	0.12	----
EK058G: Nitrate as N by Discrete Analyser									
^ Nitrate as N	14797-55-8	0.01	mg/L		0.45	0.10	0.05	5.87	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.8	0.5	0.8	9.0	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.10	0.20	0.08	0.04	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	----	0.01	mg/L		0.05	0.07	0.04	0.02	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----