Werris Creek Coal Community Consultative Committee

Twenty Second Meeting of the Committee

Training Room, Werris Creek Coal Mine

10am Tuesday 20th March 2010

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 10am and had a pit tour of the mine site prior to the meeting including an inspection of the Water Discharge Incident site.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative arrived at 11am); Roslyn Marr (Community Representative); Geoff Dunn (Community Representative arrived at 10:45am); Nigel Wood (Whitehaven Coal Operations Manager and Acting WCC Project Manager); Andrew Wright (WCC Environmental Officer and Minute Taker); Col Stewart (Liverpool Plains Shire Council - Councillor); Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services).

Apologies: Jill Coleman (Community Representative)

Gae Swain was appointed by the Department of Planning and Infrastructure as the Independent Chairperson on 1st February 2012 replacing Ron Short who retired from the Committee last year. Geoff Dunn and Ros Marr were appointed by the Department of Planning and Infrastructure as Community Representatives on 7th March 2012 replacing Chris Holley who also retired from the Committee last year.

Nigel Wood commenced as Whitehaven Coal's Operations Manager on 5th March 2012 and will be Acting as the WCC Project Manager for an interim period until a new Project Manager is appointed. The previous Project Manager Michael Post accepted another role within Whitehaven Coal based out of the Gunnedah office and the previous Manager of Mining Engineering Des George retired.

Given that the CCC had a number of new members and stakeholders at this meeting, Gae Swain (Chairperson) asked the meeting attendees to introduce themselves and outline their reason for being involved with the WCC CCC.

2. New Matters for Discussion under General Business

Andrew Wright asked to add an agenda item to discuss the Water Discharge Incident.

3. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

4. Minutes of Previous Meeting

Minutes of the previous meeting 24th November 2011 were accepted as true and accurate representation of business conducted on that day.

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

5. Declaration of Pecuniary or other interests

Noel Taylor raised that his son is an employee of Whitehaven Coal and works at Werris Creek Coal. Gae Swain (Chairperson) said that she did not believe that this should preclude him from the CCC, however asked for Noel to raise this at each meeting.

6. Environmental Monitoring Report: November, December 2011 and January 2012

Meteorology – November wind direction was predominantly a northerly, while December and January were dominated by south easterly winds. A total of 114.2mm of rain fell for the three month period.

Air Quality – All dust deposition gauge, PM10 and TSP dust results were within compliance limits for November, December and January. The committee discussed Quirindi Train Dust Deposition monitoring being undertaken by WCC. No trend in train dust fall out has been identified to date since monitoring commenced in October 2011. There were two dust related complaints for the period. One complaint was raised at the last CCC meeting regarding dust on a complainant's outdoor furniture, which when investigated identified that a paddock <50m from their residence had recently been plowed and was the likely source of dust. Another complainant with asthma enquired as to what measures were being undertaken to control dust because they thought that this year was very dusty. On investigation, WCC had doubled its water cart capacity coming into the summer period to improve dust control during the hottest part of the year.

Noise – There were no noise exceedances during November, December and January. There were six complaints for noise impacts from WCC operations, with five complaints from a Werris Creek resident and one complaint from a Quipolly resident. Of the five Werris Creek noise complaints at least three of these complaints were in relation to noise from the Werris Creek Rail Yard and not from the Rail Load Out Facility. WCC does not have any involvement with Werris Creek Rail Yard. WCC will take delivery of a new D10T dozer with noise attenuated tracks to replace a D9R dozer, which should mitigate dozer track noise emissions from the Rail Load Out Facility.

Blasting – There were 21 blasts during the period. There were five complaints from three different blasts undertaken by WCC and another blast complaint that did not correlate with an actual blast. The blast on the 4th November 2011 resulted in a large cloud of fume being generated which took a long time to disperse due to the calm conditions on the day of the blast. The fume was generated due to the incomplete combustion of the explosives from the cracked ground adjacent to the former underground workings. Andrew Wright advised the committee that the EPA had subsequently issued WCC with a Penalty Infringement Notice for $1500 for the fume event. The blasts on 20th and 25th January resulted in higher than normal vibration and overpressure levels respectively, however all results including the Werris Creek monitor were well within compliance.

Groundwater – Groundwater levels have continued to fall over 2011 since the record high levels due to the very wet conditions at the end of 2010 and represent the groundwater aquifer returning back to normal conditions. Mining continues not to impact on groundwater aquifers.

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

Complaints – There were 15 complaints received during the period which is a reduction compared to the previous 3 month period which had 39 complaints received. In total there were 6 issues related to blasting; 6 issues related to noise, four issues with lights and two issues with dust. There were nine different complainants during the period with 6 complaints from one Werris Creek resident.

Motion moved to accept the Environmental Monitoring Report for November, December 2011 and January 2012.

Moved: Col Stewart. Seconded: Ros Marr. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Consultation with CCC

Andrew Wright explained that during the Environmental Assessment process for the WCC Life Of Mine Project, Whitehaven Coal and LPSC had negotiated that WCC would establish a CEF. As part of the Project Approval 10_0059, WCC had to consult with LPSC and CCC over the establishment of a CEF for $300,000 over 6 years of which $^2/_3$ had to be spent in Werris Creek. Prior to the meeting, LPSC had proposed a range of projects for the CEF which had formed the basis of the "Werris Creek Coal Community Enhancement Fund March 2012" document that was mailed to the CCC.

The CCC discussed the CEF and thought that both LPSC and Whitehaven Coal should be commended on establishing the CEF. Ros Marr questioned why the Werris Creek proportion of the CEF was being largely spent on a skate park, disabled chairlift for the Railway Museum and a water feature for the pool that would only benefit specific elements of the community and not benefit the entire Werris Creek community. Col Stewart said that Council had received a number of petitions from the youth of Werris Creek and various requests from the community during annual funding programs for a skate park in Werris Creek. Ros Marr asked where was the skate park going to be built and could the Council inspect the poor state of the infrastructure and playground equipment in the main park in Single Street and whether the skate park proposal could also incorporate an upgrade to the playground equipment. Ron van Katwyk said that the skate park location had not been finalised and that because a development application would need to be lodged, this would give the Werris Creek community an opportunity to comment on the proposal. Col Stewart said that supervision of the park and open view to the public would be a key consideration for the location of the skate park. Lindsay Bridge raised that WCC should ensure that they get publicity for all the projects associated with the CEF. Andrew Wright said that part of the agreement with Council meant that Whitehaven Coal would receive recognition for funding of CEF projects. Ros Marr said that the CEF had her in principle support but would like the CCC to be able to review the CEF annually. Andrew Wright said that the CEF document included a provision that WCC, Council and the CCC would review the projects funded by CEF annually and amend as required. The first CCC meeting each calendar year would serve as the opportunity for the CCC to have their input into the process.

Gae Swain (Chairperson) asked if the committee would move a motion that would endorse the Chairperson to write a letter to WCC on behalf of the CCC as evidence of consultation over the CEF.

Moved: Ros Marr. Seconded: Lindsay Bridge. Motion Carried.

b. Rehabilitation Management Plan Consultation with CCC and Biodiversity Offset

Andrew Wright explained that as part of the Project Approval 10_0059, WCC had to consult with CCC regarding its Rehabilitation Management Plan. WCC had mailed out to the CCC prior to the meeting an excerpt from the approved Mining Operations Plan Section 4 "Proposed Rehabilitation

Activities" and Section 5 "Final Rehabilitation" as well as a letter from the Department of Resources and Energy endorsing the WCC Rehabilitation Management Plan pending consultation including with the CCC.

The CCC discussed WCC proposal for rehabilitation management which is committing to restoring Grassy White Box Woodland both on post mining rehabilitation areas as well as across the broader Biodiversity Offset Area. Ron van Katwyk asked about the potential for grazing, the time taken to the completion of the rehabilitation and the social impact on the community at the closure of the mine in approximately 20 years time. Andrew Wright mentioned that because of commitments made in the Environmental Assessment that no grazing could be sustained if WCC was to restore a Grassy White Box Woodland vegetation community; however that grazing or cropping would be continued on the land rehabilitated at the Rail Load Out Facility because it adjoins existing agricultural land. As agreed with the government departments, WCC committed to establishing completion criteria which means that a certain standard or quality of rehabilitation must be reached before the company's could apply to the Department to sign off on its rehabilitation liability. While no time period is specified, a drought could mean that WCC would need to manage and maintain the rehabilitation and biodiversity offset areas for greater than 20 years, while if a number of good growing seasons were to occur then it might take less than 20 years to reach the completion criteria. Andrew Wright mentioned that WCC has committed to undertaking a social impact assessment as part of mine closure planning within five years of the end of mine life; however based on the diverse base of employment and growth of other mining operations within the Shire would mean that any impact would be minimal to the local community.

Gae Swain (Chairperson) asked if the committee would move a motion that would endorse the Chairperson to write a letter to WCC on behalf of the CCC as evidence of consultation over the Rehabilitation Management Plan.

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

c. "History of Coal Mining at Werris Creek" Booklet

Andrew Wright addressed the committee to say that the CCC member's hard endeavors' over the last 2 years have been rewarded with the completion of the "History of Coal Mining at Werris Creek" Booklet. The CCC members were presented with a final copy of the booklet with Andrew Wright indicating that a hard cover printed copy will be posted shortly. The committee generally commented that they were pleased with the final product; that the booklet was well presented and easy to read.

d. Water Discharge Incident

Andrew Wright briefed the committee on a Water Discharge Incident that had occurred on 11th March 2012 from a void water dam onsite resulting in a breach of the dam's spillway resulting in the discharge of approximately 30ML of void water offsite flowing into Quipolly Creek. As part of the site tour prior to the meeting, CCC members were shown the location of the Water Discharge Incident and what actions were taken on the day to contain the discharge and notify neighbours downstream. Water quality monitoring results found that the void water had not significantly impacted downstream creek water quality and that the water was still within ANZECC Water Quality Guidelines for Livestock Watering and Agricultural Irrigation and safe for livestock and humans to be in contact with the water. Andrew Wright mentioned that WCC was still undertaking an investigation into the incident and was also fully cooperating with the Environmental Protection Authority. Noel Taylor raised that he thought that the order in which the neighbours were notified could be improved and Andrew Wright said that he agreed.

Meeting Closed 12:30pm.

Next Meeting was scheduled for Thursday 31st May 2012.

Copy to:

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

Ron Van Katwyk	LPSC	Nigel Wood	Whitehaven Coal
Cr Col Stewart	LPSC	Brian Cullen	Whitehaven Coal
Paul Freeman	DoPI	Danny Young	Whitehaven Coal
Michael Lloyd	DRE	Andrew Wright	Werris Creek Coal
Simon Lund	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

November and December 2011, January 2012

This Environmental Monitoring Report covers the period 1st November 2011 to 31st January 2012 for the Werris Creek No.2 Coal Mine Community Consultative Committee.

The report includes environmental monitoring results from the on-site Weather Station, Air Quality, Noise, Blasting, Surface Water, Groundwater and Discharge Water Quality together with any community complaints received and general details on site environmental matters.

Note: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

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APPENDICES

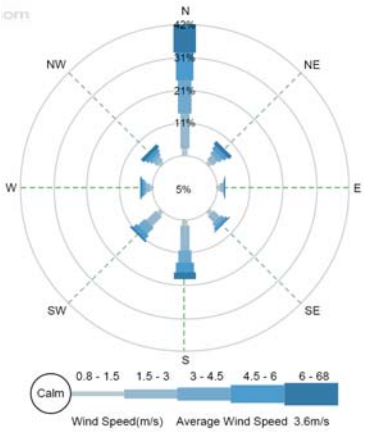
1.0 METEOROLOGY

1.1 WEATHER STATION

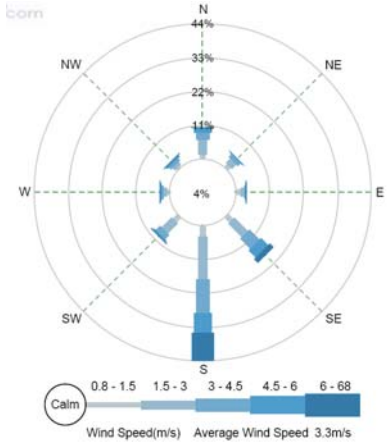
WCC collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring trailer located at "Kyooma" for the majority of the period. The following table summarises temperature, inversion and rainfall data for the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

Month	Temp (°C) Trailer			Temp (°C) 10m Onsite			Lapse Rate (°C/100m)		Rainfall (mm)		
	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Trailer	Annual*
November	11.2	22.3	35.9	13.7	22.6	35.5	-4.8	+1.3	199.4	88.0	515.8
December	9.7	18.8	27.8	9.3	19.0	28.8	-5.9	+1.3	58.4	39.0	574.2
January	11.0	22.6	33.4	11.9	22.5	33.3	-5.3	+2.5	55.8	43.8	630.0

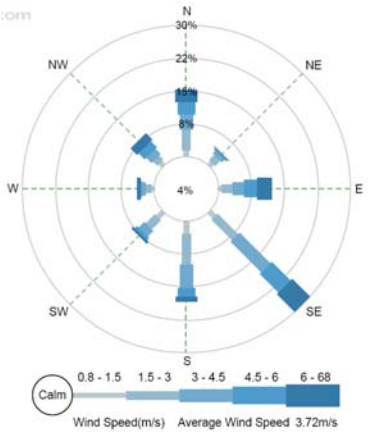
* Annual cumulative total since April 2011 for onsite Weather Station



November 2011



December 2011



January 2012

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10)

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

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

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

2.1.1 Monitoring Data Results

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

Monitor Location	November (µg/m^3)	December (µg/m^3)	January (µg/m^3)	Annual (µg/m^3)	Criteria (µg/m^3)
WCHV1	17.0	10.3	9.3	18.7	30
WCHV2	16.6	8.1	11.3	15.4	30
WCHV3	15.8	8.8	15.3	20.2	30
WCHV4	20.4	8.6	12.3	12.6	30
WCHV5	35.8	20.7	38.4	49.8	90

2.1.2 Discussion - Compliance / Non Compliance

The daily and monthly averages for November, December and January were all within the compliance limits.

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

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

2.2 WERRIS CREEK MINE DEPOSITED DUST

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

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

Sampling is scheduled monthly in accordance with DECCW guidelines and results are reported as grams per metre squared per month (g/m^2/month).

2.2.1 Monitoring Data Results

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

Monitor Location	November (g/m^2/month)	December (g/m^2/month)	January (g/m^2/month)	Annual (g/m^2/month)	Criteria (g/m^2/month)
WC2	3.3	1.1	1.1	1.5	4.0
WC5	1.2	0.6	0.5	1.0	4.0
WC7	0.9	0.7	0.5	0.6	4.0
WC8	1.2	1.0	0.4	0.9	4.0
WC9	1.7	0.3	0.9	0.6	4.0
WC10	0.8	c2.2	1.1	0.8	4.0
WC11	2.2	3.5	1.5	1.4	4.0

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

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge results were within the monthly criteria of 4.0g/m^2/month.

2.3 QUIRINDI TRAIN DUST DEPOSITION

2.3.1 Monitoring Data Results

The results for the last three months are provided in the table below; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	November 2011		December 2011		January 2012		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.4	10	0.8	10	1.5	50	1.2
DDW20	1.6	25	0.8	5	1.5	20	1.2
DDW13	2.0	35	0.9	25	3.4	20	1.7
Train Line							
DDE13	0.9	5	0.7	10	0.5	20	0.8
DDE20	1.2	5	0.9	5	0.3	30	1.6
DDE30	2.6	5	1.2	30	0.5	40	1.3

2.3.2 Discussion - Compliance / Non Compliance

Werris Creek Coal committed to monitoring train dust emissions through Quirindi as part of the Life of Mine Project. The train dust monitoring trial commenced in October 2011 with three dust gauges located on either side of the train line near Galbraith's IGA in Quirindi with the dust gauges spaced at 13m, 20m and 30m from the line. To date, no clear pattern of dust deposition has been identified from the monitoring results.

2.4 AIR QUALITY COMPLAINTS

There were two dust related complaints for the period that did not specify specific instantaneous. One complaint was raised at the last CCC meeting regarding dust on a complainants outdoor furniture, which when investigated identified that a paddock <50m from their residence had recently been plowed and was the likely source of dust. Another complainant with asthma enquired as to what measures were being undertaken to control dust because they thought that this year was very dusty. On investigation, Werris Creek Coal had doubled its water cart capacity coming into the summer period to improve dust control during the hottest part of the year. 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).

3.1.1 Monitoring Data Results

The results for the last three months attended noise monitoring are outlined below for noise levels from Werris Creek Coal operations only (not ambient noise); however see Monthly Noise Monitoring Reports under **Appendix 4** for more detail.

Wednesday 30th November and Thursday 1st December 2011

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening dB(A) $L_{eq\ 15min}$	Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
"Rosehill" R5	Inaudible#	35	33	Inaudible	35
West Quipolly (R7, R8*, R9 & R22)	Inaudible#	37/36[1]	30	Barely Audible	37/36[1]
Central Quipolly (R10*, R11*)	Inaudible#	39	28	<25	39
"Hazeldene" R24	Inaudible#	37	Inaudible	Inaudible	37
"Railway Cottage" R12	Inaudible#	38	Inaudible#	25	38
"Talavera" R96	Inaudible#	38	33	27	37
Davidson	Inaudible#		30	29	35
"Kyooma" R98*	Inaudible#	36	30	36	36
Kurrara St, WC	Inaudible#	35	25	<25	35
Coronation Ave, WC	Inaudible#	35	Inaudible	Inaudible	35
"Greenslopes" R14	25	39	35	39	39
South St, WC (R20*, R21*)	Inaudible#	39	Inaudible	Inaudible	37
West St, WC (R103, R105, R3, R102, R101)	Inaudible#	35	Inaudible	Inaudible	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

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

Wednesday 14th December 2011

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening dB(A) $L_{eq\ 15min}$	Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
"Rosehill" R5	Inaudible#	35	Inaudible#	Inaudible	35
West Quipolly (R7, R8*, R9 & R22)	Inaudible	37/36[1]	Inaudible#	35	37/36[1]
Central Quipolly (R10*, R11*)	Inaudible#	39	Inaudible#	<25	39
"Hazeldene" R24	Inaudible#	37	Inaudible#	Inaudible	37
"Railway Cottage" R12	Inaudible#	38	Inaudible#	Inaudible	38
Davison	30#	35	25#	<20	35
"Talavera" R96	33#	38	30#	Inaudible#	37
"Kyooma" R98*	35#	36	33#	<20	36
Kurrara St, WC	Inaudible#	35	Inaudible#	26	35
Coronation Ave, WC	Inaudible#	35	Inaudible#	Inaudible	35
"Greenslopes" R14	35	39	33#	34	39
South St, WC (R20*, R21*)	Inaudible#	39	37#	37	37
West St, WC (R103, R105, R3, R102, R101)	Inaudible	35	Inaudible#	Inaudible#	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

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

Tuesday 24th January 2012

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening dB(A) $L_{eq\ 15min}$	Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
"Rosehill" R5	30#	35	Faintly audible#	25#	35
West Quipolly (R7, R8*, R9 & R22)	Inaudible#	37/36[1]	Inaudible#	32#	37/36[1]
Central Quipolly (R10*, R11*)	Inaudible#	39	Inaudible#	30#	39
"Hazeldene" R24	Inaudible#	37	Inaudible	25#	37
"Railway Cottage" R12	Inaudible#	38	Inaudible	Inaudible	38
Davison	Inaudible#	35	Faintly audible#	<20#	35
"Talavera" R96	25#	38	20#	Inaudible	37
"Kyooma" R98*	<20#	36	<20#	<20#	36
Kurrara St, WC	Inaudible#	35	Inaudible#	Inaudible#	35
Coronation Ave, WC	Inaudible#	35	Inaudible#	Inaudible#	35
South St, WC (R20*, R21*)	Inaudible#	39	Inaudible	30	37
West St, WC (R103, R105, R3, R102, R101)	Inaudible#	35	Inaudible#	Inaudible	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

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

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during November and December 2011 and January 2012.

3.2 NOISE COMPLAINTS

There were six complaints for noise impacts from Werris Creek Coal operations, with five complaints from a Werris Creek resident and one complaint from a Quipolly resident. Of the five Werris Creek noise complaints at least three of these complaints were in relation to noise from the Werris Creek Rail Yard and not from the rail load out facility. Werris Creek Coal does not have any involvement with Werris Creek Rail Yard.. Werris Creek Coal will take delivery of a new D10T dozer with noise attenuated tracks to replace a D9R dozer, which should reduce potential dozer track related noise emissions from the rail load out facility. Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring is undertaken at "Glenala", "Talavera", "Werris Creek", "Tonsley Park", "Greenslopes" and "Cintra". Compliance limits for blasting overpressure is 115dBL (and up to 120dBL for only 5% of blasts) and vibration is 5mm/s (and up to 10mm/s for only 5% of blasts). During the period a total of 21 blasts were fired by the blasting contractor, Orica Mining Services.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

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

November	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.65	104.1	0.94	100.0	1.79	102.4	0.29	100.7	<0.37	<109.9
Monthly Maximum	NM	NM	1.44	110.2	1.22	111.5	2.27	107.3	0.44	113.2	<0.37	<109.9
Annual Average	<0.37	<109.9	0.68	101.5	0.79	101.1	1.24	106.7	0.45	100.4	0.56	102.5
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	3.6%	0%	0%	0%	4.3%	0%	0%	0%	0%
# Triggered this Month	0/0		5/7		5/7		3/3		4/7		1/4	

December	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.66	107.9	0.67	102.5	0.90	106.5	0.32	100.7	<0.37	<109.9
Monthly Maximum	NM	NM	1.12	112.8	1.37	110.3	1.17	114.6	0.37	106.6	<0.37	<109.9
Annual Average	<0.37	<109.9	0.67	102.2	0.77	101.3	1.20	106.6	0.43	100.5	0.56	102.5
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	3.2%	0%	0%	0%	3.8%	0%	0%	0%	0%
# Triggered this Month	0/0		8/8		8/8		6/6		3/8		0/2	

January	"Glenala"		"Greenslopes"		"Tonsley Park"		"Cintra"*		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.88	105.5	0.92	102.2	1.13	105.4	0.70	104.1	<0.37	<109.9
Monthly Maximum	NM	NM	1.14	112.8	1.62	111.0	1.97	111.0	1.45	106.3	<0.37	<109.9
Annual Average	<0.37	<109.9	0.69	102.5	0.79	101.4	1.19	106.5	0.47	101.0	0.56	102.5
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	2.9%	0%	0%	0%	3.6%	0%	0%	0%	0%
# Triggered this Month	0/0		6/6		5/6		3/3		4/6		0/3	

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

4.1.2 Discussion - Compliance / Non Compliance

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

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 five complaints from three different blasts undertaken by Werris Creek Coal and another blast complaint that did not correlate with an actual blast. The blast on the 4th November 2011 resulted in a large cloud of fume being generated which took a long time to disperse due to the calm conditions on the day of the blast. The fume was generated due to the incomplete combustion of the explosives from the cracked ground adjacent to the former underground workings. The blasts on 20th and 25th January resulted in higher than normal vibration and overpressure levels respectively, however all results including the Werris Creek monitor were well within compliance. Specific actions taken for all blasting complaints are outlined in **Section 6**.

5.0 WATER

The quarterly groundwater quality monitoring was undertaken on 13th and 14th December 2011. Quarterly surface water monitoring was undertaken on 23rd November 2011. There were seven 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 6**.

Site	pH	EC	Dip	Change from Previous Quarter
Quipolly Creek Alluvium				
MW7	7.56	637	4.28	Groundwater level dropped 0.01m, pH rose 0.20 and EC increased 34.
MW12	7.62	453	7.95	Groundwater level dropped 1.82m, pH rose 0.10 and EC increased 15.
Werris Basalt				
MW5	7.95	1640	7.81	Groundwater level dropped 0.15m, pH rose 0.15 and EC decreased 90.
MW14	7.89	1180	15.49	Groundwater level rose 0.11m, pH rose 0.68 and EC decreased 160.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is distance in meters from top of bore to groundwater surface

5.1.2 Discussion - Compliance / Non Compliance

Groundwater levels have continued to fall over 2011 since the record high levels due to the very wet conditions at the end of 2010 and represent the groundwater aquifer returning back to normal conditions. Mining continues not to impact on groundwater aquifers.

5.2 SURFACE WATER

Surface water monitoring is undertaken at key dirty and void water dams to monitor for potential contamination issues due to mining while the water is still onsite.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with detailed monitoring data outlined in **Appendix 7**.

Site	pH	EC	TSS	O&G	Change
ONSITE					
SB2	8.24	626	18	<5	Not Sampled in September
SB9	7.95	622	6	<5	pH dropped 1.24, EC dropped 59, TSS dropped 1, O&G no change.
SB10	7.81	383	64	<5	pH dropped 0.19, EC dropped 33, TSS dropped 6, O&G no change.
OFFSITE					
QCU	7.79	438	24	<5	pH rose 0.03, EC dropped 4, TSS rose 6, O&G no change.
QCD	8.02	868	15	<5	pH dropped 0.03, EC dropped 1, TSS dropped 1, O&G no change.
WCU	8.02	1360	50	<5	pH rose 0.01, EC dropped 50, TSS rose 45, O&G no change.
WCD	8.38	1310	32	<5	pH dropped 0.03, EC dropped 60, TSS rose 6, O&G negligible change.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.2.2 Discussion - Compliance / Non Compliance

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

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were five wet weather discharge events and two controlled discharge events during the period. A summary of discharge monitoring results is provided below with detailed monitoring data outlined in **Appendix 8**.

Date	Site	pH	EC	TSS	O&G	Compliance	Type
25/11/2011	**SB2**	7.80	407	34	<5	Water quality within compliance	Wet Weather
25/11/2011	**SB9**	7.42	493	40	<5	Water quality within compliance	Wet Weather
26/11/2011	**SB10**	7.60	342	106	<5	TSS >50mg/L however rainfall >39.2mm & in compliance	Wet Weather
13/12/2011	**SB2**	7.92	464	<5	<5	Water quality within compliance	Wet Weather
13/12/2011	**SB9**	7.68	224	18	<5	Water quality within compliance	Wet Weather
20/12/2011	**SB2**	7.98	468	12	<5	Water quality within compliance	Controlled
20/12/2011	**SB9**	7.67	214	14	<5	Water quality within compliance	Controlled
Criteria		**8.5**	**N/A**	**50**	**10**		

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.3.2 Discussion - Compliance / Non Compliance

The wet weather discharge from SB10 on 26/11/2011 recorded high TSS (sediment), however as greater than 39.2mm of rain had fallen then TSS limits in accordance with EPL 12290 conditions do not apply. 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 15 complaints received during the period with the details summarized below. In total there were 6 issues related to blasting; 6 issues related to noise, four issues with lights and two issues with dust. There were nine different complainants during the period with 6 complaints from one Werris Creek resident.

#	Date	Complainant	Complaint	Investigation	Action Taken
91	4/11/2011 9:19pm	Y (Werris Creek)/OEH	Complainant stated that there was a "big blast on 4th November 2011 after 1pm with a lot of orange smoke".	Blast #71 (S12-S13_19-20_DE Coal UG) was fired at 13:10 on 4th November 2011 with the blast results in compliance. The blast was in an area above the former underground workings that had many cavities and voids in the ground. The blast was designed to collapse the old workings so that it could be excavated safely however a fume cloud with a rating of 4 was generated and dispersed onsite.	A written response sent to OEH and the complainant.
92	16/11/2011 7:50am	A(Werris Creek)/OEH	Complainant stated that there were lights on their property most of the night (Tuesday 15th November 2011) and the mine was noisy.	The Light Monitoring Camera does not show any lighting impacts, however it is possible that the dozer headlights pushing coal from the west to the east in the direction of Werris Creek could have been the source of the lighting complaint. Given the prevailing weather conditions, noise from the Train Load Out Facility (in particular 16th November) could have potentially been enhanced towards Werris Creek.	A written response sent to the complainant and OEH.
93	22/11/2011 2:16pm	A(Werris Creek)/OEH	Complainant alleged excessive noise on 2nd, 3rd and 4th November 2011.	While the dozers would have been working until 3:30am on those nights, however the timing of the trains does not match the times outlined by the complainant. The source of train noise is more likely to have originated from Werris Creek Rail Yard.	A written response sent to the complainant and OEH.
94	9/12/2011 5:12pm	A(Werris Creek)/OEH	Complainant alleged excessive noise on 5th and 8th December 2011 due to train shunting and coal loading activities.	No trains were loaded at WCC on 5th or 8th December, most likely source of noise is from Werris Creek Rail Yard.	A written response sent to the complainant and OEH.
95	19/12/2011 10:01am	Anonymous (Werris Creek)/OEH	Complainant alleged that a large blast was fired on 16th December between 1:30pm and 2pm.	Blast #83 (S12_7-9_Aseam) was fired at 13:10 on 16th December 2011 was an overburden blast in the centre of the pit at RL385 level. Blast was small and all results were within compliance limits.	A written response sent to the OEH.
96	24/11/2011 9:00am	Z (Quipolly) /CCC	Complainant alleged to CCC member that the evening of Monday 21st November the mine was noisier than usual. Noise was particularly worse when the trucks were dumping up on the top of dump of an evening.	While trucks were not dumping on top of the dump on 21st November 2011, dumping had recently been occurring on the RL445m level. The dump locations shifted in pit at dark.	Follow up phone call to complainant confirmed that noise was quieter after dark when trucks moved in pit.
97	24/11/2011 9:00am	M (Quipolly)/ CCC	Complainant alleges that dust from the mine is coating their outdoor area.	Wind roses for August and September do not indicate that the mine is the likely source of the increase in dust levels. The complainant had recently plowed and sown the paddock adjacent to their home and dust deposition gauge which is the likely source of dust.	A written response sent to the complainant.
98	22/12/2011 10:24pm	L (Quipolly)	Complainant stated that the mine was very noisy Thursday night 22nd December 2011.	Mining operations and dump locations were just below the natural surface. Between 8:30pm and 2am the wind was a north easterly which could have propagated noise towards complainant's residence.	A written response sent to the complainant.

99	11/01/2012 1:35pm	AA (Werris Creek)	Complainant suffers from asthma and believes the symptoms have worsened and that this year is the dustiest seen for 50 years due to WCC.	No specific incident to investigate. WCC is currently utilizing five water carts to manage dust emissions. The local area has predominant NW-SE winds, WCC is not a major source of dust for Werris Creek because SW winds only occur on average 15% of the time.	A written response sent to the complainant.
100	18/01/2012 4:18pm	A(Werris Creek)/OEH	Complainant alleged that the on 3rd January 2012 the coal loader was noisy particularly at 11:30pm and that there was light spill from the coal mine.	The coal crushing plant ran until 3:30am and the dozers pushed up at the rail load out facility until 1am after loading a train that arrived at 7:47pm and departed 9pm. The meteorological conditions were unlikely to enhance noise impacts that would be continuous or persistent. A review of photos and lighting camera indicates that no lighting plants were visible to Werris Creek from either open cut or rail load out facility.	A written response sent to the complainant and OEH.
101	18/01/2012 4:18pm	A(Werris Creek)/OEH	Complainant alleged that the 18th January 2012 trains were revving their engines from 1am to 2:30am when she went to bed and that they were impacted at 1:30am by light.	No trains at WCC. The source of train noise is more likely to have originated from Werris Creek Rail Yard. The meteorological conditions were unlikely to enhance noise impacts as there no night shift operations on 17th January 2012. A review of photos and lighting camera indicates that no lighting plants were visible to Werris Creek from either open cut or rail load out facility.	A written response sent to the complainant and OEH.
102	20/01/2012 1:44pm	AB (Werris Creek)	Complainant said that the mine blast shook his house and this was the first blast that had ever felt.	Blast #03 (S11_4-7_350) was fired at 13:28 on 20th January 2012 was a thru-seam blast on the west edge and middle horizon of the pit. Blast results were within compliance limits.	A written response sent to the complainant.
103	20/01/2012 1:45pm	AC (Werris Creek)	Complainant said that the mine blast shook his house and knocked two photo frames off a cupboard. The level of vibration is not acceptable.	Blast #03 (S11_4-7_350) was fired at 13:28 on 20th January 2012 was a thru-seam blast on the west edge and middle horizon of the pit. Blast results were within compliance limits.	A written response sent to the complainant.
104	25/01/2012 1:55pm	O (Werris Creek)	Complainant said that the mine blast at 1:30pm gave his house a fair thump and saw orange smoke.	Blast #04 (S12_13-18_Aseam) was fired at 13:28 on 25th January 2012 was an overburden blast in the weathered material on the crest of the ridge, centre of the pit. Blast results were within compliance limits.	A written response sent to the complainant.
105	20/01/2012 2:51pm	A(Werris Creek)/OEH	Complainant alleged to OEH that a blast from Werris Creek Coal today at 13:30hrs had shook all the back windows and they are unable to sell their home because of the mining activities.	Blast #04 (S12_13-18_Aseam) was fired at 13:28 on 25th January 2012 was an overburden blast in the weathered material on the crest of the ridge, centre of the pit. Blast results were within compliance limits.	A written response sent to the complainant and OEH.

7.0 GENERAL

Please feel free to ask any questions in relation to the information contained within this document during Item 7 of the meeting agenda.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS Dust Monitoring
2011-2012

Site / Date	WCHV1 Cintra	Monthly Monthly Average	Rolling Annual Average	WCHV2 Tonsley Park	Monthly Monthly Average	Rolling Annual Average	WCHV3 Railway View	Monthly Monthly Average	Rolling Annual Average	WCHV4 Eurunderee	Monthly Monthly Average	Rolling Annual Average	WCTSP Railway View	Monthly Monthly Average	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
02-Apr-11	11		11.2	15		15.4	11		10.8	13		13.3	19		18.8	50	30	90
08-Apr-11	25		18.2	11		13.1			10.8	9		11.1			18.8	50	30	90
14-Apr-11	24		20.2	20		15.3	39		24.7	15		12.2	97		57.8	50	30	90
20-Apr-11	51		27.8	21		16.6	50		33.1	18		13.6	114		76.5	50	30	90
26-Apr-11	11	**24.5**	24.5	7	**14.7**	14.7	12	**27.8**	27.8	7	**12.2**	12.2	28	**64.3**	64.3	50	30	90
02-May-11	38		26.7	26		16.6	35		29.1	16		12.9	85		68.4	50	30	90
08-May-11	13		24.8	16		16.5	12		26.2	12		12.8	20		60.4	50	30	90
14-May-11	7		22.5	5		15.1	14		24.5	7		12.1	50		58.9	50	30	90
20-May-11	34		23.9	34		17.2	50		27.8	28		13.8	100		64.0	50	30	90
26-May-11	27	**23.9**	24.2	17	**19.6**	17.1	13	**24.7**	26.1	16.1	**15.9**	14.0	25.7	**56.1**	59.8	50	30	90
01-Jun-11	58		27.2	52		20.3	50		28.4	7.7		13.5	95		63.2	50	30	90
07-Jun-11	62		30.2	56		23.2	80		33.1	9		13.1	256		80.8	50	30	90
13-Jun-11	49		31.6	48		25.1	47		34.3	5.4		12.5			80.8	50	30	90
19-Jun-11	7		29.8	8		23.9	7		32.2	5.5		12.0	155		87.0	50	30	90
25-Jun-11	18	**38.7**	29.0	13	**35.2**	23.2	14	**39.5**	30.9	13.1	**8.1**	12.1	25	**132.5**	82.1	50	30	90
01-Jul-11	11		27.9	8		22.2	4		29.1	4		11.6	10.1		77.0	50	30	90
07-Jul-11	10		26.8	4		21.1	35		29.5	5		11.2	105		78.9	50	30	90
13-Jul-11	15		26.2	15		20.8	19		28.8	25		12.0	47.5		76.9	50	30	90
19-Jul-11	8		25.2	4		19.9	14		28.0	4		11.6	44.3		75.0	50	30	90
25-Jul-11	8	**10.3**	24.3	8	**7.8**	19.3	10	**16.3**	27.0	19	**11.5**	11.9	16.9	**44.8**	71.8	50	30	90
31-Jul-11	9		23.6	11		18.9	10		26.2	15		12.1	24.5		69.3	50	30	90
06-Aug-11	9		23.0	10		18.5	12		25.5	20		12.5	31.3		67.4	50	30	90
12-Aug-11	21		22.9	12		18.2	17		25.1	7		12.2	38.7		66.0	50	30	90
18-Aug-11	5		22.1	2		17.5	13		24.6	3		11.8	46.8		65.1	50	30	90
24-Aug-11	25	**13.7**	22.2	11	**9.2**	17.3	13	**13.1**	24.1	5	**10.0**	11.6	47.8	**37.8**	64.4	50	30	90
30-Aug-11	30		22.5	21		17.4	22		24.0	13		11.6	47		63.7	50	30	90
05-Sep-11	15		22.2	12		17.2	32		24.4	15		11.8	65		63.7	50	30	90
11-Sep-11	5		21.6	5		16.8	6		23.7	5		11.5	14		61.8	50	30	90
17-Sep-11	12		21.2	18		16.8	15		23.4	17		11.7	37		60.9	50	30	90
23-Sep-11	41	**20.3**	21.9	32	**17.6**	17.3	46	**24.2**	24.1	36	**17.2**	12.5	91	**50.8**	62.0	50	30	90
29-Sep-11	8		21.5	7		17.0	8		23.6	7		12.3	16		60.4	50	30	90
05-Oct-11	27		21.6	17		17.0	16		23.3	10		12.2	36		59.6	50	30	90
11-Oct-11	22		21.6	11		16.8	32		23.6	7		12.1	67		59.8	50	30	90
17-Oct-11	15		21.4	12		16.7	10		23.2	11		12.0	19		58.5	50	30	90
23-Oct-11	16	**17.5**	21.3	21	**13.5**	16.8	18	**16.8**	23.1	16	**10.0**	12.1	44	**36.3**	58.1	50	30	90
29-Oct-11	7		20.9	9		16.6	8		22.6	16		12.3	29		57.2	50	30	90
04-Nov-11	16		20.7	15		16.5	14		22.4	13		12.3	47		56.9	50	30	90
10-Nov-11	24		20.8	20		16.6	22		22.4	24		12.6	41		56.5	50	30	90
16-Nov-11	21		20.8	21		16.7	20		22.3	22		12.8	28		55.7	50	30	90
22-Nov-11	18	**17.0**	20.7	19	**16.6**	16.8	16	**15.8**	22.1	28	**20.4**	13.2	35	**35.8**	55.1	50	30	90
28-Nov-11	8		20.4	8		16.5	14		21.9	10		13.1	30		54.5	50	30	90
04-Dec-11	6		20.1	4		16.2	10		21.6	5		12.9	30		53.9	50	30	90
10-Dec-11	15		20.0	10		16.1	4		21.2	13		12.9	8		52.8	50	30	90
16-Dec-11	8		19.7	6		15.9	9		20.9	5		12.7	19		52.0	50	30	90
22-Dec-11	15	**10.3**	19.6	12	**8.1**	15.8	7	**8.8**	20.6	11	**8.6**	12.7	16	**20.7**	51.1	50	30	90
28-Dec-11	1		19.2	1		15.5	10		20.4	16		12.8	16		50.3	50	30	90
03-Jan-12			19.2			15.5			20.4	15		12.8	50		50.3	50	30	90
09-Jan-12	16		19.1	15		15.5	25		20.5	13		12.8	71		50.8	50	30	90
15-Jan-12	8		18.9	17		15.5	16		20.4	8		12.7	34		50.4	50	30	90
21-Jan-12	12	**9.3**	18.7	12	**11.3**	15.4	11	**15.3**	20.2	9	**12.3**	12.6	22	**38.4**	49.8	50	30	90
27-Jan-12			18.7			15.4			20.2			12.6			49.8	50	30	90
02-Feb-12			18.7			15.4			20.2			12.6			49.8	50	30	90
08-Feb-12			18.7			15.4			20.2			12.6			49.8	50	30	90
14-Feb-12			18.7			15.4			20.2			12.6			49.8	50	30	90
20-Feb-12		**#DIV/0!**	18.7		**#DIV/0!**	15.4		**#DIV/0!**	20.2		**#DIV/0!**	12.6		**#DIV/0!**	49.8	50	30	90
26-Feb-12			18.7			15.4			20.2			12.6			49.8	50	30	90
04-Mar-12			18.7			15.4			20.2			12.6			49.8	50	30	90
10-Mar-12			18.7			15.4			20.2			12.6			49.8	50	30	90
16-Mar-12			18.7			15.4			20.2			12.6			49.8	50	30	90
22-Mar-12			18.7			15.4			20.2			12.6			49.8	50	30	90
28-Mar-12		**#DIV/0!**	18.7		**#DIV/0!**	15.4		**#DIV/0!**	20.2		**#DIV/0!**	12.6		**#DIV/0!**	49.8	50	30	90
Min	**1.2**						**4.2**			**2.7**			**8.4**					
Max	**62.2**			**55.9**			**80.4**			**36.2**			**256.0**					
Capture	**80%**			**80%**			**79%**			**82%**			**79%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2011-2012

MONTH (g/m2/month)	EPL #7		EPL #4		EPL #1		EPL #8		-		-		-		ANNUAL AVERAGE LIMIT
	WC-2 Cintra		WC-5 Railway View		WC-7 Tonsley Park		WC-8 Plain View		WC-9 Marengo		WC-10 Mountain View		WC-11 Glenara		
	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	
April 2011	1.5	1.0	1.1	0.7	0.6	0.5	1.1	0.9	0.5	0.4	c2.3	1.6	0.6	0.6	4.0
May 2011	c0.6*	0.2	0.6	0.3	0.1	0.1	0.2	0.2	0.1	0.1	5.9*	2.0	0.2	0.2	4.0
June 2011	3.0	1.8	2.4	1.5	0.9	0.5	1.3	0.8	0.8	0.5	0.8	0.4	1.4	0.8	4.0
July 2011	0.5	0.3	0.5	0.4	0.3	0.2	0.8	0.5	0.2	0.2	0.9	0.5	0.6	0.5	4.0
August 2011	0.8	0.6	0.9	0.7	0.4	0.3	1.1	0.8	0.5	0.4	0.5	0.4	c20	c17.6	4.0
September 2011	1.5	1.0	1.4	0.9	1.2	0.8	1.4	1.0	0.5	0.5	0.5	0.3	c19.8	c17.1	4.0
October 2011	1.1	0.8	1.2	0.8	0.9	0.5	0.5	0.5	0.8	0.5	0.8	0.5	1.0	0.8	4.0
November 2011	3.3	2.0	1.2*	0.5	0.8*	0.3	1.2	0.6	1.7	1.3	0.8	0.4	2.2	1.7	4.0
December 2011	1.1	0.6	0.6	0.5	0.7	0.4	1.0	0.5	0.3	0.2	c2.2	0.7	3.5	2.3	4.0
January 2012	1.1	0.9	0.5	0.5	0.5	0.4	0.4	0.4	0.9	0.6	1.1	0.9	1.5	0.8	4.0
February 2012															4.0
March 2012															4.0
ANNUAL AVERAGE	**1.5**		**1.0**		**0.6**		**0.9**		**0.6**		**0.8**		**1.4**		**4.0**
MINIMUM	**0.5**		**0.5**		**0.1**		**0.2**		**0.1**		**0.5**		**0.2**		**-**
MAXIMUM	**3.3**		**2.4**		**1.2**		**1.4**		**1.7**		**1.1**		**3.5**		**4.0**

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

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

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2011-2012

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2011																									4.0
May 2011																									4.0
June 2011																									4.0
July 2011																									4.0
August 2011																									4.0
September 2011																									4.0
October 2011	1.0	30%	15%	55%	0.7	45%	10%	45%	0.6	40%	10%	50%	1.1	40%	15%	45%	3.8	10%	35%	25%	0.7	35%	15%	50%	4.0
November 2011	1.4	10%	70%	20%	1.6	25%	60%	15%	2.0	35%	55%	10%	0.9	5%	55%	40%	1.2	5%	50%	45%	2.6	5%	80%	15%	4.0
December 2011	0.8	10%	55%	35%	0.8	5%	70%	25%	0.9	25%	55%	20%	0.7	10%	70%	20%	0.9	5%	80%	15%	1.2	30%	55%	15%	4.0
January 2012	1.5	50%	30%	20%	1.5	20%	70%	10%	3.4	20%	60%	20%	0.5	20%	60%	20%	0.3	30%	50%	20%	0.5	40%	40%	20%	4.0
February 2012																									4.0
March 2012																									4.0
ANNUAL AVERAGE	**1.2**				**1.2**				**1.7**				**0.8**				**1.6**				**1.3**				**4.0**
MINIMUM	**0.8**				**0.7**				**0.6**				**0.5**				**0.3**				**0.5**				**-**
MAXIMUM	**1.5**				**1.6**				**3.4**				**1.1**				**3.8**				**2.6**				**4.0**

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

Appendix 4 – Noise Monitoring Results

5 December 2011

Ref: 04035/4207

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

RE: NOVEMBER 2011 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Wednesday 30th November and Thursday 1st December, 2011.

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

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

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

Additional monitoring was carried out at the Davidson property on Werris Creek Stock Road. As there is no residence on the property the monitoring was carried out on the roadside near the farm gate (see Figure 1).

Three sets of measurements were made over the "circuit", one during the day time period (before 6 pm), one during the evening period (from 6 pm – 10 pm) and one at night (after 10 pm). Note that rain on the afternoon of November 30 meant that the day time circuit was carried out during the morning of December 1.

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that during the early evening of November 30 winds were light from a north westerly direction. During the late evening and night the wind remained light but swung round to the south. During the day on December 1 the winds were moderate from the south to south east. The data showed that a temperature inversion was not a feature of the atmosphere throughout the night survey.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as inaudible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable. All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

Table 1
WCC Noise Monitoring Results –1 December 2011 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	9:05 am	43	35	n/a	6.9/165	Birds (42), traffic (35), **WCC inaudible**
R9 Gedhurst	9:23 am	45	37	n/a	7.0/170	Birds & insects (44), traffic (38), **WCC inaudible**
R11 Glenara	9:42 am	47	39	n/a	6.9/179	Birds & insects (47), traffic (32), **WCC inaudible**
R12 Railway Cottage	10:40 am	43	38	n/a	8.1/174	Traffic (42), birds & insects (35), **WCC inaudible**
R14 Greenslopes	8:32 am	45	39	n/a	6.0/186	Birds & insects (45), tractor (30), **WCC (25)**
R20 Tonsley Park	8:43 am	43	39	n/a	6.2/164	Traffic (42), birds & insects (35), **WCC inaudible**
R24 Hazeldene	10:03 am	46	37	n/a	7.0/181	Birds & insects (46), traffic (35), **WCC inaudible**
Davidson	9:43 am	53	37	n/a	7.1/181	Birds (53), **WCC inaudible**
R96 Kyooma	9:43 am	50	38	n/a	6.9/179	Wind in trees (50), birds (40), **WCC inaudible**
R98 Talavera	10:18 am	45	36	n/a	7.7/175	Birds (43), wind in trees (42), **WCC inaudible**
R103 Parsons	8:25 am	54	35	n/a	6.0/186	Trains (53), dogs (47), **WCC inaudible**
Kurrara St	9:02 am	51	35	n/a	6.9/165	Birds & insects (51), traffic (42), **WCC inaudible**
Coronation Avenue	9:20 am	59	35	n/a	7.0/170	Birds & insects (59), traffic (35), **WCC inaudible**

Table 2 WCC Noise Monitoring Results – 30 November (Evening)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	7:28 pm	40	35	n/a	1.6/332	Birds & insects (37), frogs (32), WCC (33), dog (30)
R9 Gedhurst	7:50 pm	50	37	n/a	2.2/305	Birds & insects (50), cattle (32), WCC (30)
R11 Glenara	8:07 pm	51	39	n/a	1.5/291	Birds & insects (51), traffic (30), WCC (28)
R12 Railway Cottage	8:42 pm	47	38	n/a	3.7/186	Insects (44), traffic (43), WCC inaudible
R14 Greenslopes	9:05 pm	50	39	n/a	1.4/336	Frogs (47), insects (46), WCC (35)
R20 Tonsley Park	9:40 pm	48	37	n/a	1.3/179	Insects (44), traffic (42), train (40), WCC inaudible
R24 Hazeldene	8:25 pm	42	37	n/a	1.4/280	Birds & insects (42), traffic (33), WCC inaudible
Davidson	8:39 pm	38	37	n/a	1.4/280	Birds & insects (37), WCC (30)
R96 Kyooma	8:05 pm	36	37	n/a	1.5/291	Insects (35), WCC (30)
R98 Talavera	7:30 pm	43	36	n/a	1.6/291	Birds & insects (42), WCC (33), plane (30)
R103 Parsons	9:28 pm	42	35	n/a	1.5/187	Train (39), insects (37), frogs (33), WCC inaudible
Kurrara St	9:19 pm	48	35	n/a	1.1/250	Birds & insects (48), traffic (35), WCC (25)
Coronation Avenue	9:00 pm	59	35	n/a	1.0/312	Local traffic (59), insects (48), WCC inaudible

Table 3 WCC Noise Monitoring Results –30 November (Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	10:03 pm	50	35	Lapse	1.8/191	Frogs & insects (50), WCC inaudible
R9 Gedhurst	10:22 pm	43	37	Lapse	2.4/214	Frogs & insects (43), traffic (30), WCC barely audible
R11 Glenara	10:49 pm	44	39	Lapse	1.8/190	Frogs & insects (44), traffic (28), WCC (<25)
R12 Railway Cottage	11:39 pm	38	38	Lapse	1.1/137	Frogs & insects (37), traffic (30), WCC (25)
R14 Greenslopes	12:07 am	46	39	Lapse	1.0/107	Insects (43), frogs (41), WCC (39)
R20 Tonsley Park	11:50 pm	40	37	Lapse	1.0/140	Insects (40), traffic (29), WCC inaudible
R24 Hazeldene	10:03 pm	41	37	Lapse	1.2/149	Traffic (39), frogs & insects (36), WCC inaudible
Davidson	10:24 pm	37	37	Lapse	2.4/214	Insects (37), WCC (29)
R96 Kyooma	11:29 pm	39	37	Lapse	2.0/206	WCC (36), insects (36)
R98 Talavera	10:05 pm	44	36	Lapse	1.8/191	Birds & insects (44), WCC (27)
R103 Parsons	12:09 am	49	35	Lapse	1.0/107	Dogs (49), insects (35), train (32), WCC inaudible
Kurrara St	11:29 pm	51	35	Lapse	1.2/126	Frogs (51), traffic (35), WCC (<25)
Coronation Avenue	11:07 pm	37	35	Lapse	1.5/161	Traffic (36), insects (31), 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 relevant criterion at any monitoring locations at any time during the survey.

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

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

During the night time measurement circuit the highest L1 (1 min) noise from WCC was 45 dB(A) at the Greenslopes monitoring location. It must be noted that the sleep disturbance criterion is applicable at a point 1m from a bedroom window. For practical purposes the noise measurement location at Greesnlopes is approximately 30m from the residence (at a location agreed upon with the resident). In addition to this, the internal layout of the residence is not known so the bedroom windows cannot be identified. It is, therefore, not possible to accurately determine compliance with the sleep disturbance criterion based on the data obtained.

At all other monitoring locations the L1 (1 min) noise levels were lower than 45.

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

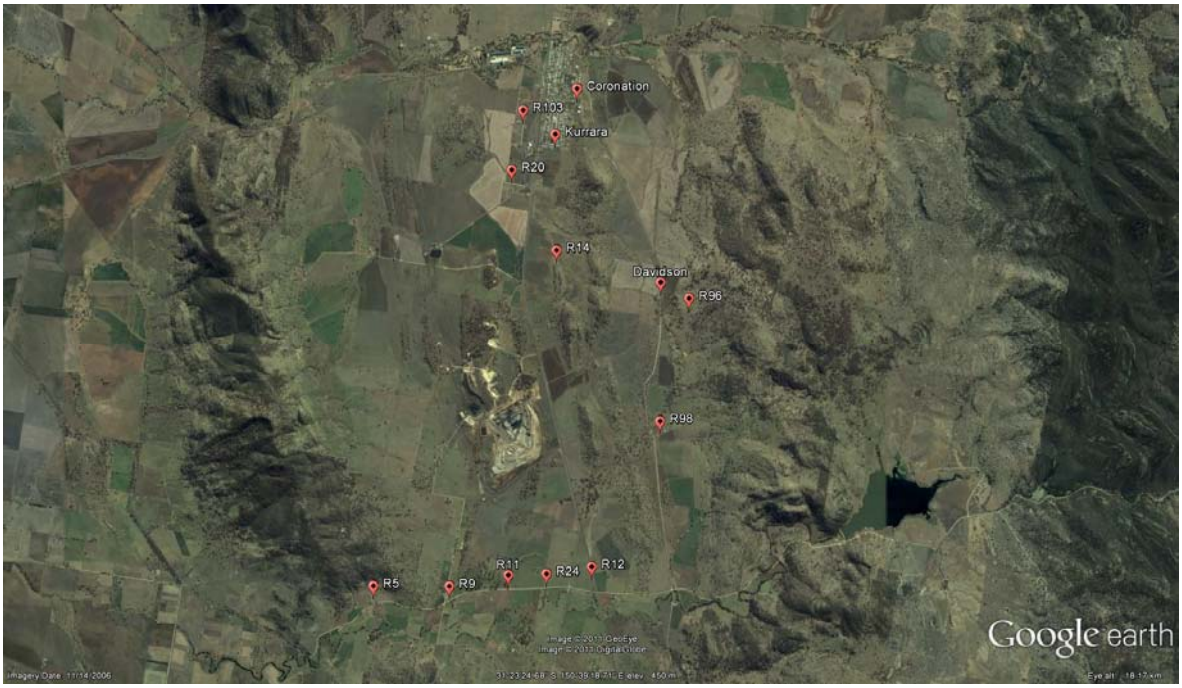


Figure 1 – Noise Monitoring Locations

20 December 2011

Ref: 04035/4221

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

RE: DECEMBER 2011 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Wednesday 14th December, 2011.

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

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

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

Additional monitoring was carried out at the Davidson property on Werris Creek Stock Road. As there is no residence on the property the monitoring was carried out on the roadside near the farm gate (see Figure 1).

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).

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that during the afternoon of December 14 winds were light from a south to south westerly direction. During the late evening the wind was stronger and more from south. At night the wind remained from the south but wind speeds dropped. The data showed that there was a mild temperature inversion from about 11 pm.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as inaudible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable. All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

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

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	1:52 pm	38	35	n/a	3.1/238	Birds (37), traffic (31), **WCC inaudible**
R9 Gedhurst	2:10 pm	36	37	n/a	2.7/213	Birds & insects (35), traffic (30), **WCC inaudible**
R11 Glenara	2:26 pm	45	39	n/a	3.6/225	Backhoe (44), birds & insects (38), **WCC inaudible**
R12 Railway Cottage	3:00 pm	42	38	n/a	4.9/186	Traffic (42), birds & insects (32), **WCC inaudible**
R14 Greenslopes	1:09 pm	40	39	n/a	2.6/203	Insects (36), **WCC (35)**, traffic (35)
R20 Tonsley Park	1:28 pm	36	39	n/a	3.2/221	Traffic (35), insects (30), **WCC inaudible**
R24 Hazeldene	2:43 pm	42	37	n/a	3.7/241	Birds & insects (42), traffic (35), **WCC inaudible**
Davidson	2:56 pm	41	37	n/a	4.9/186	Birds & insects (41), traffic (30), **WCC (30)**
R96 Kyooma	2:32 pm	38	38	n/a	3.6/225	Insects (35), **WCC (35)**
R98 Talavera	3:21 pm	38	36	n/a	4.7/204	Insects (34), **WCC (33)**, traffic (31), train (30)
R103 Parsons	1:08 pm	39	35	n/a	2.6/203	Trains (37), birds (34), traffic (30), **WCC inaudible**
Kurrara St	1:29 pm	51	35	n/a	3.2/221	Traffic (51), insects (38), **WCC inaudible**
Coronation Avenue	1:51 pm	43	35	n/a	3.1/238	Traffic (40), trains (38), birds & insects (33), **WCC inaudible**

Table 2 WCC Noise Monitoring Results – 14 December (Evening)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	8:05 pm	40	35	n/a	4.9/152	Birds & insects (39), traffic (34), WCC inaudible
R9 Gedhurst	8:22 pm	38	37	n/a	4.8/164	Birds, insects & frogs (38), traffic (25), WCC inaudible
R11 Glenara	8:38 pm	49	39	n/a	5.0/171	Birds & insects (49), traffic (32), WCC inaudible
R12 Railway Cottage	9:15 pm	42	38	n/a	5.3/177	Traffic (40), insects & frogs (37), WCC inaudible
R14 Greenslopes	9:28 pm	44	39	n/a	5.0/179	Insects & frogs (42), traffic (35), WCC (33)
R20 Tonsley Park	7:34 pm	47	37	n/a	5.3/168	Birds & insects (46), WCC (37), traffic (28)
R24 Hazeldene	8:56 pm	51	37	n/a	5.4/177	Train (49), traffic (45), insects & frogs (42), WCC inaudible
Davidson	8:01 pm	48	37	n/a	4.9/152	Insects (48), WCC (25)
R96 Kyooma	7:38 pm	40	37	n/a	5.1/166	Birds & insects (37), WCC (33), traffic (33)
R98 Talavera	7:11 pm	42	36	n/a	5.8/169	Insects (40), traffic (35), plane (32), WCC (30)
R103 Parsons	7:13 pm	49	35	n/a	5.8/169	Birds & insects (46), train (45), domestic noise (40), WCC inaudible
Kurrara St	8:47 pm	52	35	n/a	5.2/176	Traffic (50), insects & frogs (46), train (40) WCC inaudible
Coronation Avenue	8:22 pm	40	35	n/a	4.8/164	Insects (36), trains (35), traffic (34), WCC inaudible

Table 3 WCC Noise Monitoring Results –14 December (Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	11:49 pm	44	35	<2	2.4/202	Frogs & insects (44), traffic (30), WCC inaudible
R9 Gedhurst	11:30 pm	42	37	<2	2.5/206	Birds, insects & frogs (41), WCC (35)
R11 Glenara	11:13 pm	37	39	<2	2.2/184	Birds & insects (37), WCC (<25)
R12 Railway Cottage	10:40 pm	39	38	Lapse	2.3/174	Traffic (37), insects (36), WCC inaudible
R14 Greenslopes	11:44 am	41	39	<2	2.4/202	Traffic (38), insects (36), WCC (34)
R20 Tonsley Park	10:18 am	51	37	Lapse	2.6/183	Insects & frogs (51), WCC (37), traffic (32)
R24 Hazeldene	10:56 pm	42	37	Lapse	2.1/162	Traffic (40), frogs & insects (38), WCC inaudible
Davidson	10:48 pm	47	37	Lapse	2.2/173	Insects (47), WCC (<20)
R96 Kyooma	10:26 pm	39	37	Lapse	2.5/176	Insects (39), WCC (<20)
R98 Talavera	10:01 pm	40	36	Lapse	3.5/175	Insects (40), WCC inaudible
R103 Parsons	10:01 am	45	35	Lapse	3.5/175	Train (43), insects (40), WCC inaudible
Kurrara St	11:24 pm	47	35	<2	2.3/195	Frogs (47), traffic (35), WCC (26)
Coronation Avenue	11:06 pm	45	35	<2	2.1/173	Insects (45), traffic (30), 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 relevant criterion at any monitoring locations at any time during the survey.

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

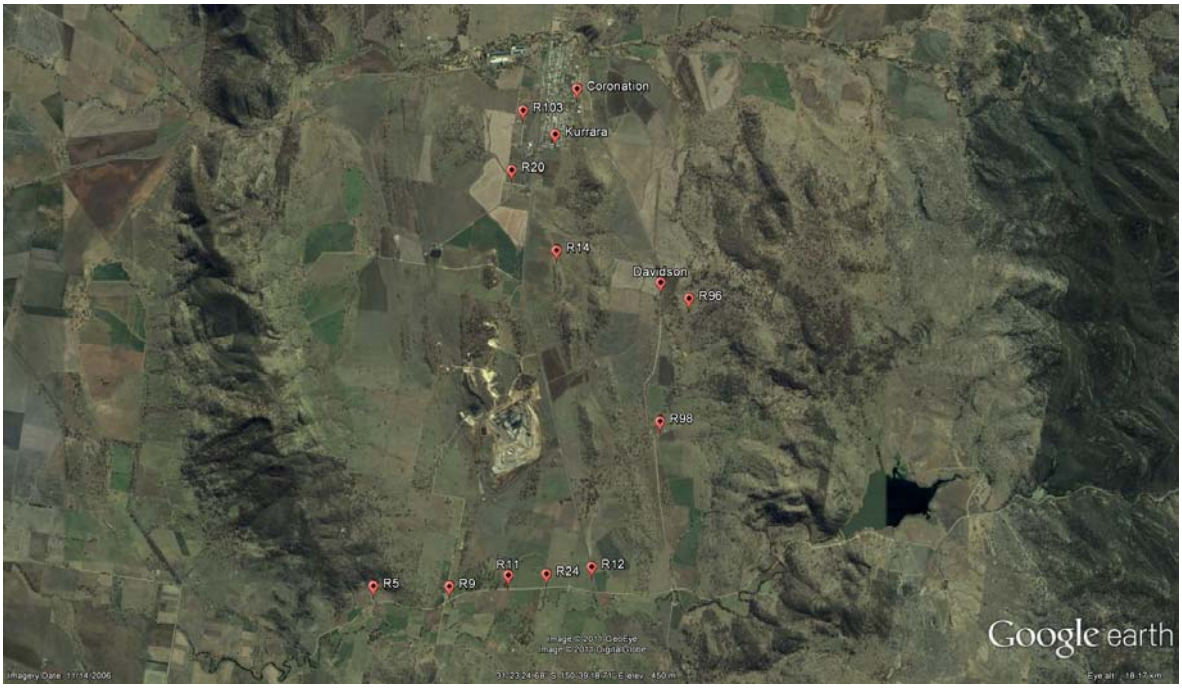


Figure 1 – Noise Monitoring Locations

31 January 2012

Ref: 04035/4263

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

RE: JANUARY 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 24th January, 2012.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Project Approval PA10_0059. The monitoring locations and noise criteria for each are detailed below in extract from the Approval and shown on the attached **Figure 1**. The actual monitoring locations representative of the various receptor areas are shown in bold and underlined in the extract below (note that R14 and R18 are now mine owned).

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

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

Additional monitoring was carried out at the Davidson property on Werris Creek Stock Road. As there is no residence on the property the monitoring was carried out on the roadside near the farm gate (see Figure 1).

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).

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that throughout the entire survey the winds were generally from the east. Wind speeds gradually decreased from the beginning of the day time survey until the end of the night time survey. The data showed that there was a mild temperature inversion from about 9 pm.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as inaudible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable. All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

Table 1
WCC Noise Monitoring Results –24 January 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	2:20 pm	36	35	n/a	4.7/94	Birds (31), traffic (30), WCC (30), dog (26)
R9 Gedhurst	2:37 pm	38	37	n/a	5.4/74	Birds & insects (35), traffic (34), cattle (30), WCC inaudible
R11 Glenara	4:24 pm	46	39	n/a	6.0/103	Traffic (44), birds & insects (42), WCC inaudible
R12 Railway Cottage	4:38 pm	41	38	n/a	4.9/119	Traffic (40), birds & insects (35), WCC inaudible
R20 Tonsley Park	4:01 pm	42	39	n/a	6.7/109	Traffic (40), birds (38), WCC faintly audible
R24 Hazeldene	4:41 pm	54	37	n/a	4.9/119	Birds & insects (54), traffic (45), WCC inaudible
Davidson	2:30 pm	41	37	n/a	6.6/86	Birds & insects (41), sheep (30), WCC inaudible
R96 Kyooma	2:12 pm	40	38	n/a	4.7/94	Birds & insects (40), WCC (<20)
R98 Talavera	1:45 pm	43	36	n/a	3.9/59	Birds & insects (43), WCC (25)
R103 Parsons	1:50 pm	38	35	n/a	3.9/59	Birds & insects (36), traffic (34), WCC inaudible
Kurrara St	4:16 pm	54	35	n/a	5.9/103	Traffic (53), birds (46), WCC inaudible
Coronation Avenue	3:57 pm	55	35	n/a	6.7/109	Traffic (54), birds & insects (48), WCC inaudible

Table 2 WCC Noise Monitoring Results – 24 January 2012 (Evening)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	7:45 pm	38	35	n/a	4.1/90	Birds & insects (37), traffic (31), WCC faintly audible
R9 Gedhurst	8:04 pm	41	37	n/a	4.0/83	Birds & insects (41), traffic (30), WCC inaudible
R11 Glenara	8:22 pm	41	39	n/a	3.0/93	Birds & insects (40), traffic (33), WCC inaudible
R12 Railway Cottage	9:09 pm	43	38	n/a	1.6/110	Insects (41), traffic (30), WCC inaudible
R20 Tonsley Park	8:44 pm	46	37	n/a	2.1/116	Insects (45), trains (39) WCC inaudible
R24 Hazeldene	8:46 pm	41	37	n/a	2.1/116	Birds & insects (40), traffic (37), WCC inaudible
Davidson	7:51 pm	41	37	n/a	4.0/86	Insects (41), cattle (30), WCC faintly audible
R96 Kyooma	7:34 pm	35	37	n/a	3.4/84	Birds & insects (35), WCC (<20)
R98 Talavera	7:12 pm	39	36	n/a	3.5/79	Birds & insects (39), train (30), WCC (20)
R103 Parsons	7:17 pm	40	35	n/a	3.5/79	Birds & insects (36), train (35), traffic (34), WCC inaudible
Kurrara St	8:25 pm	40	35	n/a	3.0/93	Insects & frogs (38), train (37) WCC inaudible
Coronation Avenue	8:08 pm	56	35	n/a	3.6/86	Insects (56), trains (42), traffic (40), WCC inaudible

Table 3 WCC Noise Monitoring Results –24 January 2012 (Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/ 100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	10:27 pm	40	35	<3	3.1/89	Insects (38), traffic (35), WCC (25)
R9 Gedhurst	10:46 pm	36	37	<3	3.9/94	WCC (32), insects (31), traffic (31)
R11 Glenara	11:06 pm	38	39	<3	3.3/89	Insects (36), traffic (32), WCC (30)
R12 Railway Cottage	11:52 pm	40	38	<3	2.8/119	Traffic (40), insects (31), WCC inaudible
R20 Tonsley Park	11:43 am	46	37	<3	2.8/122	Insects (45), trains (38), traffic (32), WCC (30)
R24 Hazeldene	11:30 pm	37	37	<3	3.5/113	Insects (37), WCC (25), traffic (22)
Davidson	10:52 pm	43	37	<3	3.7/88	Insects (43), WCC (<20)
R96 Kyooma	10:33 pm	43	37	<3	3.1/89	Insects (43), dog (26), WCC (<20)
R98 Talavera	10:00 pm	39	36	<3	2.2/97	Insects (39), WCC inaudible
R103 Parsons	10:00 am	45	35	<3	2.2/97	Insects (45), train (35), traffic (30), WCC inaudible
Kurrara St	11:25 pm	44	35	<3	3.5/89	Frogs & insects (43), trains (37), WCC inaudible
Coronation Avenue	11:08 pm	35	35	<3	3.3/89	Traffic (33), insects (30), 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 relevant criterion at any monitoring locations at any time during the survey.

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

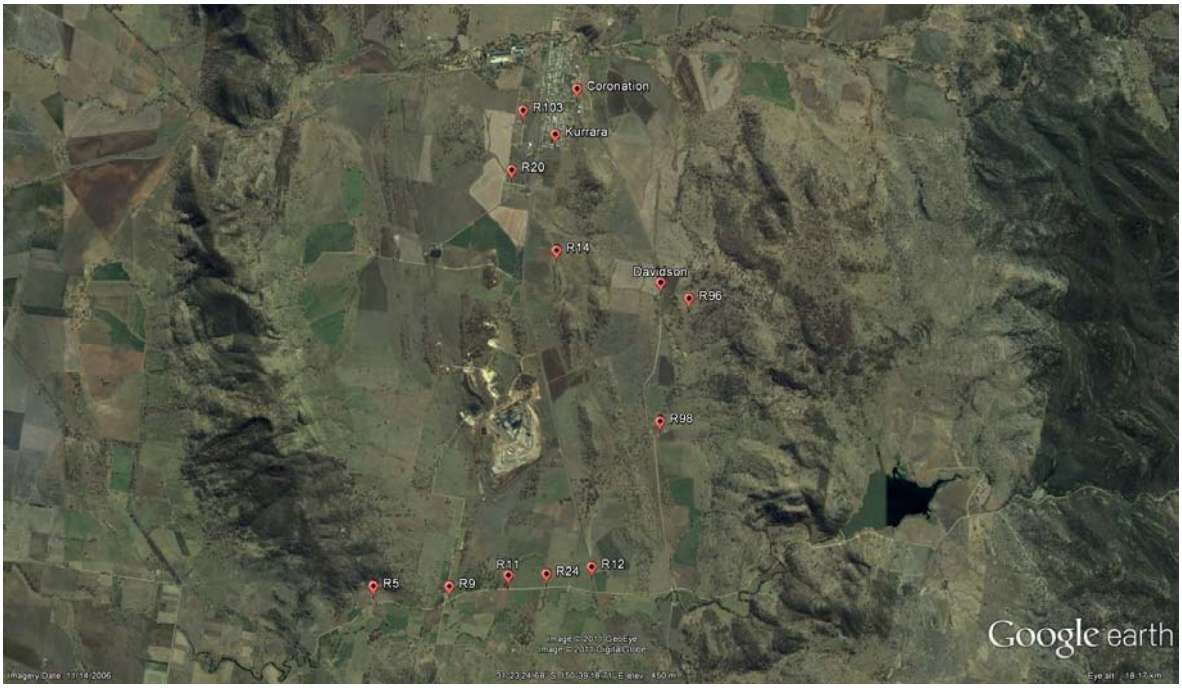


Figure 1 – Noise Monitoring Locations

Appendix 5 – Blasting Monitoring Results

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes		Tonsley Park		Cintra*		Werris Creek		Talavera		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-71	4/11/2011	13:15	S12 S13_19-20 DE Coal UG	OVBD	NM	NM	0.4	101	1.22	100.7	2.02	107.3	0.44	91.3	NM	NM	10.00	120.0
11-72	8/11/2011	13:10	S12_15-18_330 PS	PS	NM	NM	0.07	108.4	1.22	93.0	2.27	97	0.39	92.9	NM	NM	10.00	120.0
11-73	14/11/2011	13:20	S12_2-4_365 TSB13	THRU	NM	NM	0.9	100.7	0.72	98.0	1.07	103	0.26	102.9	NM	NM	10.00	120.0
11-74	17/11/2011	13:51	S12_5-6_365 Pt1	OVBD	NM	NM	1.44	105.9	<0.37	<109.9	NM	NM	0.42	102.4	<0.37	<109.9	10.00	120.0
11-75	18/11/2011	13:06	S12_3-8_330 PS	PS	NM	NM	0.72	99	1.15	99.9	NM	NM	0.26	96.4	<0.37	<109.9	10.00	120.0
11-76	22/11/2011	13:20	S12_5-6_365 Pt2	IB	NM	NM	0.07	110.2	0.1	111.5	NM	NM	0.08	113.2	<0.37	<109.9	10.00	120.0
11-77	24/11/2011	13:30	S12-7-9_330 PS	PS	NM	NM	0.92	103.5	1.20	96.8	<0.37	<109.9	0.20	106	NM	NM	10.00	120.0
TOTALS	**NOVEMBER**	**# BLAST**	**7**	**AVERAGE**	**NM**	**NM**	**0.65**	**104.1**	**0.94**	**100.0**	**1.79**	**102.4**	**0.29**	**100.7**	**<0.37**	**<109.9**	**5.00**	**115.0**
TOTALS	**NOVEMBER**	**# BLAST**	**7**	**HIGHEST**	**NM**	**NM**	**1.44**	**110.2**	**1.22**	**111.5**	**2.27**	**107.3**	**0.44**	**113.2**	**<0.37**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**60**	**AVERAGE**	**<0.37**	**<109.9**	**0.68**	**101.5**	**0.79**	**101.1**	**1.24**	**106.7**	**0.45**	**100.4**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**60**	**0%**	**0%**	**0%**	**3.6%**	**0%**	**0%**	**0%**	**4.3%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes*		Tonsley Park		Cintra*		Werris Creek		Talavera		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-78	1/12/2011	13:39	S11_6-7_350	IB	NM	NM	0.45	111.5	0.37	103.4	0.75	108.8	<0.20	<109.9	NM	NM	10.00	120.0
11-79	2/12/2011	13:30	S12_10-13_330 PS	PS	NM	NM	0.67	104.3	0.8	93.9	1.15	97.7	0.24	97.3	NM	NM	10.00	120.0
11-80	6/12/2011	13:15	S11_8-10_350 pt 1	IB	NM	NM	0.42	104.3	0.5	100.3	0.72	107.3	<0.20	<109.9	NM	NM	10.00	120.0
11-81	13/12/2011	13:13	S11_8-10_Ccoal Ramp	IB	NM	NM	0.75	112.8	0.75	107.5	1.17	114.6	<0.20	<109.9	NM	NM	10.00	120.0
11-82	14/12/2011	13:12	S11_8-10_350 pt 2	IB	NM	NM	0.42	105.9	0.47	100.7	0.72	108.2	<0.20	<109.9	NM	NM	10.00	120.0
11-83	16/12/2011	13:10	S12_7-9_Aseam	IB	NM	NM	0.6	109.7	0.47	107.5	NM	NM	<0.20	<109.9	<0.37	<109.9	10.00	120.0
11-84	23/12/2011	13:12	S11_10-11_350	IB	NM	NM	0.85	102.4	0.62	96.2	0.9	102.6	0.34	98.2	NM	NM		
11-85	29/12/2011	16:16	S12_10-11_Aseam	IB	NM	NM	1.12	111.9	1.37	110.3	NM	NM	0.37	106.6	<0.37	<109.9	10.00	120.0
TOTALS	**DECEMBER**	**# BLAST**	**8**	**AVERAGE**	**NM**	**NM**	**0.66**	**107.9**	**0.67**	**102.5**	**0.90**	**106.5**	**0.32**	**100.7**	**<0.37**	**<109.9**	**5.00**	**115.0**
TOTALS	**DECEMBER**	**# BLAST**	**8**	**HIGHEST**	**NM**	**NM**	**1.12**	**112.8**	**1.37**	**110.3**	**1.17**	**114.6**	**0.37**	**106.6**	**<0.37**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**68**	**AVERAGE**	**<0.37**	**<109.9**	**0.67**	**102.2**	**0.77**	**101.3**	**1.20**	**106.6**	**0.43**	**100.5**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**68**	**0%**	**0%**	**0%**	**3.2%**	**0%**	**0%**	**0%**	**3.8%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes*		Tonsley Park		Cintra*		Werris Creek		Talavera		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
11-86	4/01/2012	13:18	S12_15-17_370	IB	NM	NM	0.98	110.3	0.97	111.0	NM	NM	0.60	105.0	<0.37	<109.9	10.00	120.0
11-87	5/01/2012	13:42	S12_1-3_350 TSB14	THRU	NM	NM	0.97	98.5	0.45	94.2	NM	NM	<0.20	<109.9	<0.37	<109.9	10.00	120.0
12-01	11/01/2012	13:24	S11_10-12_350	IB	NM	NM	0.52	96.4	<0.37	<109.9	NM	NM	<0.20	<109.9	<0.37	<109.9	10.00	120.0
12-02	13/01/2012	13:12	S12_10-12_Aseam	IB	NM	NM	0.75	112.8	0.80	98.5	0.31	98.9	1.45	106.3	NM	NM	10.00	120.0
12-03	20/01/2012	13:28	S11_4-7_332 TSB15	THRU	NM	NM	1.14	106.3	1.62	100.7	1.97	106.3	0.47	104.6	NM	NM	10.00	120.0
12-04	25/01/2012	13:28	S12_13-14_Aseam	IB	NM	NM	0.90	108.6	0.75	106.8	1.12	111.0	0.26	100.3	NM	NM	10.00	120.0
TOTALS	**JANUARY**	**# BLAST**	**6**	**AVERAGE**	**NM**	**NM**	**0.88**	**105.5**	**0.92**	**102.2**	**1.13**	**105.4**	**0.70**	**104.1**	**<0.37**	**<109.9**	**5.00**	**115.0**
TOTALS	**JANUARY**	**# BLAST**	**6**	**HIGHEST**	**NM**	**NM**	**1.14**	**112.8**	**1.62**	**111.0**	**1.97**	**111.0**	**1.45**	**106.3**	**<0.37**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**74**	**AVERAGE**	**<0.37**	**<109.9**	**0.69**	**102.5**	**0.79**	**101.4**	**1.19**	**106.5**	**0.47**	**101.0**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**74**	**0%**	**0%**	**0%**	**2.9%**	**0%**	**0%**	**0%**	**3.6%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

Appendix 6 – Groundwater Monitoring Results

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1127737**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3127		
C-O-C number	: ----	Date Samples Received	: 15-DEC-2011
Sampler	: BP	Issue Date	: 28-DEC-2011
Site	: ----		
		No. of samples received	: 9
Quote number	: BN/759/11	No. of samples analysed	: 9

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

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

General Comments

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

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

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

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

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

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

- **It has been noted that Reactive Phosphorous is greater than Total Phosphorous for MW5, however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW3	MW4	MW5	MW7	MW8
				Client sampling date / time: 14-DEC-2011 10:30	14-DEC-2011 13:00	14-DEC-2011 09:00	14-DEC-2011 09:50	14-DEC-2011 12:10
				ES1127737-001	ES1127737-002	ES1127737-003	ES1127737-004	ES1127737-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.94**	**7.95**	**7.95**	**7.56**	**7.86**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**44**	**1020**	**1640**	**637**	**1260**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	**1.63**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.16**	**1.45**	**3.78**	**1.50**	**5.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.16**	**1.45**	**5.41**	**1.50**	**5.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**0.6**	**18.6**	**0.3**	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**0.9**	**2.0**	**24.0**	**1.8**	**5.0**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.25**	**0.02**	**1.86**	**0.11**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.22**	**0.01**	**1.92**	**0.07**	**0.02**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW9	MW14	P1	P2	----
				Client sampling date / time: 14-DEC-2011 11:50	14-DEC-2011 11:20	14-DEC-2011 13:30	14-DEC-2011 11:00	----
				ES1127737-006	ES1127737-007	ES1127737-008	ES1127737-009	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.90**	**7.89**	**7.60**	**7.86**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**833**	**1180**	**1290**	**1230**	----
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	**2.74**	**12.0**	**1.82**	**5.86**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.74**	**12.0**	**1.82**	**5.86**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	**1.3**	**0.8**	**1.3**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**2.9**	**13.3**	**2.6**	**7.2**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.07**	**0.08**	**0.10**	**0.12**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.01**	**0.05**	<0.01	<0.01	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1127623**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3127		
C-O-C number	: ----	Date Samples Received	: 14-DEC-2011
Sampler	: BP	Issue Date	: 21-DEC-2011
Site	: ----		
		No. of samples received	: 10
Quote number	: SY/261/10	No. of samples analysed	: 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.

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

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW1	MW2	MW6	MW10	MW12
				Client sampling date / time: 13-DEC-2011 09:40	13-DEC-2011 10:20	13-DEC-2011 10:50	13-DEC-2011 09:10	13-DEC-2011 13:50
				ES1127623-001	ES1127623-002	ES1127623-003	ES1127623-004	ES1127623-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.41**	**7.83**	**7.65**	**7.99**	**7.62**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1220**	**862**	**1870**	**1280**	**453**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.02**	<0.01	<0.01	**0.68**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.78**	**0.68**	**3.10**	**7.25**	**1.16**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.80**	**0.68**	**3.10**	**7.93**	**1.16**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.8**	**0.4**	**1.0**	**0.4**	**0.3**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**4.6**	**1.1**	**4.1**	**8.3**	**1.5**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.14**	**0.02**	**0.13**	**0.02**	**0.08**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.11**	**0.01**	**0.07**	<0.01	**0.06**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW13	MW15	MW16	MW17A	MW17B
				Client sampling date / time: 13-DEC-2011 11:50	13-DEC-2011 11:20	13-DEC-2011 13:20	13-DEC-2011 12:30	13-DEC-2011 12:50
				ES1127623-006	ES1127623-007	ES1127623-008	ES1127623-009	ES1127623-010
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.37**	**7.66**	**7.65**	**7.64**	**8.33**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**663**	**1040**	**790**	**956**	**2320**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.05**	**1.17**	**4.84**	**1.18**	**0.05**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.05**	**1.17**	**4.84**	**1.18**	**0.05**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**0.2**	**0.5**	<0.1	**0.1**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**2.0**	**1.4**	**5.3**	**1.2**	**0.2**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.09**	**0.12**	**0.08**	**0.08**	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.08**	**0.08**	**0.06**	**0.08**	<0.01

Appendix 7 – Surface Water Monitoring Results

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1125856**	Page	: 1 of 6
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3008		
C-O-C number	: ----	Date Samples Received	: 24-NOV-2011
Sampler	: BP	Issue Date	: 30-NOV-2011
Site	: ----		
		No. of samples received	: 12
Quote number	: SY/261/10	No. of samples analysed	: 12

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **It has been noted that Reactive P is greater than Total P for various samples, however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB6	SB9	SB10	VWD1
				Client sampling date / time: 23-NOV-2011 13:10	23-NOV-2011 12:20	23-NOV-2011 11:40	23-NOV-2011 11:20	23-NOV-2011 13:30
				ES1125856-001	ES1125856-002	ES1125856-003	ES1125856-004	ES1125856-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	495	490	472	320	780
pH	----	0.01	pH Unit	8.80	8.40	8.40	8.40	8.80
Temperature	----	0.1	°C	22.3	22.3	23.2	22.1	22.7
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.24	7.79	7.95	7.81	8.32
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	626	622	584	383	954
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	18	50	6	64	8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.18	0.13	0.01	0.03
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.04	19.5	1.86	2.21	1.45
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	19.7	1.99	2.22	1.48
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	6.4	1.9	1.8	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.5	26.1	3.9	4.0	1.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.05	0.10	<0.01	0.04	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	0.02	<0.01	0.08	<0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: VWD2	200MLD-NORTH	QCU	QCD	WCU
				Client sampling date / time: 23-NOV-2011 12:00	23-NOV-2011 12:50	23-NOV-2011 10:30	23-NOV-2011 10:45	23-NOV-2011 10:00
				ES1125856-006	ES1125856-007	ES1125856-009	ES1125856-010	ES1125856-011
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	715	750	360	685	1090
pH	----	0.01	pH Unit	8.90	8.90	8.10	8.10	8.40
Temperature	----	0.1	°C	23.0	22.1	21.5	21.5	21.3
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.34	8.37	7.79	8.02	8.02
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	878	925	438	868	1360
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	6	6	24	15	50
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.12	0.08	<0.01	<0.01	0.03
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	11.3	4.15	<0.01	0.03	3.28
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	11.4	4.23	<0.01	0.03	3.31
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.6	1.2	0.6	0.2	1.3
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	14.0	5.4	0.6	0.2	4.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.11	0.09	0.17
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	0.10	0.06
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	100 MLD-STH	----	----	----
			Client sampling date / time	23-NOV-2011 09:40	23-NOV-2011 12:40	----	----	----
Compound	CAS Number	LOR	Unit	ES1125856-012	ES1125856-013	----	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1060	740	----	----	----
pH	----	0.01	pH Unit	8.60	8.80	----	----	----
Temperature	----	0.1	°C	23.5	22.1	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.38	8.27	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1310	928	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	32	18	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.02	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.01	7.93	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	7.95	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	3.2	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.4	11.2	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.28	0.04	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.19	<0.01	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 23-NOV-2011 13:10	CLEAR
AC04: Appearance	SB6 - 23-NOV-2011 12:20	CLEAR
AC04: Appearance	SB9 - 23-NOV-2011 11:40	CLEAR
AC04: Appearance	SB10 - 23-NOV-2011 11:20	TURBID
AC04: Appearance	VWD1 - 23-NOV-2011 13:30	CLEAR
AC04: Appearance	VWD2 - 23-NOV-2011 12:00	CLEAR
AC04: Appearance	200MLD-NORTH - 23-NOV-2011 12:50	CLEAR
AC04: Appearance	QCU - 23-NOV-2011 10:30	CLEAR
AC04: Appearance	QCD - 23-NOV-2011 10:45	CLEAR
AC04: Appearance	WCU - 23-NOV-2011 10:00	CLEAR
AC04: Appearance	WCD - 23-NOV-2011 09:40	CLEAR
AC04: Appearance	100 MLD-STH - 23-NOV-2011 12:40	CLEAR
AC04: Odour	SB2 - 23-NOV-2011 13:10	NIL
AC04: Odour	SB6 - 23-NOV-2011 12:20	NIL
AC04: Odour	SB9 - 23-NOV-2011 11:40	NIL
AC04: Odour	SB10 - 23-NOV-2011 11:20	NIL
AC04: Odour	VWD1 - 23-NOV-2011 13:30	NIL
AC04: Odour	VWD2 - 23-NOV-2011 12:00	NIL
AC04: Odour	200MLD-NORTH - 23-NOV-2011 12:50	NIL
AC04: Odour	QCU - 23-NOV-2011 10:30	NIL
AC04: Odour	QCD - 23-NOV-2011 10:45	NIL
AC04: Odour	WCU - 23-NOV-2011 10:00	NIL
AC04: Odour	WCD - 23-NOV-2011 09:40	NIL
AC04: Odour	100 MLD-STH - 23-NOV-2011 12:40	NIL
AC04: Colour	SB2 - 23-NOV-2011 13:10	CLEAR
AC04: Colour	SB6 - 23-NOV-2011 12:20	CLEAR
AC04: Colour	SB9 - 23-NOV-2011 11:40	CLEAR
AC04: Colour	SB10 - 23-NOV-2011 11:20	GREY
AC04: Colour	VWD1 - 23-NOV-2011 13:30	CLEAR
AC04: Colour	VWD2 - 23-NOV-2011 12:00	CLEAR
AC04: Colour	200MLD-NORTH - 23-NOV-2011 12:50	CLEAR
AC04: Colour	QCU - 23-NOV-2011 10:30	CLEAR
AC04: Colour	QCD - 23-NOV-2011 10:45	CLEAR
AC04: Colour	WCU - 23-NOV-2011 10:00	CLEAR
AC04: Colour	WCD - 23-NOV-2011 09:40	CLEAR
AC04: Colour	100 MLD-STH - 23-NOV-2011 12:40	CLEAR

Appendix 8 – Discharge Monitoring Results

ALS Group

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1126203**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3027		
C-O-C number	: ----	Date Samples Received	: 29-NOV-2011
Sampler	: AW	Issue Date	: 05-DEC-2011
Site	: ----		
		No. of samples received	: 7
Quote number	: SY/261/10	No. of samples analysed	: 7

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA

WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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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**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	SB10	WCU	WCD	SB2
				Client sampling date / time: 25-NOV-2011 08:00	26-NOV-2011 10:00	26-NOV-2011 10:30	26-NOV-2011 10:45	25-NOV-2011 08:15
				ES1126203-001	ES1126203-002	ES1126203-003	ES1126203-004	ES1126203-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.42**	**7.60**	**7.64**	**7.82**	**7.80**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**493**	**342**	**148**	**162**	**407**
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**40**	**106**	**261**	**1340**	**34**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.10**	**0.03**	<0.01	**0.02**	**0.01**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.23**	**3.61**	**0.25**	**2.76**	**0.35**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.33**	**3.64**	**0.25**	**2.78**	**0.36**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.3**	**1.2**	**1.4**	**3.0**	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**4.6**	**4.8**	**1.6**	**5.8**	**0.4**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.18**	**0.21**	**0.87**	**1.66**	**0.21**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.08**	**0.16**	**0.81**	**0.66**	**0.17**
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QCU	QCD	----	----	----
				Client sampling date / time: 25-NOV-2011 08:30	25-NOV-2011 08:45	----	----	----
				ES1126203-006	ES1126203-007	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.65**	**7.94**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**405**	**810**	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**40**	**13**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.16**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	**0.16**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	<0.1	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**0.4**	**0.2**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.16**	**0.20**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	**0.10**	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1127636**	Page	: 1 of 3
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3125		
C-O-C number	: ----	Date Samples Received	: 14-DEC-2011
Sampler	: A.W	Issue Date	: 21-DEC-2011
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/261/10	No. of samples analysed	: 4

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

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

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	SB2	QCU	QCD	----
				Client sampling date / time: 13-DEC-2011 07:00	13-DEC-2011 07:15	13-DEC-2011 07:30	13-DEC-2011 07:45	----
				ES1127636-001	ES1127636-002	ES1127636-003	ES1127636-004	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.68**	**7.92**	**7.57**	**7.98**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**224**	**464**	**452**	**783**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**18**	<5	**24**	**12**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.11**	**0.01**	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.93**	**0.07**	**0.28**	**0.18**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.04**	**0.08**	**0.28**	**0.18**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.9**	**0.9**	**0.8**	**0.4**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**2.9**	**1.0**	**1.1**	**0.6**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.22**	**0.16**	**0.15**	**0.14**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.16**	**0.11**	**0.06**	**0.09**	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1128189**	Page	: 1 of 3
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-DEC-2011
Sampler	: AW	Issue Date	: 05-JAN-2012
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/261/10	No. of samples analysed	: 4

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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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.

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **LCS recovery for (NOx) fall outside ALS dynamic control limits. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	SB2	QCU	QCD	----
				Client sampling date / time: 20-DEC-2011 08:00	20-DEC-2011 08:15	20-DEC-2011 08:30	20-DEC-2011 08:45	----
				ES1128189-001	ES1128189-002	ES1128189-003	ES1128189-004	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.67**	**7.98**	**7.42**	**7.97**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**214**	**468**	**439**	**750**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**14**	**12**	**15**	**20**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.04**	**0.44**	**0.28**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.06**	**0.04**	**0.44**	**0.28**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.3**	**0.1**	**0.2**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**1.0**	**0.3**	**0.5**	**0.5**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.09**	**0.09**	**0.07**	**0.13**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	**0.06**	**0.05**	**0.10**	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Werris Creek Coal Community Consultative Committee

Twenty Third Meeting of the Committee

Training Room, Werris Creek Coal Mine

9:30am Thursday 31st May 2012

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting.

1. **Record of Attendance:**

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative arrived at 11am); Roslyn Marr (Community Representative); Geoff Dunn (Community Representative); Andrew Wright (WCC Environmental Officer and Minute Taker); Col Stewart (Liverpool Plains Shire Council - Councilor); Jill Coleman (Community Representative).

Apologies: Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services) Nigel Wood (Whitehaven Coal Regional Operations Manager and Acting WCC Project Manager);

2. **Declaration of Pecuniary or other interests**

None.

3. **New Matters for Discussion under General Business**

None.

4. **Matters Arising**

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. **Minutes of Previous Meeting**

Minutes of the previous meeting 20th March 2012 were accepted as true and accurate representation of business conducted on that day.

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

6. **Environmental Monitoring Report: February, March and April 2012**

Meteorology – Predominantly wind direction was a south easterly with 178mm of rain for the three month period.

Air Quality – All dust deposition gauge, PM10 and TSP dust results were within compliance limits for the period. Two dust related complaints relating to the onset of temperature inversions and the perceived "extra" dust in the early mornings trapped under the inversion.
Noise – There were no noise exceedances for the period. There were seven complaints for noise impacts from WCC operations, with three complaints from two Werris Creek residents and four complaints from a Quipolly resident. Real time noise monitoring and the Noise Control Operator confirmed that noise levels were in compliance.
Blasting – There were 15 blasts during the period, all were in compliance. There were two complaints for two shots in the weathered overburden however both were fired when the wind was away from Werris Creek and both in compliance.
Groundwater – Groundwater levels have continued to fall over 2011 since the record high levels due to the very wet conditions at the end of 2010 and represent the groundwater aquifer returning back to normal conditions. Mining continues not to impact on groundwater aquifers.
Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values. A breach in a void water dam (Void Water Dam 3 – 200ML Dam North) was observed at approximately 9:30am on Sunday 11th March 2012. The breach of the void water dam wall had occurred at the spillway of the dam, located on the northern embankment as result of pumping water from the open cut pit into the dam and overflowing through the spillway resulting in the release of approximately 30ML of void water. WCC is not approved to discharge void water offsite and the incident is being investigated by the EPA. Laboratory analysis found that the water samples both of the discharge water and normal creek water generally complied with both Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) Livestock Watering, Agricultural Irrigation and Drinking Water Guidelines with a few minor exceptions due to in stream water quality and not the void water discharge. WCC is undertaking a number of actions to rectify the dam breach as well as upgrading overflow controls on all void water dams.
Complaints – There were 17 complaints received during the period. In total there were seven issues related to noise, six issues with lights; two issues related to blasting and two issues with dust and one relating to rail spur train movement. There were six different complainants during the period with nine complaints from one Werris Creek resident and four from one Quipolly resident.

Motion moved to accept the Environmental Monitoring Report for February, March and April 2012.

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

A complaint on the 8th February 2012 alleging that a train was exceeding the rail spur speed limit was initially denied only to be confirmed several weeks later from the train's data logger that the train had actually exceeded the 15km/h limit. Both Col Stewart and Gae Swain expressed concern over the misinformation provided by the train transport sub-contractor.

Motion moved for the CCC to write a letter to Whitehaven Coal expressing its concern over the misinformation provided regarding this complaint.

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

7. General Business

a. Community Enhancement Fund (CEF) Update

The Community Project Schedule endorsed by the CCC at the 20th March 2012 meeting:

YEAR	PROJECT/PROPOSAL	COST
COMPLETE	Royal Theatre Quirindi – Grand Piano	$20,000
2012	Disabled Lift at Australian Railway Museum Werris Creek	$60,000

2012	Skate Park – Werris Creek	$70,000
2013	Nil	$0
2014	Playground Equipment – Bell Park Quirindi	$30,000
2015	Werris Creek Pool – water feature/playground	$70,000
2016	Various playground improvements in Villages	$50,000
2017	Nil	$0
TOTAL (excluding CPI)		**$300,000**

The Council was not able to provide an update on the status of the 2012 projects. A comment from Ross Marr and Geoff Dunn was the issue of flooding at the proposed skate park location.

Motion moved for the Liverpool Plains Shire Council representatives to prepare an update on the CEF project status at each CCC meeting.

Moved: Geoff Dunn. Seconded: Jill Coleman. Motion Carried.

b. Update on Void Water Dam Offsite Discharge Event

The Environment Protection Authority has confirmed that they are investigating the incident and have formally requested documentation and evidence relating to the incident. Ros Marr commented on the open letter of apology to the community from Whitehaven Coal published in the Quirindi Advocate in relation to the discharge incident.

c. WCC LOM Project Status

Andrew Wright provided the committee members with a plan outlining the LOM Project site layout and discussed the progress of mining operations and timing over the next 15 years.

Meeting Closed 11:30am.

Next Meeting scheduled for Thursday 30th August 2012.

Copy to:

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

Ron Van Katwyk	LPSC	Nigel Wood	Whitehaven Coal
Cr Col Stewart	LPSC	Brian Cullen	Whitehaven Coal
Paul Freeman	DoPI	Danny Young	Whitehaven Coal
Michael Lloyd	DRE	Andrew Wright	Werris Creek Coal
Simon Lund	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

February, March and April 2012

This Environmental Monitoring Report covers the period 1st February 2012 to 30th April 2012 for the Werris Creek No.2 Coal Mine Community Consultative Committee.

The report includes environmental monitoring results from the on-site Weather Station, Air Quality, Noise, Blasting, Surface Water, Groundwater and Discharge Water Quality together with any community complaints received and general details on site environmental matters.

Note: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

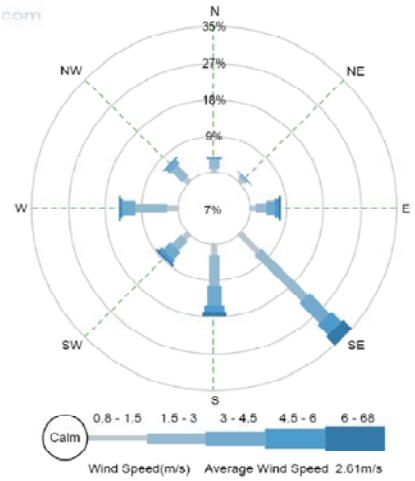
1.0 METEOROLOGY

1.1 WEATHER STATION

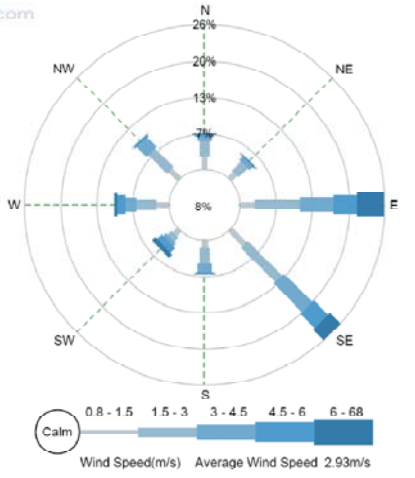
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring trailer located at "Mountain View" for the period. The following table summarises temperature, inversion and rainfall data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

Month	Temp (°C) Trailer			Temp (°C) 10m Onsite			Lapse Rate (°C/100m)		Rainfall (mm)		
	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Trailer	Annual*
February	10.7	21.2	32.3	14.4	22.1	31.5	+0.9	+4.5	119.0	79.6	749.0
March	4.4	19.2	31.3	10.3	20.5	29.5	+1.0	+6.0	44.6	41.2	793.6
April	6.9	19.3	30.3	6.5	18.0	29.5	+2.1	+7.3	14.8	35.2	14.8

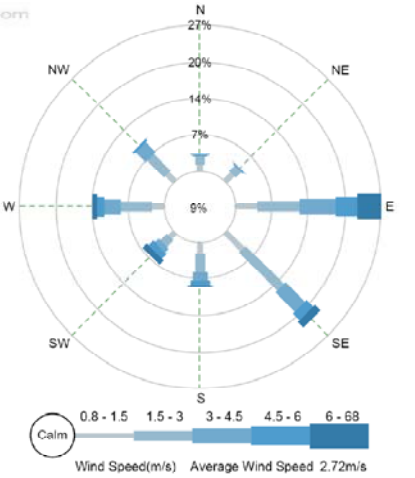
* Annual cumulative total since April 2011 to March 2012 for onsite Weather Station



February 2012



March 2012



April 2012

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10)

High Volume Air Sampler (HVAS) monitors particulate matter less than 10 micron in size (PM10) and total suspended particulate (TSP) matter and is conducted at the 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 Environment Protection Authority (EPA) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled.

2.1.1 Monitoring Data Results

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

Monitor Location	February (µg/m^3)	March (µg/m^3)	2011-2012 Average (µg/m^3)	April (µg/m^3)	Criteria (µg/m^3)
WCHV1	6.7	9.5	16.8	15.9	30
WCHV2	6.2	8.2	14.0	15.3	30
WCHV3	4.6	9.9	17.9	22.6	30
WCHV4	5.4	8.8	11.8	15.1	30
WCHV5	11.6	21.6	44.0	55.3	90

2.1.2 Discussion - Compliance / Non Compliance

The daily results and monthly averages for February, March and April were all below the air quality criteria.

The annual average for the PM10 sites between April 2011 and March 2012 were also below the air quality annual criteria of 30µg/m^3.

The TSP site between April 2011 and March 2012 was below the air quality annual criteria of 90µg/m^3.

2.2 WERRIS CREEK MINE 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 EPA guidelines and results are reported as grams per metre squared per month (g/m^2/month).

2.2.1 Monitoring Data Results

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

Monitor Location	February (g/m^2/month)	March (g/m^2/month)	Annual (g/m^2/month)	April (g/m^2/month)	Criteria (g/m^2/month)
WC2	0.7	1.2	1.4	2.5	4.0
WC5	0.5	0.6	0.9	1.1	4.0
WC7	0.5	0.7	0.6	0.6	4.0
WC8	0.5	1.2	0.9	1.0	4.0
WC9	0.8*	0.5	0.6	0.7*	4.0
WC10	0.4	0.8	0.7	3.5	4.0
WC11	0.2	5.0*	1.2	1.5	4.0

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

2.2.2 Discussion - Compliance / Non Compliance

All dust deposition gauge results were within the monthly criteria of 4.0g/m^2/month.

2.3 QUIRINDI TRAIN DUST DEPOSITION

2.3.1 Monitoring Data Results

The results for the last three months are provided in the table below; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	February 2012		March 2012		April 2012		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	0.5	10	0.7	25	0.8	25	1.0
DDW20	0.6	40	0.5	25	0.3	25	1.0
DDW13	0.8	60	0.4	30	0.3	30	1.4
Train Line							
DDE13	0.5	40	0.7	25	0.7	25	0.7
DDE20	0.7	10	0.4	15	1.0	10	1.2
DDE30	1.4	10	0.4	15	0.5	25	1.1

2.3.2 Discussion - Compliance / Non Compliance

To date, there is no clear pattern of train dust deposition adjacent to the railway line in Quirindi.

2.4 AIR QUALITY COMPLAINTS

There were two dust related complaints for the period (#115 and #2) both relating to extra dust observed in the mornings from WCC. The autumn seasonal change in weather conditions and the onset of longer and stronger inversions have been trapping and concentrating dust emissions so that it is more noticeable of a morning. WCC is not generating more dust that usual, the temperature inversions are trapping and preventing the dust from dispersing until after 9am when the atmosphere warms up and dispersion can occur. Dust deposition monitoring results have not identified increased dust deposition. Complaint #115 on 29th March 2012 was due likely in response to a small outbreak in spontaneous combustion that was brought under control on dayshift. Specific actions taken in relation to these complaints are outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 properties from 13 monitoring points:

- A - “Rosehill” R5;
- B1 - “Almawille” (private agreement) R8;
- B1 - 83 Wadwells Lane R7;
- B2 - “Mountain View” R22;
- B2 - “Gedhurst” R9;
- C - “Meadholme” (private agreement) R10;
- C - “Glenara” (private agreement) R11;
- D - “Hazeldene” R24;
- E - “Railway Cottage” R12;
- F - “Talavera” R96;
- G - R97;
- H - “Kyooma” (private agreement) R98;
- I - Kurrara St, Werris Creek;
- J - Coronation Ave, Werris Creek;
- K - “Tonsley Park” (private agreement) R20;
- K - “Alco Park” (private agreement) R21; and
- L - R103.

Attended noise monitoring during February and March measured noise levels across three 15 minute intervals corresponding to day, evening and night periods and for April, noise levels were measured for 15 minute intervals representative of the day period and the evening/night period together.

3.1.1 Monitoring Data Results

The results for the last three months attended noise monitoring are outlined below for noise levels from WCC operations only (not ambient noise); however see Monthly Noise Monitoring Reports under **Appendix 4** for more detail.

Wednesday 8th February 2012

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening dB(A) $L_{eq\ 15min}$	Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
"Rosehill" R5	<30#	35	Inaudible#	<30	35
West Quipolly R7, R8*, R9 & R22	<25#	37/36[1]	Inaudible#	<25	37/36[1]
Central Quipolly R10*, R11*	Inaudible#	39	Inaudible#	<25	39
"Hazeldene" R24	Inaudible#	37	Inaudible#	<25	37
"Railway Cottage" R12	Inaudible#	38	Inaudible#	<30#	38
R97	<30#	38	<30#	<30#	37
"Talavera" R96	24#		<30#	<30	35
"Kyooma" R98*	25#	36	<30#	<30	36
Kurrara St, WC	Inaudible#	35	<30#	<30	35
Coronation Ave, WC	<30#	35	Inaudible#	Inaudible#	35
South St, WC R20*, R21*	Inaudible#	39	30#	30#	37
West St, WC R103	<25#	35	Inaudible#	Inaudible#	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

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

Thursday 22nd March 2012

Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening dB(A) $L_{eq\ 15min}$	Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
"Rosehill" R5	31	35	33	27#	35
West Quipolly R7, R8*, R9 & R22	31	37/36[1]	32	32#	37/36[1]
Central Quipolly R10*, R11*	30	39	32	32#	39
"Hazeldene" R24	29	37	25	31#	37
"Railway Cottage" R12	<25	38	31	31#	38
R97	21	35	<20	Barely Audible#	35
"Talavera" R96	<20	38	<20	<20#	37
"Kyooma" R98*	<20	36	<20	Barely Audible#	36
Kurrara St, WC	Inaudible	35	Inaudible	Inaudible#	35
Coronation Ave, WC	Inaudible	35	Inaudible	Inaudible#	35
South St, WC R20*, R21*	Inaudible	39	33	Inaudible#	37
West St, WC R103	Inaudible	35	Inaudible	Inaudible#	35
Rail Spur	NM				55 dB(A) $L_{eq\ 24hr}$
	NM				80 dB(A) L_{MAX}

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

Thursday 26th April 2012

	Location	Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible	35	Inaudible	35
B1	**West Quipolly** R7, R8*	Inaudible#	37	33	37
B2	**West Quipolly** R9 & R22	<25#	37/36[1]	31	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible	39	30	39
D	**"Hazeldene"** R24	Inaudible	37	32	37
E	**"Railway Cottage"** R12	Inaudible	38	30	38
F	**"Talavera"** R96	28	35	25	35
G	R97	25	38	22	37
H	**"Kyooma"** R98*	31#	36	31	36
I	**Kurrara St, WC**	Inaudible	35	<25	35
J	**Coronation Ave, WC**	Inaudible#	35	Inaudible	35
K	**South St, WC** R20*, R21*	Inaudible	39	Inaudible	37
L	**West St, WC** R103	Inaudible	35	Inaudible	35
	Rail Spur	NM			55 dB(A) $L_{eq\ 24hr}$
		NM			80 dB(A) L_{MAX}

WC – Werris Creek; * - Private agreement in place with resident; # – Adverse weather with wind >3m/s; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during February, March and April 2012.

3.2 NOISE COMPLAINTS

There were seven complaints for noise impacts from WCC operations, three complaints from two Werris Creek residents and four complaints from a Quipolly resident. Two noise complaints were in relation to train shunting and dozers at the rail load out facility. The train shunting noise associated with the Werris Creek Rail yard, which is not related to WCC operations. WCC will take delivery of a new D10T dozer with noise attenuated tracks to replace an older D9R dozer, which should reduce potential dozer track related noise emissions from the rail load out facility. The complaints related to mine noise should be mitigated by implementing a noise control operator on 17th March 2012 who on night shift listens to the real time audio and noise levels from the continuous noise monitor located in the Quipolly area. When noise levels from mining operations go over 35dB(A), the noise control operator notifies the open cut examiner who then modifies operations so that noise levels fall below 35dB(A). WCC will also take delivery of a second continuous noise monitor which will be located in Werris Creek township when the Council approves the lease and a compound is constructed. Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at “Glenala”, “Talavera”, “Werris Creek”, “Tonsley Park”, “Greenslopes” and “Cintra” during the period with “Cintra” and “Greenslopes” excluded from April onwards as the properties are owned by WCC. Compliance limits for blasting overpressure is 115dBL (and up to 120dBL for only 5% of blasts) and vibration is 5mm/s (and up to 10mm/s for only 5% of blasts). During the period a total of 15 blasts were fired by the blasting contractor, Orica Mining Services.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

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

February 2012	“Glenala”		“Greenslopes”		“Tonsley Park”		“Cintra”*		Werris Creek		“Talavera”	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.61	106.7	0.92	105.1	1.36	110.0	0.33	102.5	<0.37	<109.9
Monthly Maximum	NM	NM	0.75	110.5	1.25	107.9	1.57	113.2	0.34	104.6	<0.37	<109.9
Annual Average	<0.37	<109.9	0.69	102.9	0.80	101.7	1.21	106.8	0.45	101.2	0.56	102.5
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	2.7%	0%	0%	0%	3.3%	0%	0%	0%	0%
# Triggered this Month	0/0		3/4		4/4		3/4		2/4		0/0	

March 2012	“Glenala”		“Greenslopes”		“Tonsley Park”		“Cintra”*		Werris Creek		“Talavera”	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	mm/s	dB(L)	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	NM	NM	0.49	102.3	0.86	100.1	1.00	105.6	0.34	104.1	<0.37	<109.9
Monthly Maximum	NM	NM	0.77	108.7	1.05	108.0	1.22	110.1	0.42	107.2	<0.37	<109.9
Annual Average	<0.37	<109.9	0.69	102.9	0.81	101.6	1.19	106.7	0.44	101.5	0.56	102.5
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	2.6%	0%	0%	0%	0.0%	0%	0%	0%	0%
# Triggered this Month	0/0		6/6		4/6		5/6		3/6		0/0	

April 2012	“Glenala”		“Tonsley Park”		Werris Creek		“Talavera”	
	mm/s	dB(L)	mm/s	mm/s	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.18	108.9	0.91	99.8	0.31	99.0	0.10	113.4
Monthly Maximum	0.18	108.9	1.17	102.4	0.31	105.1	0.10	113.4
Annual Average	0.18	108.9	0.91	99.8	0.31	99.0	0.10	113.4
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	1/3		2/5		2/5		1/3	

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

4.1.2 Discussion - Compliance / Non Compliance

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

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 two blasting complaints (#109 and #5) from one Werris Creek complainant during the period. Both blasts were in the more weathered material on top of the hill ahead of the open cut pit and would be more exposed. Both blasts were fired when wind conditions were away from Werris Creek and blast monitoring results were below criteria. Specific actions taken for the blasting complaints are outlined in **Section 6**.

5.0 WATER

The quarterly groundwater quality monitoring was undertaken on 26th and 27th March 2012. Quarterly surface water monitoring was undertaken on 23rd February 2012. There were four surface water discharge events and one void water discharge incident during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC 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 6**.

Site	pH	EC	Dip	Change from Previous Quarter
Quipolly Creek Alluvium				
MW7	7.06	606	5.22	Groundwater level measurement not accurate as pump was running, pH dropped 0.50 and EC dropped 31.
MW12	7.68	453	7.84	Groundwater level increased 0.11m, pH rose 0.06 and EC no change.
Werris Basalt				
MW5	8.01	1740	7.89	Groundwater level dropped 0.08m, pH rose 0.06 and EC increased 100.
MW14	7.76	1310	15.40	Groundwater level rose 0.09m, pH dropped 0.13 and EC increased 130.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is distance in meters from top of bore to groundwater surface

5.1.2 Discussion - Compliance / Non Compliance

Groundwater levels have continued to fall over 2011 since the record high levels due to the very wet conditions at the end of 2010 and represent the groundwater aquifer returning back to normal conditions. Mining continues not to impact on groundwater aquifers.

5.2 SURFACE WATER

Surface water monitoring is undertaken at key dirty and void water dams to monitor for potential contamination issues due to mining while the water is still onsite.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with detailed monitoring data outlined in **Appendix 7**.

Site	pH	EC	TSS	O&G	Change
ONSITE					
SB2	8.34	444	14	<5	pH increased 0.1, EC decreased 182, TSS decreased 4, O&G no change.
SB9	7.89	306	28	<5	pH decreased 0.06, EC decreased 316, TSS increased 22, O&G no change.
SB10	8.68	258	7	<5	pH increased 0.87, EC decreased 115, TSS dropped 57, O&G no change.

OFFSITE					
QCU	7.50	317	16	<5	pH decreased 0.29, EC decreased 121, TSS decreased 8, O&G no change.
QCD	7.83	482	37	<5	pH decreased 0.19, EC decreased 386, TSS increased 22, O&G no change.
WCU	8.02	1360	45	<5	pH steady, EC steady, TSS decreased 5, O&G no change.
WCD	8.38	1310	32	<5	pH decreased 0.14, EC decreased 90, TSS decreased 7, O&G negligible change.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.2.2 Discussion - Compliance / Non Compliance

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

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were two wet weather discharge events and two controlled discharge events during the period. VWD3 Dam was breached at the spillway on 11th March 2012 resulting in a non-compliant discharge of void water. A summary of discharge monitoring results is provided below with detailed monitoring data outlined in **Appendix 8**.

Date	Site	pH	EC	TSS	O&G	Compliance	Type
2/02/2012	**SB9**	7.92	404	32	<5	Water quality within compliance	Wet Weather
2/02/2012	**SB10**	7.59	282	300	<5	TSS >50mg/L however rainfall >39.2mm & in compliance	Wet Weather
16/02/2012	**SB2**	7.92	436	16	<5	Water quality within compliance	Controlled
16/02/2012	**SB9**	7.18	325	41	<5	Water quality within compliance	Controlled
11/03/2012	**VWD3**	8.3	892	8	NT	NON-COMPLIANT DISCHARGE of Void Water	-
Criteria		**8.5**	**N/A**	**50**	**10**		

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water; NT – Not Tested

5.3.2 Discussion - Compliance / Non Compliance

The wet weather discharge from SB10 on 2/02/2012 recorded high TSS (sediment), however was in compliance as greater than 39.2mm of rain had fallen and therefore TSS limits in accordance with EPL 12290 conditions do not apply. All dirty 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 dirty water discharge events.

A breach in a void water dam (Void Water Dam 3 – 200ML Dam North) was observed at approximately 9:30am on Sunday 11th March 2012. The breach of the void water dam wall had occurred at the spillway of the dam, located on the northern embankment as result of pumping water from the open cut pit into the dam and overflowing through the spillway resulting in the release of approximately 30ML of void water. WCC is not approved to discharge void water offsite and the incident is being investigated by the EPA. Laboratory analysis found that the water samples both of the discharge water and normal creek water generally complied with both Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) Livestock Watering, Agricultural Irrigation and Drinking Water Guidelines with a few minor exceptions due to in stream water quality and not the void water discharge. WCC is undertaking a number of actions to rectify the dam breach as well as upgrading overflow controls on all void water dams.

5.3 WATER COMPLAINTS

There were no water related complaints during the period.

6.0 COMPLAINTS SUMMARY

There were 17 complaints received during the period with the details summarized below. In total there were 7 issues related to noise; six issues related to lighting, two issues with blasting, two issues with dust and one issue relating to train movements on rail spur. There were six different complainants during the period with nine complaints from one individual Werris Creek resident and four from one individual Quipolly resident. The lighting complaints were all from the one Werris Creek resident with a lighting camera set up on the southern edge of Werris Creek with a view towards the mine confirming that the lighting plants had been set up

appropriately and in compliance with PA 10_0059. The train transport sub-contractor disciplined a train driver for exceeding the speed limit on the Werris Creek rail spur.

#	Date	Complainant	Complaint	Investigation	Action Taken
106	8/02/2012 7:39am	AC	Complainant alleged that a train arriving on the Werris Creek Rail Spur was travelling in excess of the maximum speed of 15km/h which was very noisy as train line 50m from back door.	Initial response from train transport sub-contractor found that the driver did not exceed the rail spur speed limit and that these locomotives do not record speed. However further investigation by rail transport contractor found that the locomotives do record speed which found that the train driver had exceed the rail spur speed limit of 15km/h due to testing a recently repaired locomotive engine.	Initial written response provided to complainant. Train driver has been disciplined by rail transport contractor and entire crew of train drivers toolbox talked on WCC site rules. A final written response was sent to the complainant.
107	9/02/2012 1:18pm	A	Complainant stated that on Wednesday 8th February 2012 at 1:30am could see two lights from WCC but were not intrusive. However on Thursday 9th February 2012 at 12:05am, could see three lights, with the additional third light shining impacting on their residence.	A review of open cut operations indicates that at least two lighting plants would have been visible to Werris Creek, one on the east RL430m dump and centre RL440m ramp. The "additional third lighting plant" was the lighting plant on the centre RL440m ramp. The lighting plant was set up in accordance with WCC consent conditions at 30o away from Werris Creek but still noticeable to people in town.	The centre RL440m ramp lighting plant was relocated to the east RL430m dump for the next night shift. A written response was sent to the complainant.
108	15/02/2012 3:13pm	EPA/A	Complainant alleged to the EPA that noise from train movements at WCC had interrupted their sleep at 2:25am on 7th February 2012.	The last train loaded at night by Werris Creek Coal was on the 4th February 2012. Any train shunting at 2:25am on 7th February 2012 is unrelated to WCC activities.	A written response was sent to EPA and the complainant.
109	15/02/2012 2:35pm	EPA/A	Complainant alleged to the EPA that a blast from WCC had shaken the back windows and entire house.	Blast #05 (S13_13-18_BlackSeam1) was fired at 13:37 on 15th February 2012 was a blast in the weathered material on the ridge in front of the pit down to RL385m. Blast results were within compliance limits.	A written response was sent to EPA and the complainant.
110	22/02/2012 12:30pm	A	Complainant stated that on Monday 20th, Tuesday 21st and Wednesday 22nd February 2012 was impacted with lights shining directly at the property from the open cut.	A review of the lighting camera time lapse video did not identify any potential point source lighting impacts between the 20th and 23rd February 2012. The camera did not identify any lights from the mine on Tuesday and Wednesday nights 21st and 22nd February, with only a general glow of lights visible on Monday night 20th February 2012.	A written response was sent to the complainant.
111	2/03/2012 9:11am	EPA/A	Complainant indicated on 25th February 2012 there was noise and intrusive lighting coming from the coal loader from 7pm to 2:45am. The coal loader was also very noisy mainly from bulldozers and lights on Thursday night 1st March 2012 from 9pm to 0:15am.	Dozers working away from Werris Creek and lighting plants were oriented to the north west and west. The weather conditions could have propagated noise towards Werris Creek from the Rail Load Out Facility on the Saturday and Monday night however Thursday night weather conditions would have been unlikely to enhance noise emissions.	Written response sent to EPA and complainant.
112	8/03/2012 11:37pm	C	Complainant stated that noise from WCC was very clear and loud at their house tonight and WCC needed to look at what was in operation at 11:24pm as the machinery was very noisy.	Both the wind direction and temperature inversion are considered to represent noise enhancing conditions and likely to have enhanced mining noise levels.	Written response sent to complainant.

113	16/03/2012 10:58pm	L	Complainant stated that mine was very loud tonight	The wind direction and temperature inversion were likely to result in noise enhancement at the complainant's residence.	Noise Control Operator position created for night shift to review real time noise levels and audio. Written response sent to complainant.
114	28/03/2012 10:34am	A	Lights from WCC were shining at complainants residence after midnight	Lighting camera confirms glow of mine lights visible. Lighting plant inspection confirms all lights are orientated away from Werris Creek.	One lighting plant was removed by OCE. Written response sent to complainant.
115	29/03/2012 9:10am	Z	Complainant indicated that mine was very dusty this morning.	Small patch of spontaneous combustion in pit had caused hazy conditions in the morning. Strong inversion present trapping smoke and dust.	Spontaneous combustion dug out and put out. Written response sent to complainant.
116	30/03/2012 10:42pm	L	Complainant stated that mine was very noisy at 10:30pm	The wind direction was likely to result in noise enhancement at the complainant's residence however it is not obvious whether mining noise or road truck/traffic noise that caused levels above the Hazeldene criteria of 37dBA.	OCE shutdown all operations at 10:50pm when contacted by Noise Control Operator. OCE sent operator to Quipolly to investigate road noise. Written response sent to complainant.
117	30/03/2012 9:13am	DoP/A	Lights from WCC were shining at complainants residence after midnight	Lighting camera confirms glow of mine lights visible. Lighting plant inspection confirms all lights are orientated away from Werris Creek.	Pre Shift Instruction to dozer operators on variable light switches to dim lights. Written response sent to DoP and complainant.
1	3/04/2012 11:00pm	L	Complainant stated that mine was very loud tonight	The calm conditions and strong inversion at the time of complaint was likely to result in noise enhancement at the complainants residence, however the noise levels measured without the influence of cattle did not exceed the noise criteria.	EO relocated the noise trailer the following night to avoid impacts from cattle. A written response provided to the complainant.
2	4/04/2012 5:45pm	AD	Complainant indicated that mine had been very dusty lately and was concerned over microscopic dust impacting on their health.	Seasonal change and onset of longer and stronger inversions had been concentrating dust emissions. Dust deposition gauge results for the last 12 months at complainant's property have been well below dust criteria.	A written response and NSW Health Coal Mine Dust factsheet provided to the complainant.
3	18/04/2012 12:29pm	A	Lights from WCC were shining at complainants residence and neighbours for the last 2 nights from 11:30pm.	Lighting camera confirms glow of mine lights visible but not intrusive. In pit inspection confirms lighting plants orientated away from Werris Creek.	Lighting plant re-orientated further to the south by OCE. Written response sent to complainant.
4	27/04/2012 10:41pm	L	Complainant stated that noise from mine was loud tonight and preventing her from going to sleep and had been noisy that week.	Continuous noise monitor levels show that the average noise levels were below the noise criteria. NCO and OCE appropriately managed operations to prevent further impacts even though noise enhancing conditions were present.	A written response provided to the complainant.
5	30/04/2012 3:03pm	EPA/A	Complainant alleged that a large blast from WCC shook her house on Friday 27th April 2012.	Blast #19 (BlackSeam4) fired at 13:14 on 27th April 2012 was an overburden blast in the weathered material on the ridge in front of the pit down to the Black Seam or RL385m. Blast results were in compliance.	A written response provided to the complainant and EPA.

7.0 GENERAL

Please feel free to ask any questions in relation to the information contained within this document during Item 7 of the meeting agenda.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS Dust Monitoring
2011-2012

Site / Date	WCHV1 Cintra	Monthly Monthly Average	Rolling Annual Average	WCHV2 Tonsley Park	Monthly Monthly Average	Rolling Annual Average	WCHV3 Railway View	Monthly Monthly Average	Rolling Annual Average	WCHV4 Eurunderee	Monthly Monthly Average	Rolling Annual Average	WCTSP Railway View	Monthly Monthly Average	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
02-Apr-12	22		22.3	19		19.0	29		28.6	18		17.6	66		66.4	50	30	90
08-Apr-12	12		17.2	16		17.6	23.2		25.9	20		18.8	53		59.6	50	30	90
14-Apr-12	6		13.5	8		14.2	12		21.3	8		15.3	22		47.0	50	30	90
20-Apr-12	23	**16**	15.9	19	**15**	15.3	26	**23**	22.6	14	**15**	15.1	80	**55**	55.3	50	30	90
26-Apr-12			15.9			15.3			22.6			15.1			55.3	50	30	90
02-May-12			15.9			15.3			22.6			15.1			55.3	50	30	90
08-May-12			15.9			15.3			22.6			15.1			55.3	50	30	90
14-May-12			15.9			15.3			22.6			15.1			55.3	50	30	90
20-May-12			15.9			15.3			22.6			15.1			55.3	50	30	90
26-May-12			15.9			15.3			22.6			15.1			55.3	50	30	90
01-Jun-12			15.9			15.3			22.6			15.1			55.3	50	30	90
07-Jun-12			15.9			15.3			22.6			15.1			55.3	50	30	90
13-Jun-12			15.9			15.3			22.6			15.1			55.3	50	30	90
19-Jun-12			15.9			15.3			22.6			15.1			55.3	50	30	90
25-Jun-12			15.9			15.3			22.6			15.1			55.3	50	30	90
01-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
07-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
13-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
19-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
25-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
31-Jul-12			15.9			15.3			22.6			15.1			55.3	50	30	90
06-Aug-12			15.9			15.3			22.6			15.1			55.3	50	30	90
12-Aug-12			15.9			15.3			22.6			15.1			55.3	50	30	90
18-Aug-12			15.9			15.3			22.6			15.1			55.3	50	30	90
24-Aug-12			15.9			15.3			22.6			15.1			55.3	50	30	90
30-Aug-12			15.9			15.3			22.6			15.1			55.3	50	30	90
05-Sep-12			15.9			15.3			22.6			15.1			55.3	50	30	90
11-Sep-12			15.9			15.3			22.6			15.1			55.3	50	30	90
17-Sep-12			15.9			15.3			22.6			15.1			55.3	50	30	90
23-Sep-12			15.9			15.3			22.6			15.1			55.3	50	30	90
29-Sep-12			15.9			15.3			22.6			15.1			55.3	50	30	90
05-Oct-12			15.9			15.3			22.6			15.1			55.3	50	30	90
11-Oct-12			15.9			15.3			22.6			15.1			55.3	50	30	90
17-Oct-12			15.9			15.3			22.6			15.1			55.3	50	30	90
23-Oct-12			15.9			15.3			22.6			15.1			55.3	50	30	90
29-Oct-12			15.9			15.3			22.6			15.1			55.3	50	30	90
04-Nov-12			15.9			15.3			22.6			15.1			55.3	50	30	90
10-Nov-12			15.9			15.3			22.6			15.1			55.3	50	30	90
16-Nov-12			15.9			15.3			22.6			15.1			55.3	50	30	90
22-Nov-12			15.9			15.3			22.6			15.1			55.3	50	30	90
28-Nov-12			15.9			15.3			22.6			15.1			55.3	50	30	90
04-Dec-12			15.9			15.3			22.6			15.1			55.3	50	30	90
10-Dec-12			15.9			15.3			22.6			15.1			55.3	50	30	90
16-Dec-12			15.9			15.3			22.6			15.1			55.3	50	30	90
22-Dec-12			15.9			15.3			22.6			15.1			55.3	50	30	90
28-Dec-12			15.9			15.3			22.6			15.1			55.3	50	30	90
03-Jan-13			15.9			15.3			22.6			15.1			55.3	50	30	90
09-Jan-13			15.9			15.3			22.6			15.1			55.3	50	30	90
15-Jan-13			15.9			15.3			22.6			15.1			55.3	50	30	90
21-Jan-13			15.9			15.3			22.6			15.1			55.3	50	30	90
27-Jan-13			15.9			15.3			22.6			15.1			55.3	50	30	90
02-Feb-13			15.9			15.3			22.6			15.1			55.3	50	30	90
08-Feb-13			15.9			15.3			22.6			15.1			55.3	50	30	90
14-Feb-13			15.9			15.3			22.6			15.1			55.3	50	30	90
20-Feb-13			15.9			15.3			22.6			15.1			55.3	50	30	90
26-Feb-13			15.9			15.3			22.6			15.1			55.3	50	30	90
04-Mar-13			15.9			15.3			22.6			15.1			55.3	50	30	90
10-Mar-13			15.9			15.3			22.6			15.1			55.3	50	30	90
16-Mar-13			15.9			15.3			22.6			15.1			55.3	50	30	90
22-Mar-13			15.9			15.3			22.6			15.1			55.3	50	30	90
28-Mar-13			15.9			15.3			22.6			15.1			55.3	50	30	90
Min	**6.2**						**12.2**			**8.2**			**22.0**					
Max	**23.0**			**19.0**			**28.6**			**20.0**			**79.9**					
Capture	**7%**			**7%**			**7%**			**7%**			**7%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2012-2013

MONTH (g/m2/month)	EPL #7		EPL #4		EPL #1		EPL #8		-		-		-		AQGHGMP Criteria
	WC-2 Cintra		WC-5 Railway View		WC-7 Tonsley Park		WC-8 Plain View		WC-9 Marengo		WC-10 Mountain View		WC-11 Glenara		
	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	
April 2011	2.5	1.4	1.1	0.6	0.6	0.3	1.0	0.6	c0.7	c0.3	3.5	2.6	1.5	0.8	4.0
May 2011															4.0
June 2011															4.0
July 2011															4.0
August 2011															4.0
September 2011															4.0
October 2011															4.0
November 2011															4.0
December 2011															4.0
January 2012															4.0
February 2012															4.0
March 2012															4.0
ANNUAL AVERAGE	**2.5**		**1.1**		**0.6**		**1.0**		**#DIV/0!**		**3.5**		**1.5**		**4.0**
MINIMUM	**2.5**		**1.1**		**0.6**		**1.0**		**0.0**		**3.5**		**1.5**		**-**
MAXIMUM	**2.5**		**1.1**		**0.6**		**1.0**		**0.0**		**3.5**		**1.5**		**4.0**

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

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

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2012-2013

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2012	0.8	25%	50%	25%	0.3	25.0	50.0	25.0	0.3	30.0	40.0	30.0	0.7	25.0	50.0	25.0	1.0	10.0	60.0	30.0	0.5	25.0	50.0	25.0	4.0
May 2012																									4.0
June 2012																									4.0
July 2012																									4.0
August 2012																									4.0
September 2012																									4.0
October 2012																									4.0
November 2012																									4.0
December 2012																									4.0
January 2013																									4.0
February 2013																									4.0
March 2013																									4.0
ANNUAL AVERAGE	**0.8**				**0.3**				**0.3**				**0.7**				**1.0**				**0.5**				**4.0**
MINIMUM	**0.8**				**0.3**				**0.3**				**0.7**				**1.0**				**0.5**				**-**
MAXIMUM	**0.8**				**0.3**				**0.3**				**0.7**				**1.0**				**0.5**				**4.0**

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

Appendix 4 – Noise Monitoring Results

17 February 2012

Ref: 04035/4272

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

RE: FEBRUARY 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Wednesday 8th February, 2012.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Project Approval PA10_0059. The monitoring locations and noise criteria for each are detailed below in extract from the Approval and shown on the attached **Figure 1**. The actual monitoring locations representative of the various receptor areas are shown in bold and underlined in the extract below (note that R14 and R18 are now mine owned and, therefore, no monitoring is carried out there).

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

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

Additional monitoring was carried out at the Davidson property on Werris Creek Stock Road. As there is no residence on the property the monitoring was carried out on the roadside near the farm gate (see Figure 1).

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).

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that throughout the entire survey the winds were generally from the southeast. Wind speeds gradually decreased from the beginning of the day time survey until the end of the night time survey. The data showed that there was a mild temperature inversion from about 9 pm.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable. All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

Table 1
WCC Noise Monitoring Results – 8 February 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	1:53 pm	45	35	n/a	4.6/143	Birds (42), traffic (42), WCC (<30)
R9 Gedhurst	2:12 pm	44	37	n/a	5.6/136	Machine (41), Traffic (38), birds (38), WCC (<25)
R11 Glenara	2:35 pm	45	39	n/a	6.1/114	Traffic (42), wind (42), **WCC inaudible**
R12 Railway Cottage	1:00 pm	41	38	n/a	4.4/108	Wind (39), Traffic (37), **WCC inaudible**
R20 Tonsley Park	1:26 pm	45	39	n/a	3.6/139	Traffic (42), birds (41), **WCC inaudible**
R24 Hazeldene	2:50 pm	45	37	n/a	6/123	Traffic (44), wind (36), birds (35), **WCC inaudible**
Davidson	2:14 pm	41	37	n/a	5.6/136	Wind (38), thunder (36), windmill (32), WCC (<30)
R96 Kyooma	1:41 pm	39	38	n/a	4.6/143	Wind (36), plane (35), WCC (25)
R98 Talavera	1:20 pm	36	36	n/a	3.6/139	Wind (34), plane (30), insects (28), WCC (24)
R103 Parsons	1:05 pm	43	35	n/a	4.4/108	Machine (41), birds (36), traffic (34), WCC (<25)
Kurrara St	2:51 pm	53	35	n/a	6/123	Traffic (50), train (48), **WCC inaudible**
Coronation Avenue	2:34 pm	48	35	n/a	6.1/114	Workmen (45), Wind (42), traffic (42), WCC (<30)

Table 2 WCC Noise Monitoring Results – 8 February 2012 (Evening)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	8:00 pm	44	35	n/a	5.4/152	Insects (42), traffic (38), WCC inaudible
R9 Gedhurst	8:34 pm	39	37	n/a	5.2/162	Birds & insects (37), traffic (33), WCC inaudible
R11 Glenara	9:07 pm	38	39	n/a	4.0/150	Birds & insects (35), traffic (33), WCC inaudible
R12 Railway Cottage	7:01 pm	44	38	n/a	7.5/130	Wind (41), traffic (38), plane (35), WCC inaudible
R20 Tonsley Park	7:31 pm	45	37	n/a	6.7/148	Insects (43), traffic (39) WCC (30)
R24 Hazeldene	9:28 pm	42	37	n/a	3.4/134	Traffic (40), Birds & insects (36), WCC inaudible
Davidson	8:05 pm	43	37	n/a	5.4/152	Insects (42), wind (35), WCC (<30)
R96 Kyooma	7:45 pm	40	37	n/a	6.2/156	Wind (37), insects (37), WCC (<30)
R98 Talavera	7:22 pm	51	36	n/a	6.4/134	Insects (50), traffic (42), WCC (<30)
R103 Parsons	7:12 pm	52	35	n/a	6.4/134	Birds (51), train (42), traffic (40), WCC inaudible
Kurrara St	8:46 pm	45	35	n/a	5.4/159	Insects (43), traffic (39), WCC (<30)
Coronation Avenue	8:25 pm	53	35	n/a	5.2/162	Traffic (51), insects (47), WCC inaudible

Table 3 WCC Noise Monitoring Results – 8-9 February 2012 (Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	12:28 am	41	35	<3	1.7/106	Insects (35), traffic (34), WCC (<30)
R9 Gedhurst	12:45 am	38	37	<3	1.7/123	Insects (39), traffic (37), WCC (<25)
R11 Glenara	1:02 am	42	39	<3	1.9/121	Insects (41), traffic (35), WCC (<25)
R12 Railway Cottage	10:08 pm	37	38	<3	3.9/122	Insects (36), traffic (31), WCC (<30)
R20 Tonsley Park	12:05 am	44	37	<3	3.6/104	Insects (45), trains (38), traffic (32), WCC (30)
R24 Hazeldene	1:22 am	45	37	<3	1.7/159	Insects (44), traffic (35), WCC (<25)
Davidson	10:59 pm	46	37	<3	4.1/105	Insects (43), train (31), WCC (<30)
R96 Kyooma	10:43 pm	37	37	<3	2.9/118	Insects (36), WCC (<30)
R98 Talavera	10:24 pm	45	36	<3	2.1/128	Insects (44), traffic (36), WCC (<30)
R103 Parsons	11:49 pm	44	35	<3	3.6/104	Train (40), Insects (39), WCC inaudible
Kurrara St	11:30 pm	45	35	<3	1.9/144	Trains (42), Insects (37), traffic (36), WCC (<25)
Coronation Avenue	11:14 pm	39	35	<3	3.2/121	Insects (36), train (36), 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 relevant criterion at any monitoring locations at any time during the survey.

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
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Review:

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Acoustical Consultant

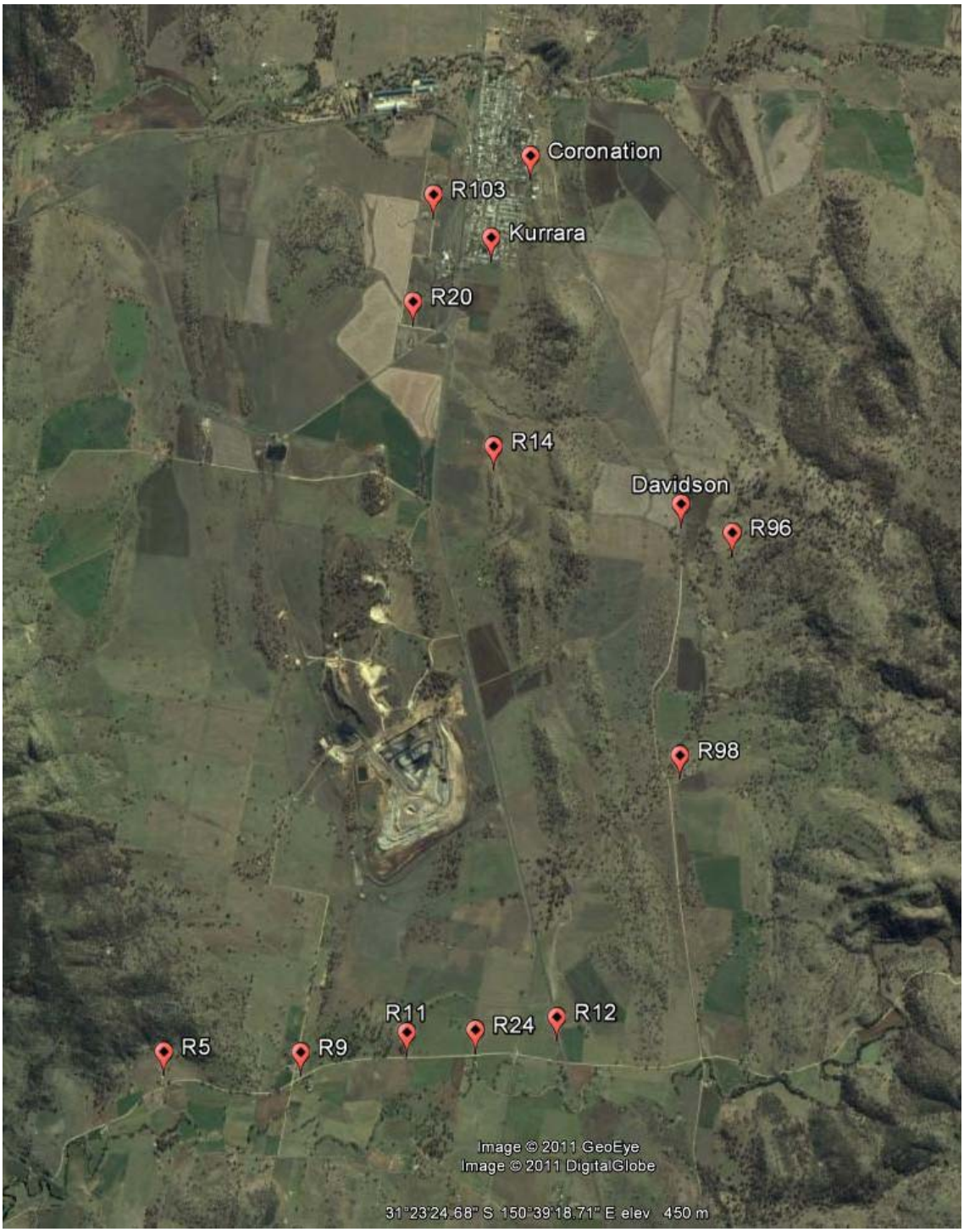

Figure 1 – Noise Monitoring Locations

26 March 2012

Ref: 04035/4313

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

RE: MARCH 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Thursday 22nd March, 2012.

Noise measurement locations for the attended noise survey are as defined in the Werris Creek Coal Project Approval PA10_0059. The monitoring locations and noise criteria for each are detailed below in extract from the Approval and shown on the attached **Figure 1**. The actual monitoring locations representative of the various receptor areas are shown in bold and underlined in the extract below (note that R14 and R18 are now mine owned and, therefore, no monitoring is carried out there).

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

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

Additional monitoring was carried out at the Davidson property on Werris Creek Stock Road. As there is no residence on the property the monitoring was carried out on the roadside near the farm gate (see Figure 1).

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).

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period. A-weighted noise levels were measured over 15-minute periods with data acquired at 1-second statistical intervals and the meter set to "fast" response. Each one-second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Meteorological data used in this report were supplied by the mine from their automatic weather station. Wind speed and direction have been determined as the arithmetic average of the measurements over the monitoring period. The data show that throughout the day time survey winds were light and variable in direction. During the evening the wind was light from the south and in the night the wind turned from the north and increased in speed. The data showed that there was a mild temperature inversion throughout the night time survey.

The total measured Leq noise level is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable. All noise levels shown are in dB(A) Leq (15 min) unless otherwise shown.

Table 1
WCC Noise Monitoring Results – 22 March 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	3:54 pm	35	35	n/a	1.3/210	Birds & insects (33), WCC (31)
R9 Gedhurst	4:15 pm	34	37	n/a	1.0/259	WCC (31), birds & insects (30), traffic (30)
R11 Glenara	4:38 pm	36	39	n/a	1.2/339	Birds & insects (34), WCC (30), traffic (27)
R12 Railway Cottage	2:45 pm	47	38	n/a	1.3/76	Train (47), traffic (28), WCC (<25)
R20 Tonsley Park	3:23 pm	35	39	n/a	1.1/121	Traffic (33), birds & insects (30), WCC inaudible
R24 Hazeldene	5:00 pm	37	37	n/a	1.4/26	Birds & insects (36), WCC (29), traffic (28)
Davidson	4:03 pm	41	37	n/a	1.3/210	Birds & insects (41), WCC (21)
R96 Kyooma	3:45 pm	37	38	n/a	1.2/204	Birds & insects (37), WCC (<20)
R98 Talavera	3:12 pm	38	36	n/a	1.1/101	Birds & insects (38), WCC (<20)
R103 Parsons	3:00 pm	36	35	n/a	1.3/99	Train (36), dog (30), WCC inaudible
Kurrara St	4:49 pm	49	35	n/a	1.9/353	Birds & insects (47), traffic (43), train (40), WCC inaudible
Coronation Avenue	4:32 pm	37	35	n/a	0.5/325	Birds & insects (33), traffic (33), train (30), WCC inaudible

Table 2 WCC Noise Monitoring Results – 22 March 2012 (Evening)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	7:52 pm	47	35	n/a	2.0/132	Insects (44), dogs (42), domestic noise (37), traffic (38), WCC (33), traffic (30)
R9 Gedhurst	8:12 pm	40	37	n/a	0.7/30	Train (37), Insects (36), WCC (32)
R11 Glenara	8:32 pm	51	39	n/a	1.4/174	Insects (51), traffic (34), WCC (32)
R12 Railway Cottage	6:50 pm	44	38	n/a	1.0/175	Traffic (43), birds & insects (36), WCC (31)
R20 Tonsley Park	7:21 pm	45	37	n/a	2.0/189	Insects (43), trains (38), dog (38), WCC (33)
R24 Hazeldene	8:50 pm	44	37	n/a	1.1/93	Insects (44), traffic (30), WCC (25)
Davidson	7:50 pm	55	37	n/a	2.0/132	Insects (55), WCC (<20)
R96 Kyooma	7:32 pm	40	37	n/a	2.1/189	Insects (40), WCC (<20)
R98 Talavera	7:10 pm	48	36	n/a	1.3/187	Insects (48), WCC (<20)
R103 Parsons	7:03 pm	49	35	n/a	0.8/186	Train (47), insects (44), WCC inaudible
Kurrara St	8:32 pm	52	35	n/a	1.4/174	Insects (52), traffic (28), WCC inaudible
Coronation Avenue	8:12 pm	44	35	n/a	0.7/30	Insects (42), train (38), WCC inaudible

Table 3 WCC Noise Monitoring Results – 22 March 2012 (Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
R5 Rosehill	10:43 pm	40	35	+1.5	6.3/341	Insects (40), WCC (27)
R9 Gedhurst	11:00 pm	36	37	+1.8	6.1/340	Insects (34), WCC (32)
R11 Glenara	11:17 pm	51	39	+2.1	6.1/336	Insects (51), WCC (32), traffic (30)
R12 Railway Cottage	10:00 pm	45	38	+1.9	5.3/344	Insects (45), WCC (31)
R20 Tonsley Park	10:18 pm	57	37	+1.4	6.2/346	Insects (57), trains (30), WCC inaudible
R24 Hazeldene	11:38 pm	44	37	+2.9	5.6/330	Insects (44), traffic (31), WCC 31)
Davidson	10:58 pm	52	37	+1.8	6.1/340	Insects (52), WCC barely audible
R96 Kyooma	10:41 pm	40	37	+1.5	6.3/341	Insects (40), WCC barely audible
R98 Talavera	10:21 pm	56	36	+1.4	6.2/346	Insects (56), WCC (<20)
R103 Parsons	10:00 pm	44	35	+1.9	5.3/344	Train (41), Insects (41), WCC inaudible
Kurrara St	11:43 pm	46	35	+3.1	5.4/329	Insects (46), train (23), WCC inaudible
Coronation Avenue	11:24 pm	40	35	+2.4	6.0/333	Insects (40), train (20), 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 relevant criterion at any monitoring locations at any time during the survey.

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

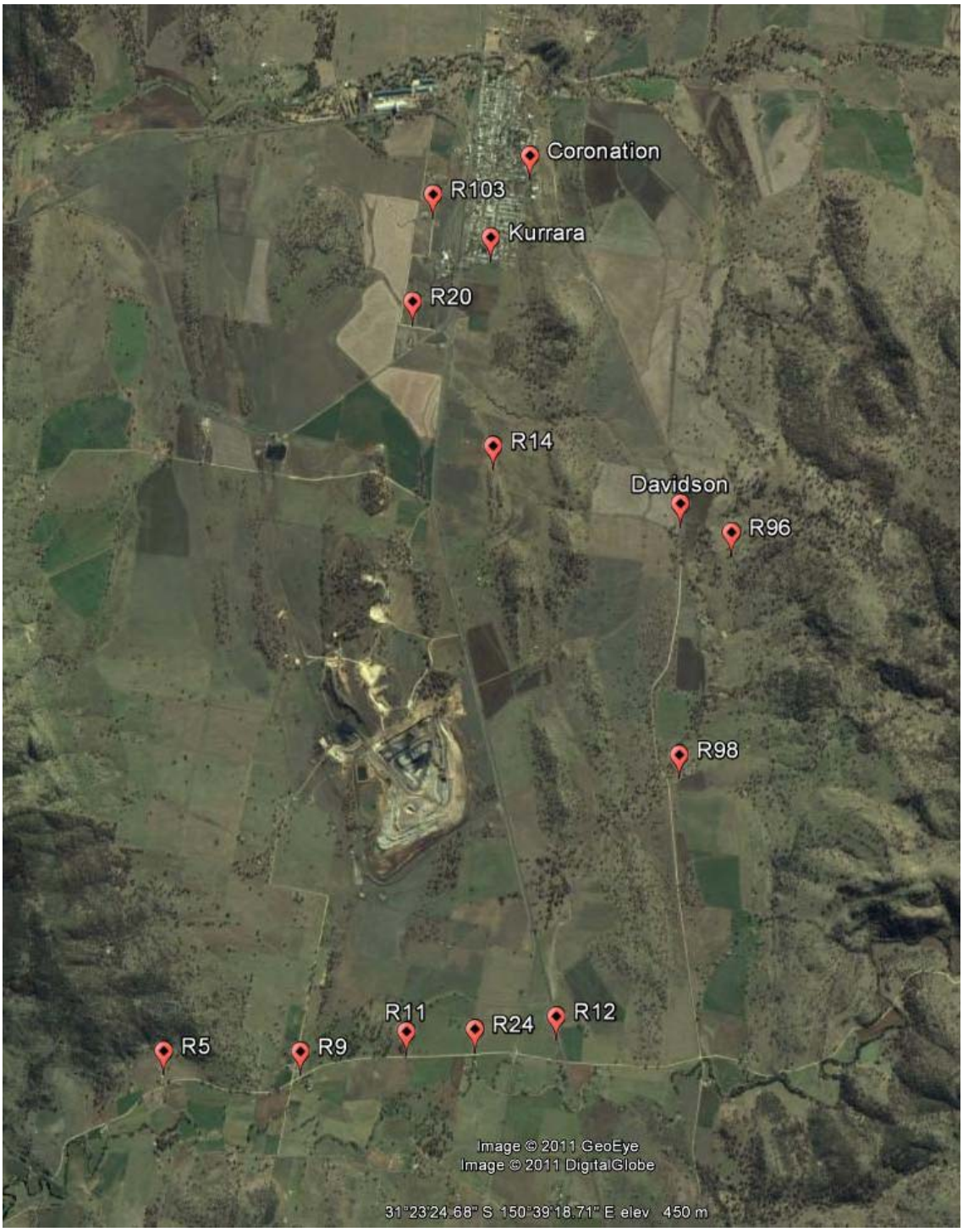

Figure 1 – Noise Monitoring Locations

2 May 2012

Ref: 04035/4357

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

RE: APRIL 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Thursday 26th April, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from Table 25 of the NMP). The monitoring locations and noise criteria for each are detailed in **Appendix 1**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

Mining operations on Thursday dayshift and nightshift 26th April 2012 had the 3600 excavator in Strip 11 centre at RL320m, a 1900 excavator in Strip 12 centre at RL350m, a 1900 excavator in Strip 12 west at RL320m and a 1900 excavator coaling in Strip 12 east at RL370m. The eastern 1900 coal trucks were running over RL410m dump to the ROM while the two lower trucks fleets were running in pit to RL300m dump and the higher 1900 trucks were running to RL445m dump on dayshift and the RL430m centre dump on night shift. The crushing plant was not running on nightshift and no trains were loaded.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC did not exceed the relevant criterion at any monitoring locations at any time during the survey.

Table 2 WCC Noise Monitoring Results – 26 April 2012 (Day)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	1:54 pm	33	35	n/a	2.1/154	Traffic, (30), birds (29), plane (25), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	2:12 pm	39	37	n/a	3.3/127	Birds (35), traffic (34), domestic noise (32), WCC inaudible
B2 R9Gedhurst/ R22 Mountain View	2:12 pm	37	37/36*	n/a	3.3/127	Birds (35), traffic (31), WCC (<25)
C R10 Meadholme/ R11 Glenara	1:51 pm	39	35	n/a	2.1/154	Birds (39), traffic (31), WCC inaudible
D R24 Hazeldene	3:25 pm	38	37	n/a	2.2/125	Traffic (37), birds (32), WCC inaudible
E R12 Railway Cottage	5:00 pm	45	38	n/a	1.6/105	Traffic (45), birds (32), WCC inaudible
F R96 Talavera	4:58 pm	36	38	n/a	1.6/105	Birds (34), traffic (30), WCC (28)
G R97	1:30 pm	35	35	n/a	1.8/160	Birds (35), WCC (25)
H R96 Kyooma	4:40 pm	35	35	n/a	3.2/133	Birds (33), WCC (31)
I R57 Kurrara St	3:18 pm	44	35	n/a	2.2/125	Train (42), traffic (39), birds & insects (35), WCC inaudible
J R57 Coronation Ave	4:40 pm	44	35	n/a	3.2/133	Traffic (43), birds (37), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	4:20 pm	46	35	n/a	2.6/125	Birds & insects (45), traffic (40), WCC inaudible
L R103	4:23 pm	51	35	n/a	2.6/125	Birds & insects (51), train (30), WCC inaudible

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

Table 3 WCC Noise Monitoring Results – 26 April 2012 (Evening/Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	7:55 pm	32	35	+6.7	0.5/155	Traffic (31), insects (25), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	8:14 pm	35	37	+7.0	0.2/166	WCC (33), domestic noise (30), traffic (25)
B2 R9Gedhurst/ R22 Mountain View	8:18 pm	32	36*	+7.0	0.2/166	WCC (31), insects (24)
C R10 Meadholme/ R11 Glenara	7:53 pm	40	35	+6.7	0.5/155	Traffic (39), WCC (30), cattle (30)
D R24 Hazeldene	9:25 pm	39	37	+7.5	0.3/189	Traffic (38), WCC (32), insects (25)
E R12 Railway Cottage	11:33 pm	42	38	+6.0	1.3/101	Traffic (42), WCC (30), insects (25)
F R96 Talavera	9:25 pm	27	37	+7.5	0.3/189	WCC (25), traffic (22)
G R97	1:00 am	28	35	+6.7	0.6/106	Insects (26), WCC (22)
H R96 Kyooma	10:32 pm	32	35	+7.5	0.3/274	WCC (31), insects (25)
I R57 Kurrara St	11:15 pm	47	35	+5.8	0.9/83	Train (46), traffic (40), WCC (<25)
J R57 Coronation Ave	10:56 pm	41	35	+6.1	Calm	Traffic (40), train (35), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	11:07 pm	42	35	+7.0	Calm	Train (40), insects (36), traffic (32), WCC inaudible
L R103	10:35 pm	41	35	+7.5	0.3/274	Train (41), WCC inaudible

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

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits from EPL 12290 Condition L4.1

Locality and Location	Day LAeq (15 minute)	Evening LAeq (15 minute)	Night LAeq (15 minute)	Night LA1 (1 minute)
The residence on the property "Talavera" marked as location "R96" in Appendix 3 of Project Approval 10_0059	38	37	37	45
The residence known as "Quipolly Railway Cottage" marked as location "R12" in Appendix 3 of Project Approval 10_0059	38	38	38	45
The residence located at 83 Wadwells Lane marked as location "R7" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Gedhurst" marked as location "R0" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Hazeldene" marked as location "R24" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Mountain View" marked as location "R22" in Appendix 3 of Project Approval 10_0059	36	36	36	45
Any other affected residence not owned by the licensee or its related companies	35	35	35	45

Appendix 5 – Blasting Monitoring Results

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes*		Tonsley Park		Cintra*		Werris Creek		Talavera		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
12-05	15/02/2012	13:37	S14_Black Pit #1	THRU	NM	NM	0.47	107.9	0.72	106.7	1.37	113.1	<0.20	<109.9	NM	NM	10.00	120.0
12-06	8/02/2012	13:10	S12_5_350	IB	NM	NM	0.62	101.7	0.8	99.9	1.15	103.8	0.34	100.3	NM	NM	10.00	120.0
12-07	17/02/2012	13:16	S11_5_Ccoal	IB	NM	NM	0.75	110.5	0.92	107.9	1.57	113.2	<0.20	<109.9	NM	NM	10.00	120.0
12-08	27/02/2012	13:10	S11_8_Ccoal	IB	NM	NM	<0.37	<109.9	1.25	105.7	<0.37	<109.9	0.31	104.6	NM	NM	10.00	120.0
TOTALS	**FEBRUARY**	**# BLAST**	**4**	**AVERAGE**	**NM**	**NM**	**0.61**	**106.7**	**0.92**	**105.1**	**1.36**	**110.0**	**0.33**	**102.5**	**<0.37**	**<109.9**	**5.00**	**115.0**
TOTALS	**FEBRUARY**	**# BLAST**	**4**	**HIGHEST**	**NM**	**NM**	**0.75**	**110.5**	**1.25**	**107.9**	**1.57**	**113.2**	**0.34**	**104.6**	**<0.37**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**78**	**AVERAGE**	**<0.37**	**<109.9**	**0.69**	**102.9**	**0.80**	**101.7**	**1.21**	**106.8**	**0.45**	**101.2**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**78**	**0%**	**0%**	**0%**	**2.7%**	**0%**	**0%**	**0%**	**3.3%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results													
					Glenala		Greenslopes*		Tonsley Park		Cintra*		Werris Creek		Talavera		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
12-09	13/03/2012	13:09	S13 Black seam #2	TSB	NM	NM	0.77	104.6	0.82	98.5	0.84	103.7	0.29	98.2	NM	NM	10.00	120.0
12-10	8/03/2012	14:09	S11_6_Ccoal	OB	NM	NM	0.07	108.7	1.05	108.0	1.12	110.1	0.31	107.2	NM	NM	10.00	120.0
12-11	19/03/2012	13:13	S11_9_350	TSB	NM	NM	0.77	104.6	0.95	101.8	1.22	108.8	0.42	106.9	NM	NM	10.00	120.0
12-12	14/03/2012	13:13	S12_1-3_332 TSB16 pt1	TSB	NM	NM	0.47	95.7	NM	NM	NM	NM	NM	NM	NM	NM	10.00	120.0
12-13	22/03/2012	13:07	S12_1-3_332 TSB16 pt2	TSB	NM	NM	0.40	105.3	NM	NM	0.70	109.0	NM	NM	NM	NM	10.00	120.0
12-14	28/03/2012	13:09	S12_1-3_332 TSB16 pt3	TSB	NM	NM	0.45	95.0	0.60	91.9	1.12	96.2	NM	NM	NM	NM	10.00	120.0
TOTALS	**MARCH**	**# BLAST**	**6**	**AVERAGE**	**NM**	**NM**	**0.49**	**102.3**	**0.86**	**100.1**	**1.00**	**105.6**	**0.34**	**104.1**	**<0.37**	**<109.9**	**5.00**	**115.0**
TOTALS	**MARCH**	**# BLAST**	**6**	**HIGHEST**	**NM**	**NM**	**0.77**	**108.7**	**1.05**	**108.0**	**1.22**	**110.1**	**0.42**	**107.2**	**<0.37**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**84**	**AVERAGE**	**<0.37**	**<109.9**	**0.69**	**102.9**	**0.81**	**101.6**	**1.19**	**106.7**	**0.44**	**101.5**	**0.56**	**102.5**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**84**	**0%**	**0%**	**0%**	**2.6%**	**0%**	**0%**	**0%**	**0.0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results									
					Glenala		Tonsley Park		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)
2012-15	4.04.2012	13.15	S11_10_350 TSB18		<0.20	<109.9	1.17	100.7	0.31	105.1	<0.20	<109.9	10.00	120.0
2012-16	5.04.2012	13.15	S10_8-10 Decoal		<0.20	<109.9	0.95	102.4	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-17	12.04.2012	13.01	S11_6-7_Ccoal		<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-18	19.04.2012	13.14	S11-12_9-10_350		<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-19	27.04.2012	13.13	Black Seam Shot 4		0.18	108.9	0.6	96.4	0.31	92.9	0.1	113.4	10.00	120.0
TOTALS	**APRIL 2012**	**# BLAST**	**5**	**AVERAGE**	**0.18**	**108.9**	**0.91**	**99.8**	**0.31**	**99.0**	**0.10**	**113.4**	**5.00**	**115.0**
TOTALS	**APRIL 2012**	**# BLAST**	**5**	**HIGHEST**	**0.18**	**108.9**	**1.17**	**102.4**	**0.31**	**105.1**	**0.10**	**113.4**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**5**	**AVERAGE**	**0.18**	**108.9**	**0.91**	**99.8**	**0.31**	**99.0**	**0.10**	**113.4**	**5.00**	**115.0**

Appendix 6 – Groundwater Monitoring Results

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1207238**	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	: 3752		
C-O-C number	: ----	Date Samples Received	: 27-MAR-2012
Sampler	: BP	Issue Date	: 04-APR-2012
Site	: ----		
		No. of samples received	: 10
Quote number	: ----	No. of samples analysed	: 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
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling

General Comments

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

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

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

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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

- **AC01: Bore data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **ED-093F:LCS recovery for some elements falls 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 various samples, however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW1	MW2	MW7	MW10	MW11
				Client sampling date / time: 26-MAR-2012 11:10	26-MAR-2012 11:40	26-MAR-2012 12:00	26-MAR-2012 09:50	26-MAR-2012 10:30
				ES1207238-001	ES1207238-002	ES1207238-003	ES1207238-004	ES1207238-005
AC01: Bore Data								
Standing Water Level	----	0.01	m	52.2	23.7	5.22	20.0	----
AC02: Sampling Data								
Purge Type	----	-	-	Bail	Tap	Bail	Tap	Tap
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1240	810	588	1780	1150
pH	----	0.01	pH Unit	7.01	7.54	7.06	7.31	7.60
Temperature	----	0.1	°C	22.3	22.6	21.5	21.2	20.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.48	7.93	7.57	7.79	8.00
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1320	838	606	1930	1210
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	549	391	189	349	409
Total Alkalinity as CaCO3	----	1	mg/L	549	391	189	349	409
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	10	6	5	36	50
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	105	41	62	419	127
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	123	71	46	117	68
Magnesium	7439-95-4	1	mg/L	60	47	21	119	56
Sodium	7440-23-5	1	mg/L	68	47	41	121	128
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	0.004	0.001	0.002	<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	0.030	0.001	0.014	0.018	0.005
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	0.003	0.001	<0.001	<0.001	0.001
Copper	7440-50-8	0.001	mg/L	0.222	0.019	0.040	0.004	0.118
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.002	<0.001	<0.001	0.001
Lead	7439-92-1	0.001	mg/L	0.014	0.015	0.002	<0.001	0.020

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW1	MW2	MW7	MW10	MW11
				Client sampling date / time: 26-MAR-2012 11:10	26-MAR-2012 11:40	26-MAR-2012 12:00	26-MAR-2012 09:50	26-MAR-2012 10:30
				ES1207238-001	ES1207238-002	ES1207238-003	ES1207238-004	ES1207238-005
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	**0.446**	**0.563**	**0.088**	**0.008**	**0.117**
Manganese	7439-96-5	0.001	mg/L	**0.109**	**0.013**	**0.004**	<0.001	**0.006**
Vanadium	7440-62-2	0.01	mg/L	**0.04**	**0.02**	**0.01**	**0.02**	**0.05**
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	**0.28**	<0.01	<0.01	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.03**	<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	**2.98**	**0.35**	**0.87**	**18.3**	**5.63**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.01**	**0.35**	**0.87**	**18.3**	**5.63**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.4**	<0.1	**0.1**	**1.2**	**1.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.4**	**0.4**	**1.0**	**19.5**	**7.0**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.15**	**0.06**	**0.09**	<0.01	**0.03**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.09**	**0.04**	**0.07**	**0.01**	**0.04**
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**14.1**	**9.09**	**5.63**	**19.5**	**12.8**
Total Cations	----	0.01	meq/L	**14.1**	**9.46**	**5.81**	**20.9**	**13.6**
Ionic Balance	----	0.01	%	**0.28**	**1.94**	**1.55**	**3.35**	**2.92**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	MW13	MW15	MW16	MW17A	MW17B
Client sample ID				MW13	MW15	MW16	MW17A	MW17B
Client sampling date / time				26-MAR-2012 12:50	26-MAR-2012 12:30	26-MAR-2012 13:50	26-MAR-2012 13:10	26-MAR-2012 13:30
				ES1207238-006	ES1207238-007	ES1207238-008	ES1207238-009	ES1207238-010
AC01: Bore Data								
Standing Water Level	----	0.01	m	**4.43**	**3.89**	**4.16**	**3.27**	**9.40**
AC02: Sampling Data								
Purge Type	----	-	-	**Bail**	**Bail**	**Tap**	**Tap**	**Tank**
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**634**	**1010**	**670**	**919**	**2290**
pH	----	0.01	pH Unit	**7.12**	**7.30**	**7.17**	**7.24**	**8.76**
Temperature	----	0.1	°C	**20.7**	**20.5**	**20.8**	**21.8**	**22.2**
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.67**	**7.80**	**7.71**	**7.79**	**8.44**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**659**	**1070**	**684**	**966**	**2570**
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	**17**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**180**	**275**	**212**	**261**	**266**
Total Alkalinity as CaCO3	----	1	mg/L	**180**	**275**	**212**	**261**	**284**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**25**	**34**	**38**	**38**	**38**
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**82**	**177**	**59**	**134**	**705**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**49**	**70**	**53**	**72**	**31**
Magnesium	7439-95-4	1	mg/L	**23**	**36**	**25**	**35**	**55**
Sodium	7440-23-5	1	mg/L	**43**	**103**	**51**	**71**	**497**
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	**2**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.002**	**0.001**	**0.002**	<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	**0.015**	**0.019**	**0.014**	**0.020**	**0.022**
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
Copper	7440-50-8	0.001	mg/L	**0.008**	**0.016**	**0.114**	**0.018**	**0.026**
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.003**	<0.001	**0.002**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW13	MW15	MW16	MW17A	MW17B
				Client sampling date / time: 26-MAR-2012 12:50	26-MAR-2012 12:30	26-MAR-2012 13:50	26-MAR-2012 13:10	26-MAR-2012 13:30
				ES1207238-006	ES1207238-007	ES1207238-008	ES1207238-009	ES1207238-010
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	**0.022**	**0.043**	**0.033**	**0.039**	**0.090**
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.003**	<0.001	**0.001**	**0.020**
Vanadium	7440-62-2	0.01	mg/L	**0.01**	**0.02**	**0.02**	**0.03**	**0.02**
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	<0.01	<0.01	<0.01	<0.01	**0.06**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.22**	**0.85**	**3.33**	**0.78**	**0.03**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.22**	**0.85**	**3.33**	**0.78**	**0.03**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	**0.3**	**0.3**	**0.2**	**0.9**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**1.7**	**1.2**	**3.6**	**1.0**	**0.9**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.07**	**0.07**	**0.25**	**0.08**	**0.30**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.09**	**0.10**	**0.09**	**0.08**	<0.01
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**6.43**	**11.2**	**6.69**	**9.79**	**26.4**
Total Cations	----	0.01	meq/L	**6.21**	**10.9**	**6.92**	**9.56**	**27.7**
Ionic Balance	----	0.01	%	**1.75**	**1.17**	**1.68**	**1.16**	**2.55**

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	MW1 - 26-MAR-2012 11:10	Clear
AC04: Appearance	MW2 - 26-MAR-2012 11:40	Clear
AC04: Appearance	MW7 - 26-MAR-2012 12:00	Clear
AC04: Appearance	MW10 - 26-MAR-2012 09:50	Clear
AC04: Appearance	MW11 - 26-MAR-2012 10:30	Clear
AC04: Appearance	MW13 - 26-MAR-2012 12:50	Clear
AC04: Appearance	MW15 - 26-MAR-2012 12:30	Clear
AC04: Appearance	MW16 - 26-MAR-2012 13:50	Clear
AC04: Appearance	MW17A - 26-MAR-2012 13:10	Clear
AC04: Appearance	MW17B - 26-MAR-2012 13:30	Clear
AC04: Odour	MW1 - 26-MAR-2012 11:10	Nil
AC04: Odour	MW2 - 26-MAR-2012 11:40	Nil
AC04: Odour	MW7 - 26-MAR-2012 12:00	Nil
AC04: Odour	MW10 - 26-MAR-2012 09:50	Nil
AC04: Odour	MW11 - 26-MAR-2012 10:30	Nil
AC04: Odour	MW13 - 26-MAR-2012 12:50	Nil
AC04: Odour	MW15 - 26-MAR-2012 12:30	Nil
AC04: Odour	MW16 - 26-MAR-2012 13:50	Nil
AC04: Odour	MW17A - 26-MAR-2012 13:10	Nil
AC04: Odour	MW17B - 26-MAR-2012 13:30	Nil
AC04: Colour	MW1 - 26-MAR-2012 11:10	Clear
AC04: Colour	MW2 - 26-MAR-2012 11:40	Clear
AC04: Colour	MW7 - 26-MAR-2012 12:00	Clear
AC04: Colour	MW10 - 26-MAR-2012 09:50	Clear
AC04: Colour	MW11 - 26-MAR-2012 10:30	Clear
AC04: Colour	MW13 - 26-MAR-2012 12:50	Clear
AC04: Colour	MW15 - 26-MAR-2012 12:30	Clear
AC04: Colour	MW16 - 26-MAR-2012 13:50	Clear
AC04: Colour	MW17A - 26-MAR-2012 13:10	Clear
AC04: Colour	MW17B - 26-MAR-2012 13:30	Clear

CERTIFICATE OF ANALYSIS

Work Order	: **ES1207362**	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	: 3752		
C-O-C number	: ----	Date Samples Received	: 28-MAR-2012
Sampler	: BP	Issue Date	: 05-APR-2012
Site	: ----		
		No. of samples received	: 10
Quote number	: ----	No. of samples analysed	: 10

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- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

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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.

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LOR = Limit of reporting
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- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **It has been noted that Reacitve P is greater than Total P for various samples, however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW3	MW4	MW5	MW8	MW12
				Client sampling date / time: 27-MAR-2012 10:50	27-MAR-2012 12:00	27-MAR-2012 11:40	27-MAR-2012 13:00	27-MAR-2012 13:30
				ES1207362-001	ES1207362-002	ES1207362-003	ES1207362-004	ES1207362-005
AC01: Bore Data								
Standing Water Level	----	0.01	m	14.1	10.2	7.89	12.8	7.84
AC02: Sampling Data								
Purge Type	----	-	-	Bail	Bail	Bail	Tap	Tap
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	82	975	1640	1020	448
pH	----	0.01	pH Unit	7.03	7.52	7.64	7.88	7.17
Temperature	----	0.1	°C	21.6	21.2	21.8	21.4	23.8
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.99	7.93	8.01	8.00	7.68
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	72	1020	1740	1080	453
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	24	432	346	310	171
Total Alkalinity as CaCO3	----	1	mg/L	24	432	346	310	171
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	6	44	42	18
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	7	67	300	138	21
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	5	65	81	78	37
Magnesium	7439-95-4	1	mg/L	2	40	49	44	14
Sodium	7440-23-5	1	mg/L	3	85	67	66	32
Potassium	7440-09-7	1	mg/L	6	2	19	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	0.023	0.083	0.031	0.002	0.012
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	0.007	0.001	0.001	0.038	<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	0.003	0.029	0.014	0.010	0.071
Lead	7439-92-1	0.001	mg/L	0.005	0.002	0.002	<0.001	0.002
Manganese	7439-96-5	0.001	mg/L	0.050	0.035	0.126	0.004	0.002

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW3	MW4	MW5	MW8	MW12
				Client sampling date / time: 27-MAR-2012 10:50	27-MAR-2012 12:00	27-MAR-2012 11:40	27-MAR-2012 13:00	27-MAR-2012 13:30
				ES1207362-001	ES1207362-002	ES1207362-003	ES1207362-004	ES1207362-005
EG020T: Total Metals by ICP-MS - Continued								
Nickel	7440-02-0	0.001	mg/L	**0.005**	**0.001**	**0.005**	**0.046**	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	**0.02**	<0.01	**0.02**	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.024**	**0.134**	**0.084**	**0.037**	**0.020**
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	**0.17**	**0.19**	**62.8**	<0.01	**0.04**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	**0.02**	**5.27**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.02**	**1.24**	**0.37**	**2.76**	**0.99**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.02**	**1.26**	**5.64**	**2.76**	**0.99**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**1.2**	**66.6**	**0.9**	**0.5**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**0.9**	**2.5**	**72.2**	**3.7**	**1.5**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.42**	**0.06**	**5.07**	**0.03**	**0.04**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.26**	**0.06**	**5.19**	**0.07**	**0.09**
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**0.68**	**10.6**	**16.3**	**11.0**	**4.38**
Total Cations	----	0.01	meq/L	**0.70**	**10.3**	----	**10.4**	**4.39**
Total Cations	----	0.01	meq/L	----	----	**16.0**	----	----
Ionic Balance	----	0.01	%	----	**1.75**	----	**2.58**	**0.07**
Ionic Balance	----	0.01	%	----	----	**0.93**	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW14	MW6	P1	P2	MW9
				Client sampling date / time: 27-MAR-2012 09:30	27-MAR-2012 12:30	27-MAR-2012 10:30	27-MAR-2012 11:20	27-MAR-2012 10:00
				ES1207362-006	ES1207362-007	ES1207362-008	ES1207362-009	ES1207362-010
AC01: Bore Data								
Standing Water Level	----	0.01	m	15.4	12.0	28.7	21.6	14.1
AC02: Sampling Data								
Purge Type	----	-	-	Bail	Bail	Bail	Bail	Bail
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1220	1750	1000	1070	753
pH	----	0.01	pH Unit	7.28	7.21	7.26	7.39	7.54
Temperature	----	0.1	°C	20.8	21.3	20.6	21.4	20.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.76	7.78	7.76	7.84	7.90
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1310	1890	1080	1180	786
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	426	654	224	331	302
Total Alkalinity as CaCO3	----	1	mg/L	426	654	224	331	302
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	41	30	103	69	44
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	106	237	147	138	46
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	95	71	143	77	60
Magnesium	7439-95-4	1	mg/L	66	82	6	46	35
Sodium	7440-23-5	1	mg/L	67	266	56	106	55
Potassium	7440-09-7	1	mg/L	2	<1	5	<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	0.031	0.050	0.055	0.026	0.012
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	0.004	<0.001	0.003	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.003	0.004	0.005	<0.001
Copper	7440-50-8	0.001	mg/L	0.019	0.018	0.014	0.028	0.009
Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.013	0.016	0.002
Manganese	7439-96-5	0.001	mg/L	0.211	0.111	1.25	0.189	0.006

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW14	MW6	P1	P2	MW9
				Client sampling date / time: 27-MAR-2012 09:30	27-MAR-2012 12:30	27-MAR-2012 10:30	27-MAR-2012 11:20	27-MAR-2012 10:00
				ES1207362-006	ES1207362-007	ES1207362-008	ES1207362-009	ES1207362-010
EG020T: Total Metals by ICP-MS - Continued								
Nickel	7440-02-0	0.001	mg/L	**0.004**	**0.005**	<0.001	**0.005**	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	**0.05**	<0.01	**0.05**	**0.03**
Zinc	7440-66-6	0.005	mg/L	**0.048**	**0.059**	**0.059**	**0.104**	**0.054**
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	**0.35**	<0.01	**0.03**	<0.01	**0.01**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.06**	<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	**20.7**	**3.37**	**2.61**	**5.90**	**2.44**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**20.8**	**3.37**	**2.62**	**5.90**	**2.44**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.7**	**1.5**	**1.2**	**1.2**	**1.5**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**23.5**	**4.9**	**3.8**	**7.1**	**3.9**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.10**	**0.27**	**0.04**	**0.25**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.09**	**0.08**	**0.03**	<0.01	**0.04**
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**12.4**	**20.4**	**10.8**	**11.9**	**8.25**
Total Cations	----	0.01	meq/L	**13.1**	**21.9**	**10.2**	**12.2**	**8.27**
Ionic Balance	----	0.01	%	**3.06**	**3.49**	**2.70**	**1.22**	**0.11**

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	MW3 - 27-MAR-2012 10:50	Clear
AC04: Appearance	MW4 - 27-MAR-2012 12:00	Clear
AC04: Appearance	MW5 - 27-MAR-2012 11:40	Clear
AC04: Appearance	MW8 - 27-MAR-2012 13:00	Clear
AC04: Appearance	MW12 - 27-MAR-2012 13:30	Clear
AC04: Appearance	MW14 - 27-MAR-2012 09:30	Clear
AC04: Appearance	MW6 - 27-MAR-2012 12:30	Clear
AC04: Appearance	P1 - 27-MAR-2012 10:30	Clear
AC04: Appearance	P2 - 27-MAR-2012 11:20	Clear
AC04: Appearance	MW9 - 27-MAR-2012 10:00	Clear
AC04: Odour	MW3 - 27-MAR-2012 10:50	Nil
AC04: Odour	MW4 - 27-MAR-2012 12:00	Nil
AC04: Odour	MW5 - 27-MAR-2012 11:40	Nil
AC04: Odour	MW8 - 27-MAR-2012 13:00	Nil
AC04: Odour	MW12 - 27-MAR-2012 13:30	Nil
AC04: Odour	MW14 - 27-MAR-2012 09:30	Nil
AC04: Odour	MW6 - 27-MAR-2012 12:30	Nil
AC04: Odour	P1 - 27-MAR-2012 10:30	Nil
AC04: Odour	P2 - 27-MAR-2012 11:20	Nil
AC04: Odour	MW9 - 27-MAR-2012 10:00	Nil
AC04: Colour	MW3 - 27-MAR-2012 10:50	Clear
AC04: Colour	MW4 - 27-MAR-2012 12:00	Clear
AC04: Colour	MW5 - 27-MAR-2012 11:40	Clear
AC04: Colour	MW8 - 27-MAR-2012 13:00	Clear
AC04: Colour	MW12 - 27-MAR-2012 13:30	Clear
AC04: Colour	MW14 - 27-MAR-2012 09:30	Clear
AC04: Colour	MW6 - 27-MAR-2012 12:30	Clear
AC04: Colour	P1 - 27-MAR-2012 10:30	Clear
AC04: Colour	P2 - 27-MAR-2012 11:20	Clear
AC04: Colour	MW9 - 27-MAR-2012 10:00	Clear

Appendix 7 – Surface Water Monitoring Results

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1204308**	Page	: 1 of 7
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3539		
C-O-C number	: ----	Date Samples Received	: 24-FEB-2012
Sampler	: BP	Issue Date	: 02-MAR-2012
Site	: ----		
		No. of samples received	: 14
Quote number	: ----	No. of samples analysed	: 14

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB6	SB9	SB10	SD4
				Client sampling date / time: 23-FEB-2012 12:30	23-FEB-2012 11:00	23-FEB-2012 12:00	23-FEB-2012 11:40	23-FEB-2012 13:30
				ES1204308-001	ES1204308-002	ES1204308-003	ES1204308-004	ES1204308-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	368	236	260	223	185
pH	----	0.01	pH Unit	8.70	8.60	8.50	9.20	8.00
Temperature	----	0.1	°C	26.9	26.6	27.8	26.5	28.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.34	8.41	7.89	8.68	8.06
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	444	277	306	258	211
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	14	<5	28	7	9
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.07	<0.01	<0.01	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	1.53	<0.01	0.01	0.09
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	1.60	<0.01	0.01	0.11
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	1.5	0.5	0.3	1.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.4	3.1	0.5	0.3	1.2
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	0.04	0.03	0.80
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.75
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: VWD1	VWD2	200MLD-NORTH	BGD	QCU
				Client sampling date / time: 23-FEB-2012 11:20	23-FEB-2012 12:15	23-FEB-2012 12:40	23-FEB-2012 10:00	23-FEB-2012 10:15
				ES1204308-006	ES1204308-007	ES1204308-008	ES1204308-009	ES1204308-010
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	753	717	698	256	270
pH	----	0.01	pH Unit	8.30	8.20	8.30	8.20	7.70
Temperature	----	0.1	°C	26.5	26.7	27.8	24.0	22.1
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.04	8.01	8.38	7.95	7.50
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	912	871	851	304	317
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	6	22	64	35	16
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.15	0.05	0.12	<0.01	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	3.91	3.83	8.37	<0.01	0.15
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.06	3.88	8.49	<0.01	0.17
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.2	2.4	1.1	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.7	5.1	10.9	1.1	0.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.03	<0.01	0.03	0.86	0.48
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	0.77	0.44
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	<5	<5
Oil & Grease	----	5	mg/L	----	----	<5	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QCD Client sampling date / time: 23-FEB-2012 10:30 ES1204308-011	WCU 23-FEB-2012 09:30 ES1204308-012	WCD 23-FEB-2012 09:15 ES1204308-013	200MLD-SOUTH 23-FEB-2012 13:00 ES1204308-014	---- ---- ----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**403**	**1120**	**1000**	**710**	----
pH	----	0.01	pH Unit	**7.80**	**7.90**	**8.40**	**8.60**	----
Temperature	----	0.1	°C	**23.5**	**21.0**	**23.3**	**27.5**	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.83**	**8.02**	**8.24**	**8.45**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**482**	**1360**	**1220**	**881**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**37**	**45**	**25**	<5	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	**0.02**	<0.01	**0.04**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.08**	**3.00**	<0.01	**1.61**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.08**	**3.02**	<0.01	**1.65**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.9**	**0.2**	**1.0**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**1.0**	**3.9**	**0.2**	**2.6**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.39**	**0.06**	**0.18**	**0.02**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.31**	**0.04**	**0.14**	<0.01	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 23-FEB-2012 12:30	Clear
AC04: Appearance	SB6 - 23-FEB-2012 11:00	Clear
AC04: Appearance	SB9 - 23-FEB-2012 12:00	Clear
AC04: Appearance	SB10 - 23-FEB-2012 11:40	Clear
AC04: Appearance	SD4 - 23-FEB-2012 13:30	Clear
AC04: Appearance	VWD1 - 23-FEB-2012 11:20	Clear
AC04: Appearance	VWD2 - 23-FEB-2012 12:15	Clear
AC04: Appearance	200MLD-NORTH - 23-FEB-2012 12:40	Clear
AC04: Appearance	BGD - 23-FEB-2012 10:00	Clear
AC04: Appearance	QCU - 23-FEB-2012 10:15	Clear
AC04: Appearance	QCD - 23-FEB-2012 10:30	Clear
AC04: Appearance	WCU - 23-FEB-2012 09:30	Clear
AC04: Appearance	WCD - 23-FEB-2012 09:15	Clear
AC04: Appearance	200MLD-SOUTH - 23-FEB-2012 13:00	Clear
AC04: Odour	SB2 - 23-FEB-2012 12:30	Nil
AC04: Odour	SB6 - 23-FEB-2012 11:00	Nil
AC04: Odour	SB9 - 23-FEB-2012 12:00	Nil
AC04: Odour	SB10 - 23-FEB-2012 11:40	Nil
AC04: Odour	SD4 - 23-FEB-2012 13:30	Nil
AC04: Odour	VWD1 - 23-FEB-2012 11:20	Nil
AC04: Odour	VWD2 - 23-FEB-2012 12:15	Nil
AC04: Odour	200MLD-NORTH - 23-FEB-2012 12:40	Nil
AC04: Odour	BGD - 23-FEB-2012 10:00	Nil
AC04: Odour	QCU - 23-FEB-2012 10:15	Nil
AC04: Odour	QCD - 23-FEB-2012 10:30	Nil
AC04: Odour	WCU - 23-FEB-2012 09:30	Nil
AC04: Odour	WCD - 23-FEB-2012 09:15	Nil
AC04: Odour	200MLD-SOUTH - 23-FEB-2012 13:00	Nil
AC04: Colour	SB2 - 23-FEB-2012 12:30	Clear
AC04: Colour	SB6 - 23-FEB-2012 11:00	Clear
AC04: Colour	SB9 - 23-FEB-2012 12:00	Clear
AC04: Colour	SB10 - 23-FEB-2012 11:40	Clear
AC04: Colour	SD4 - 23-FEB-2012 13:30	Clear
AC04: Colour	VWD1 - 23-FEB-2012 11:20	Clear
AC04: Colour	VWD2 - 23-FEB-2012 12:15	Clear
AC04: Colour	200MLD-NORTH - 23-FEB-2012 12:40	Clear
AC04: Colour	BGD - 23-FEB-2012 10:00	Clear
AC04: Colour	QCU - 23-FEB-2012 10:15	Clear
AC04: Colour	QCD - 23-FEB-2012 10:30	Clear

Sub-Matrix: **WATER**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
AC04: Colour	WCU - 23-FEB-2012 09:30	Clear
AC04: Colour	WCD - 23-FEB-2012 09:15	Clear
AC04: Colour	200MLD-SOUTH - 23-FEB-2012 13:00	Clear

Appendix 8 – Discharge Monitoring Results

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1202510**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3422		
C-O-C number	: ----	Date Samples Received	: 06-FEB-2012
Sampler	: AW+BP	Issue Date	: 13-FEB-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: SY/261/10	No. of samples analysed	: 6

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

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

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	SB10	QCU	QCD	WCU
				Client sampling date / time: 02-FEB-2012 07:45	02-FEB-2012 10:20	02-FEB-2012 09:50	02-FEB-2012 09:20	02-FEB-2012 10:40
				ES1202510-001	ES1202510-002	ES1202510-003	ES1202510-004	ES1202510-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.92**	**7.59**	**7.88**	**8.19**	**7.79**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**404**	**282**	**411**	**812**	**93**
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**32**	**300**	<5	**25**	**53**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.06**	**0.02**	<0.01	<0.01	**0.01**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.39**	**0.63**	<0.01	**0.08**	**0.33**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.45**	**0.65**	<0.01	**0.08**	**0.34**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.7**	**2.3**	**1.5**	**0.4**	**0.8**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**5.2**	**3.0**	**1.5**	**0.5**	**1.1**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.08**	**0.17**	**0.32**	**0.12**	**0.66**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.04**	**0.04**	**0.08**	**0.08**	**0.52**
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	----	----	----	----
			Client sampling date / time	02-FEB-2012 11:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1202510-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.86**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**224**	----	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**1830**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.02**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**5.14**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**5.16**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**4.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**9.2**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**1.38**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.44**	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **ES1203622**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: PO BOX 600 GUNNEDAH NSW, AUSTRALIA 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 3494		
C-O-C number	: ----	Date Samples Received	: 17-FEB-2012
Sampler	: ----	Issue Date	: 27-FEB-2012
Site	: ----		
		No. of samples received	: 7
Quote number	: SY/261/10	No. of samples analysed	: 7

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

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

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EK071G: It has been noted that Reacrive P is greater than Total P on sample ID (QCU), however this difference is within the limits of experimental variation.(confirmed by re-analysis).**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	SB2	QCU	QCD	SB10
				Client sampling date / time: 16-FEB-2012 07:30	16-FEB-2012 07:45	16-FEB-2012 08:00	16-FEB-2012 08:15	16-FEB-2012 07:15
				ES1203622-001	ES1203622-002	ES1203622-003	ES1203622-004	ES1203622-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.18**	**7.92**	**7.42**	**8.00**	**8.97**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**325**	**436**	**450**	**807**	**265**
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**41**	**16**	**10**	**20**	**10**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.03**	<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	**0.30**	**0.02**	**0.41**	**0.03**	**0.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.33**	**0.02**	**0.41**	**0.03**	**0.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.4**	<0.1	**0.2**	**0.6**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**1.2**	**0.4**	**0.4**	**0.2**	**0.6**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.17**	**0.02**	<0.01	**0.07**	**0.18**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	**0.03**	**0.07**	<0.01
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: WCU	WCD	----	----	----
				Client sampling date / time: 16-FEB-2012 06:30	16-FEB-2012 08:45	----	----	----
				ES1203622-006	ES1203622-007	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.94**	**8.32**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1360**	**1120**	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**18**	**9**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.02**	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.68**	**0.01**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.70**	**0.01**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**0.2**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**3.1**	**0.2**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.10**	**0.19**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.06**	**0.16**	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----

Werris Creek Coal

200ML Dam North (VWD3) Discharge Incident Surface Water Quality Monitoring Results

11th March 2012

Orange is water with void water

Bold is outside of guideline criteria

is Nitrite and Nitrate criteria expressed Nitrite as N and Nitrate as N

STV is Short Term Trigger Value defined as 20 years

* Criteria specific to beef cattle

Location	Date	Guidelines / Time	pH	Conductivity	Total Dissolved Solids	Total Suspended Solids	Alkalinity OH	Alkalinity Carbonate H2CO3	Alkalinity BiCarbonate CO3	Alkalinity Total	Sulfate as SO4	Chloride	Calcium	Magnesium	Sodium	Potassium
			pH units	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		Agricultural Irrigation	6-8.5	950	-	-	-	-	-	-	-	175	-	-	115	-
		Livestock Watering	-	-	4000*	-	-	-	-	-	1000	-	1000	-	-	-
		Drinking Heath	-	-	-	-	-	-	-	-	500	-	-	-	-	-
		Drinking Aesthetic	6.5-8.5	-	500	-	-	-	-	-	250	250	-	-	180	-
Boundary Fence	11/03/2012	11:30am	7.86	402	320	66	<1	<1	130	130	24	38	27	10	40	12
QCD	11/03/2012	2:05pm	7.97	824	478	14	<1	<1	240	240	29	124	63	28	74	3
200ML Dam North (VWD3)	11/03/2012	3:20pm	8.3	892	**518**	8	<1	<1	132	132	114	126	43	13	**122**	13
Wadwells	11/03/2012	6:15pm	7.68	791	484	30	<1	<1	115	115	94	113	33	13	105	18
Paynes	11/03/2012	6:30pm	**9.09**	311	270	59	<1	45	112	157	<1	16	33	10	18	14
QCD	11/03/2012	6:45pm	7.96	824	470	8	<1	<1	238	238	28	126	67	30	72	3
QCU	11/03/2012	7pm	7.59	444	284	10	<1	<1	142	142	22	41	37	16	33	1
200ML Dam Track	11/03/2012	7:45pm	8	905	**528**	558	<1	<1	144	144	115	141	43	15	**128**	12
Wadwells	11/03/2012	9:05pm	7.7	873	**544**	7	<1	<1	121	121	110	129	38	14	**120**	15
Paynes	11/03/2012	9:10pm	7.62	622	370	34	<1	<1	127	127	58	85	32	13	72	22
QCD	11/03/2012	9:20pm	7.98	829	**538**	22	<1	<1	223	223	29	117	59	27	73	3
QCU	11/03/2012	9:35pm	7.54	457	306	26	<1	<1	143	143	23	43	36	16	34	2
Wadwells	12/03/2012	12:20am	7.61	872	**584**	9	<1	<1	123	123	112	136	37	15	**125**	16
QCU	12/03/2012	12:30am	7.44	442	296	28	<1	<1	141	141	21	44	35	16	34	2
Paynes	12/03/2012	12:35am	7.58	860	**576**	8	<1	<1	117	117	115	135	36	15	**119**	17
QCD	12/03/2012	12:40am	7.91	824	**552**	16	<1	<1	222	222	28	122	62	28	75	3
Wadwells	12/03/2012	3:15am	7.73	878	**588**	8	<1	<1	133	133	112	137	39	16	**126**	16
Paynes	12/03/2012	3:25am	7.67	868	**582**	6	<1	<1	129	129	111	136	37	15	**124**	17
QCU	12/03/2012	3:20am	7.42	441	295	30	<1	<1	141	141	20	45	37	16	33	2
QCD	12/03/2012	3:35am	7.95	824	**552**	23	<1	<1	237	237	28	126	66	30	75	3
Wadwells	12/03/2012	6:10am	7.66	878	**588**	7	<1	<1	134	134	111	140	41	16	**126**	15
Paynes	12/03/2012	6:15am	7.66	867	**581**	6	<1	<1	128	128	111	135	37	15	**124**	16
QCD	12/03/2012	6:20am	7.94	835	**559**	30	<1	<1	220	220	30	127	62	29	75	3
QCU	12/03/2012	6:30am	7.43	441	256	40	<1	<1	142	142	20	41	35	15	33	2
Wadwells	12/03/2012	9:50am	7.67	872	500	8	<1	<1	131	131	119	140	39	16	**129**	16
Paynes	12/03/2012	10am	8.26	894	486	<5	<1	<1	132	132	112	128	35	14	**121**	16
QCU	12/03/2012	10:10	7.51	441	238	32	<1	<1	141	141	21	41	34	15	33	2
QCD	12/03/2012	10:25am	7.91	757	406	28	<1	<1	196	196	23	102	51	23	60	5
QCU	12/03/2012	14:10	7.87	441	304	16	<1	<1	141	141	22	40	36	16	33	1
Wadwells	12/03/2012	14:00	8.03	870	**526**	8	<1	<1	126	126	108	124	37	15	**119**	13
QCD	12/03/2012	14:30	8.03	753	474	41	<1	<1	160	160	66	108	45	20	82	11
Paynes	12/03/2012	14:20	8.06	872	**538**	8	<1	<1	121	121	116	123	36	15	**118**	14
QCU	12/03/2012	18:55	7.83	445	282	15	<1	<1	142	142	20	39	34	15	33	1
Wadwells	12/03/2012	18:50	7.93	874	**546**	12	<1	<1	127	127	110	123	37	14	**116**	13
QCD	12/03/2012	19:10	8.05	802	**506**	35	<1	<1	140	140	82	112	42	18	93	12
Paynes	12/03/2012	19:20	8.09	874	**510**	8	<1	<1	131	131	115	137	38	15	**123**	16
QCU	13/03/2012	7:50	7.86	441	300	16	<1	<1	144	144	20	39	25	15	33	1
Wadwells	13/03/2012	7:40	7.98	872	**512**	11	<1	<1	128	128	116	126	39	15	**121**	14
QCD	13/03/2012	7:20	8.08	844	**540**	30	<1	<1	148	148	91	120	44	19	104	11
Paynes	13/03/2012	7:35	7.95	868	**524**	8	<1	<1	126	126	108	123	38	15	115	14
QCU	13/03/2012	11:55	7.9	442	284	20	<1	<1	142	142	20	39	35	15	33	1
Wadwells	13/03/2012	11:45	8.03	878	**556**	10	<1	<1	140	140	115	132	40	16	**126**	14
QCD	13/03/2012	12:15	8.13	853	**550**	24	<1	<1	155	155	87	129	46	20	102	10
Paynes	13/03/2012	12:05	8.07	867	**548**	9	<1	<1	135	135	114	137	41	16	**124**	16
QCU	13/03/2012	18:25	7.83	446	308	13	<1	<1	144	144	20	40	36	16	33	1
Wadwells	13/03/2012	17:50	7.75	880	**540**	8	<1	<1	131	131	104	132	40	15	**118**	14
QCD	13/03/2012	18:15	7.89	860	**528**	20	<1	<1	161	161	74	131	48	20	100	10
Paynes	13/03/2012	18:00	7.83	876	**560**	10	<1	<1	127	127	104	132	40	15	**115**	15
QCU	14/03/2012	7:40	7.55	442	280	14	<1	<1	140	140	20	37	35	15	32	1
Wadwells	14/03/2012	7:25	7.75	880	**520**	15	<1	<1	134	134	105	137	42	16	**117**	14
QCD	14/03/2012	7:50	7.92	867	**500**	22	<1	<1	175	175	67	122	49	21	94	8
Paynes	14/03/2012	8:00	7.82	875	**522**	5	<1	<1	132	132	102	122	39	15	114	15
QCU	14/03/2012	13:00	7.67	443	278	16	<1	<1	148	148	20	40	35	16	34	1
Wadwells	14/03/2012	12:50	7.85	887	**548**	32	<1	<1	141	141	104	133	41	16	**122**	15
QCD	14/03/2012	13:20	7.96	868	**518**	16	<1	<1	189	189	63	131	52	23	99	9
Paynes	14/03/2012	13:10	7.93	867	**578**	16	<1	<1	128	128	101	134	39	15	115	16
QCU	15/03/2012	8:20	7.62	436	258	27	<1	<1	142	142	22	43	36	16	34	1
Wadwells	15/03/2012	8:10	7.8	891	**562**	24	<1	<1	142	142	108	130	41	16	**120**	14
QCD	15/03/2012	7:50	7.98	861	**530**	26	<1	<1	192	192	55	135	55	24	95	7
Paynes	15/03/2012	8:00	7.78	886	**540**	10	<1	<1	142	142	107	140	46	17	**121**	16
QCU	15/03/2012	12:05	7.64	439	280	19	<1	<1	142	142	21	42	36	16	34	1
Wadwells	15/03/2012	12:00	7.98	890	**524**	18	<1	<1	140	140	109	143	42	17	**126**	15
QCD	15/03/2012	12:20	8.03	857	**510**	18	<1	<1	199	199	52	136	56	25	96	6
Paynes	15/03/2012	12:10	7.77	887	**548**	14	<1	<1	144	144	106	142	46	17	**119**	15
QCU	16/03/2012	7:20	7.37	449	270	38	<1	<1	144	144	21	41	34	15	32	1
Wadwells	16/03/2012	15:35	7.61	919	**540**	44	<1	<1	136	136	123	143	42	16	**125**	16
QCD	16/03/2012	15:45	7.89	864	496	24	<1	<1	197	197	58	133	58	25	90	6
Paynes	16/03/2012	15:40	7.62	896	**542**	8	<1	<1	142	142	118	138	46	17	115	15
QCU	16/03/2012	15:30	7.53	446	288	16	<1	<1	143	143	22	43	36	16	32	1
Wadwells	16/03/2012	7:40	7.78	**956**	**550**	22	<1	<1	145	145	127	148	43	17	**125**	16
QCD	16/03/2012	6:00	7.9	859	494	26	<1	<1	206	206	47	130	57	25	84	5
Paynes	16/03/2012	7:30	7.66	904	**534**	13	<1	<1	147	147	118	138	46	17	114	15

Location	Date	Guidelines / Time	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Chromium	Copper	Manganese	Nickel	Lead	Vanadium	Zinc
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		Agricultural Irrigation	2STV	-	0.5STV	0.05STV	0.1STV	1STV	5STV	10STV	2STV	5STV	0.5STV	5STV
		Livestock Watering	0.5	-	-	0.01	1	1	1*	-	1	0.1	-	20
		Drinking Heath	0.007	0.7	-	0.002	-	0.05	2	0.5	0.02	0.01	-	-
		Drinking Aesthetic	-	-	-	-	-	-	1	0.1	-	-	-	3
Boundary Fence	11/03/2012	11:30am	0.004	0.212	<0.001	<0.0001	0.002	0.002	0.004	**0.275**	0.006	0.002	0.01	0.008
QCD	11/03/2012	2:05pm	0.002	0.058	<0.001	<0.0001	<0.001	<0.001	0.001	0.088	<0.001	<0.001	<0.01	<0.005
200ML Dam North (VWD3)	11/03/2012	3:20pm	0.002	0.107	<0.001	<0.0001	<0.001	<0.001	<0.001	0.043	<0.001	<0.001	<0.01	<0.005
Wadwells	11/03/2012	6:15pm	0.002	0.099	<0.001	<0.0001	<0.001	<0.001	0.002	0.038	0.002	<0.001	0.02	0.008
Paynes	11/03/2012	6:30pm	**0.009**	0.082	<0.001	<0.0001	0.002	0.001	0.003	**0.32**	0.005	<0.001	<0.01	<0.005
QCD	11/03/2012	6:45pm	**0.008**	0.048	<0.001	<0.0001	<0.001	<0.001	<0.001	0.037	<0.001	<0.001	<0.01	<0.005
QCU	11/03/2012	7pm	<0.001	0.024	<0.001	<0.0001	<0.001	<0.001	<0.001	0.095	<0.001	<0.001	0.03	0.018
200ML Dam Track	11/03/2012	7:45pm	0.003	0.175	<0.001	<0.0001	0.005	0.01	0.009	**0.262**	0.008	0.004	<0.01	<0.005
Wadwells	11/03/2012	9:05pm	0.002	0.099	<0.001	<0.0001	<0.001	<0.001	0.001	0.019	<0.001	<0.001	0.02	0.006
Paynes	11/03/2012	9:10pm	0.004	0.084	<0.001	<0.0001	0.001	0.001	0.003	**0.141**	0.003	<0.001	<0.01	<0.005
QCD	11/03/2012	9:20pm	0.001	0.05	<0.001	<0.0001	<0.001	<0.001	0.001	0.078	<0.001	<0.001	<0.01	<0.005
QCU	11/03/2012	9:35pm	0.001	0.028	<0.001	<0.0001	<0.001	<0.001	0.001	**0.111**	<0.001	<0.001	<0.01	<0.005
Wadwells	12/03/2012	12:20am	0.002	0.097	<0.001	<0.0001	<0.001	<0.001	0.002	0.01	<0.001	<0.001	<0.01	<0.005
QCU	12/03/2012	12:30am	0.001	0.022	<0.001	<0.0001	<0.001	<0.001	<0.001	0.039	<0.001	<0.001	<0.01	<0.005
Paynes	12/03/2012	12:35am	0.002	0.088	<0.001	<0.0001	<0.001	<0.001	0.002	0.019	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	12:40am	0.002	0.05	<0.001	<0.0001	<0.001	<0.001	0.001	0.082	<0.001	<0.001	<0.01	0.005
Wadwells	12/03/2012	3:15am	0.002	0.096	<0.001	<0.0001	<0.001	<0.001	0.001	0.009	<0.001	<0.001	<0.01	<0.005
Paynes	12/03/2012	3:25am	0.002	0.09	<0.001	<0.0001	<0.001	<0.001	0.001	0.017	<0.001	<0.001	<0.01	<0.005
QCU	12/03/2012	3:20am	0.001	0.027	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.132**	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	3:35am	0.002	0.051	<0.001	<0.0001	<0.001	<0.001	0.001	**0.103**	<0.001	<0.001	<0.01	<0.005
Wadwells	12/03/2012	6:10am	0.002	0.098	<0.001	<0.0001	<0.001	<0.001	0.001	0.011	<0.001	<0.001	<0.01	<0.005
Paynes	12/03/2012	6:15am	0.002	0.099	<0.001	<0.0001	<0.001	<0.001	0.001	0.013	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	6:20am	0.002	0.052	<0.001	<0.0001	<0.001	<0.001	0.002	**0.12**	<0.001	<0.001	0.01	<0.005
QCU	12/03/2012	6:30am	0.001	0.028	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.131**	<0.001	<0.001	<0.01	<0.005
Wadwells	12/03/2012	9:50am	0.001	0.098	<0.001	<0.0001	<0.001	<0.001	0.001	0.017	<0.001	<0.001	<0.01	<0.005
Paynes	12/03/2012	10am	0.001	0.093	<0.001	<0.0001	<0.001	<0.001	0.002	0.014	<0.001	<0.001	<0.01	<0.005
QCU	12/03/2012	10:10	0.001	0.029	<0.001	<0.0001	<0.001	<0.001	0.001	**0.14**	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	10:25am	0.002	0.052	<0.001	<0.0001	<0.001	<0.001	0.002	0.089	<0.001	<0.001	<0.01	<0.005
QCU	12/03/2012	14:10	0.001	0.028	<0.001	<0.0001	<0.001	<0.001	<0.001	0.089	<0.001	<0.001	<0.01	<0.005
Wadwells	12/03/2012	14:00	0.002	0.103	<0.001	<0.0001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	14:30	0.003	0.059	<0.001	<0.0001	<0.001	0.001	<0.001	**0.111**	0.002	<0.001	0.01	<0.005
Paynes	12/03/2012	14:20	0.001	0.088	<0.001	<0.0001	<0.001	<0.001	<0.001	0.008	<0.001	<0.001	<0.01	<0.005
QCU	12/03/2012	18:55	0.001	0.027	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.118**	<0.001	<0.001	<0.01	<0.005
Wadwells	12/03/2012	18:50	0.001	0.104	<0.001	<0.0001	<0.001	<0.001	<0.001	0.007	<0.001	<0.001	<0.01	<0.005
QCD	12/03/2012	19:10	0.003	0.064	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.116**	0.001	<0.001	0.01	<0.005
Paynes	12/03/2012	19:20	0.001	0.091	<0.001	<0.0001	<0.001	<0.001	<0.001	0.008	<0.001	<0.001	<0.01	<0.005
QCU	13/03/2012	7:50	0.001	0.028	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.126**	<0.001	<0.001	<0.01	<0.005
Wadwells	13/03/2012	7:40	0.001	0.108	<0.001	<0.0001	<0.001	<0.001	<0.001	0.01	<0.001	<0.001	<0.01	<0.005
QCD	13/03/2012	7:20	0.002	0.065	<0.001	<0.0001	<0.001	<0.001	<0.001	0.086	0.001	<0.001	0.01	<0.005
Paynes	13/03/2012	7:35	0.001	0.1	<0.001	<0.0001	<0.001	<0.001	<0.001	0.036	0.001	<0.001	<0.01	<0.005
QCU	13/03/2012	11:55	0.001	0.029	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.133**	<0.001	<0.001	0.01	0.006
Wadwells	13/03/2012	11:45	0.002	0.108	<0.001	<0.0001	<0.001	<0.001	<0.001	0.011	<0.001	<0.001	<0.01	0.006
QCD	13/03/2012	12:15	0.002	0.064	<0.001	<0.0001	<0.001	<0.001	<0.001	0.086	<0.001	<0.001	0.01	<0.005
Paynes	13/03/2012	12:05	0.002	0.101	<0.001	<0.0001	<0.001	<0.001	<0.001	0.028	0.003	<0.001	0.01	<0.005
QCU	13/03/2012	18:25	0.001	0.025	<0.001	<0.0001	<0.001	<0.001	<0.001	0.058	0.001	<0.001	<0.01	<0.005
Wadwells	13/03/2012	17:50	0.002	0.102	<0.001	<0.0001	<0.001	<0.001	0.001	0.01	0.002	<0.001	<0.01	<0.005
QCD	13/03/2012	18:15	0.002	0.054	<0.001	<0.0001	<0.001	<0.001	<0.001	0.057	0.002	<0.001	<0.01	0.005
Paynes	13/03/2012	18:00	0.002	0.09	<0.001	<0.0001	<0.001	<0.001	0.002	0.014	0.002	<0.001	<0.01	0.027
QCU	14/03/2012	7:40	0.001	0.024	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.112**	0.001	<0.001	<0.01	0.597
Wadwells	14/03/2012	7:25	0.002	0.139	<0.001	<0.0001	<0.001	<0.001	0.001	0.068	0.002	<0.001	<0.01	<0.005
QCD	14/03/2012	7:50	0.002	0.054	<0.001	<0.0001	<0.001	<0.001	<0.001	0.07	0.001	<0.001	<0.01	<0.005
Paynes	14/03/2012	8:00	0.002	0.09	<0.001	<0.0001	<0.001	<0.001	0.001	0.024	0.002	<0.001	<0.01	0.024
QCU	14/03/2012	13:00	0.001	0.024	<0.001	<0.0001	<0.001	<0.001	<0.001	0.092	0.001	<0.001	<0.01	<0.005
Wadwells	14/03/2012	12:50	0.002	0.105	<0.001	<0.0001	<0.001	<0.001	0.001	0.037	0.002	<0.001	<0.01	<0.005
QCD	14/03/2012	13:20	0.002	0.055	<0.001	<0.0001	<0.001	<0.001	<0.001	0.065	0.001	<0.001	<0.01	<0.005
Paynes	14/03/2012	13:10	0.002	0.092	<0.001	<0.0001	<0.001	<0.001	0.001	0.03	0.002	<0.001	<0.01	0.078
QCU	15/03/2012	8:20	<0.001	0.026	<0.001	<0.0001	<0.001	<0.001	<0.001	0.013	<0.001	<0.001	<0.01	<0.005
Wadwells	15/03/2012	8:10	0.002	0.148	<0.001	<0.0001	<0.001	<0.001	0.002	0.073	0.001	<0.001	<0.01	0.005
QCD	15/03/2012	7:50	0.002	0.062	<0.001	<0.0001	<0.001	<0.001	<0.001	0.072	<0.001	<0.001	<0.01	<0.005
Paynes	15/03/2012	8:00	0.002	0.11	<0.001	<0.0001	<0.001	<0.001	0.002	0.032	0.002	<0.001	<0.01	0.018
QCU	15/03/2012	12:05	0.001	0.03	<0.001	<0.0001	<0.001	<0.001	<0.001	**0.108**	<0.001	<0.001	<0.01	<0.005
Wadwells	15/03/2012	12:00	0.002	0.133	<0.001	<0.0001	<0.001	<0.001	0.002	0.06	0.002	<0.001	<0.01	<0.005
QCD	15/03/2012	12:20	0.002	0.056	<0.001	<0.0001	<0.001	<0.001	<0.001	0.068	<0.001	<0.001	<0.01	<0.005
Paynes	15/03/2012	12:10	0.003	0.105	<0.001	<0.0001	<0.001	<0.001	0.004	0.076	0.002	<0.001	<0.01	0.138
QCU	16/03/2012	7:20	0.003	0.031	<0.001	<0.0001	<0.001	<0.001	0.007	**0.208**	0.002	<0.001	0.01	<0.005
Wadwells	16/03/2012	15:35	0.007	0.166	<0.001	<0.0001	<0.001	<0.001	0.007	0.04	0.002	<0.001	<0.01	<0.005
QCD	16/03/2012	15:45	0.004	0.063	<0.001	<0.0001	<0.001	<0.001	0.004	**0.123**	0.001	<0.001	0.01	<0.005
Paynes	16/03/2012	15:40	0.002	0.104	<0.001	<0.0001	<0.001	<0.001	0.003	0.072	0.002	<0.001	<0.01	0.112
QCU	16/03/2012	15:30	0.001	0.028	<0.001	<0.0001	<0.001	0.001	<0.001	**0.162**	<0.001	<0.001	0.01	<0.005
Wadwells	16/03/2012	7:40	0.003	0.152	<0.001	<0.0001	<0.001	<0.001	0.003	0.048	0.001	<0.001	<0.01	<0.005
QCD	16/03/2012	6:00	0.002	0.061	<0.001	<0.0001	<0.001	0.001	0.001	**0.131**	<0.001	<0.001	0.01	<0.005
Paynes	16/03/2012	7:30	0.002	0.108	<0.001	<0.0001	<0.001	0.004	0.002	**0.111**	0.008	<0.001	0.01	0.076

Location	Date	Guidelines / Time	Mercury	Nitrite-N	Nitrate-N	Nitrite+Nitrate-N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P	Total Anions	Total Cations	Ionic Balance	DO	Hardness	Oil & Grease
			mg/L	mg/L	mg/L			mg/L	mg/L	mg/L	meq/L	meq/L	%	mg/L	mg/L	mg/L
		Agricultural Irrigation	0.002STV	-	-	-	-	25STV	0.8STV	-	-	-	-	-	-	
		Livestock Watering	0.002	9.1#	90.3#	-	-	-	-	-	-	-	-	-	60-350	
		Drinking Heath	0.001	0.9#	11.2#	-	-	-	-	-	-	-	-	-	-	
		Drinking Aesthetic	-	-	-	-	-	-	-	-	-	-	-	-	200	
Boundary Fence	11/03/2012	11:30am	<0.0001	<0.01	<0.01	<0.01	1.4	1.4	0.24	0.02	4.17	4.22	0.57	9.3	108	<5
QCD	11/03/2012	2:05pm	<0.0001	<0.01	<0.01	<0.01	0.5	0.5	0.07	0.06	8.9	8.74	0.87	9.7	**273**	<5
200ML Dam North (VWD3)	11/03/2012	3:20pm	<0.0001	0.05	2.35	2.4	1	3.4	0.05	<0.01	8.57	8.85	1.65	10.5	161	<5
Wadwells	11/03/2012	6:15pm	<0.0001	0.04	1.22	1.26	1.5	2.8	0.56	0.23	7.44	7.74	1.98	6.6	136	<5
Paynes	11/03/2012	6:30pm	<0.0001	<0.01	<0.01	<0.01	4	4	0.39	0.38	3.59	3.61	0.32	13.3	124	<5
QCD	11/03/2012	6:45pm	<0.0001	<0.01	<0.01	<0.01	0.2	0.2	0.1	0.06	8.89	9.02	0.72	7.7	**291**	<5
QCU	11/03/2012	7pm	<0.0001	<0.01	0.05	0.05	0.2	0.2	0.06	<0.01	4.45	4.62	1.9	13.2	158	<5
200ML Dam Track	11/03/2012	7:45pm	<0.0001	0.05	2.27	2.27	1	3.3	0.16	<0.01	9.25	9.25	0.02	7.2	169	<5
Wadwells	11/03/2012	9:05pm	<0.0001	0.04	1.62	1.62	1.1	2.7	0.24	0.15	8.32	8.65	1.78	6.3	152	<5
Paynes	11/03/2012	9:10pm	<0.0001	0.03	0.92	0.92	2.8	3.7	**1.02**	0.64	6.14	6.36	1.74	7.2	133	<5
QCD	11/03/2012	9:20pm	<0.0001	<0.01	<0.01	<0.01	0.4	0.4	0.06	0.07	8.36	8.42	0.35	7.2	**258**	<5
QCU	11/03/2012	9:35pm	<0.0001	<0.01	0.05	0.05	0.2	0.2	0.05	<0.01	4.55	4.64	1.02	11.8		
Wadwells	12/03/2012	12:20am	<0.0001	0.04	1.49	1.53	0.6	2.1	0.21	0.18	8.63	8.93	1.71	5.8		
QCU	12/03/2012	12:30am	<0.0001	<0.01	0.09	0.09	0.4	0.5	0.07	<0.01	4.5	4.59	1.07	10.3		
Paynes	12/03/2012	12:35am	<0.0001	0.05	1.43	1.48	0.8	2.3	0.37	0.27	8.54	8.64	0.58	6.1		
QCD	12/03/2012	12:40am	<0.0001	<0.01	<0.01	<0.01	0.3	0.3	0.11	0.07	8.46	8.74	1.61	7.1		
Wadwells	12/03/2012	3:15am	<0.0001	0.03	1.37	1.4	0.6	2	0.18	0.14	8.85	9.15	1.65	5.4		
Paynes	12/03/2012	3:25am	<0.0001	0.04	1.31	1.35	0.7	2	0.25	0.23	8.72	8.91	1.04	6.1		
QCU	12/03/2012	3:20am	<0.0001	<0.01	0.15	0.15	0.4	0.6	0.08	<0.01	4.5	4.65	1.6	7.7		
QCD	12/03/2012	3:35am	<0.0001	<0.01	<0.01	<0.01	0.4	0.4	0.12	0.07	8.87	9.1	1.27	7.5		
Wadwells	12/03/2012	6:10am	<0.0001	0.03	1.16	1.19	0.9	2.1	0.2	0.15	8.94	9.23	1.58	5.8		
Paynes	12/03/2012	6:15am	<0.0001	0.04	1.2	1.24	0.3	1.5	0.28	0.2	8.68	8.88	1.17	6.1		
QCD	12/03/2012	6:20am	<0.0001	<0.01	0.03	0.03	0.3	0.3	0.1	0.07	8.6	8.82	1.24	7		
QCU	12/03/2012	6:30am	<0.0001	<0.01	0.15	0.15	0.5	0.6	0.1	0.01	4.41	4.47	0.65	7.6	149	<5
Wadwells	12/03/2012	9:50am	<0.0001	0.03	0.63	0.66	1.1	1.8	0.28	0.16	9.04	9.28	1.3	9.4	163	<5
Paynes	12/03/2012	10am	<0.0001	0.03	0.85	0.88	1.1	2	0.3	0.19	8.58	8.57	0.06	8	145	<5
QCU	12/03/2012	10:10	<0.0001	<0.01	0.15	0.15	0.9	1	0.15	<0.01	4.41	4.42	0.07	8.5	147	<5
QCD	12/03/2012	10:25am	<0.0001	<0.01	0.24	0.24	0.7	0.9	0.19	0.09	7.27	7.18	0.67	8	**222**	<5
QCU	12/03/2012	14:10	<0.0001	<0.01	0.09	0.09	0.1	0.2	0.04	<0.01	4.4	4.57	1.9	8.8	156	<5
Wadwells	12/03/2012	14:00	<0.0001	0.02	0.71	0.73	0.7	1.4	0.12	0.12	8.26	8.59	1.92	7.6	154	<5
QCD	12/03/2012	14:30	<0.0001	0.02	0.66	0.68	1.2	1.9	0.32	0.21	7.62	7.74	0.79	6.8	195	<5
Paynes	12/03/2012	14:20	<0.0001	0.02	0.82	0.84	0.9	1.7	0.23	0.17	8.3	8.52	1.29	8.2	152	<5
QCU	12/03/2012	18:55	<0.0001	<0.01	0.1	0.1	0.1	0.2	0.03	<0.01	4.35	4.39	0.44	8.7	147	<5
Wadwells	12/03/2012	18:50	<0.0001	0.01	0.5	0.51	0.6	1.1	0.12	0.11	8.3	8.38	0.47	5.2	150	<5
QCD	12/03/2012	19:10	<0.0001	0.03	0.81	0.84	0.8	1.6	0.27	0.2	7.66	7.93	1.7	6	179	<5
Paynes	12/03/2012	19:20	<0.0001	0.02	0.68	0.7	0.7	1.4	0.2	0.17	8.88	8.89	0.07	6.9	157	<5
QCU	13/03/2012	7:50	<0.0001	<0.01	0.16	0.16	0.9	1.1	0.07	0.01	4.39	4.44	0.54	6.3	149	<5
Wadwells	13/03/2012	7:40	<0.0001	0.02	0.55	0.57	1.3	1.9	0.11	0.09	8.53	8.8	1.58	6.8	159	<5
QCD	13/03/2012	7:20	<0.0001	0.03	0.67	0.7	1.5	2.2	0.27	0.15	8.24	8.56	1.94	6.8	188	<5
Paynes	13/03/2012	7:35	<0.0001	0.02	0.47	0.49	0.9	1.4	0.26	0.17	8.24	8.49	1.52	6.3	157	<5
QCU	13/03/2012	11:55	<0.0001	<0.01	0.09	0.09	0.2	0.3	0.04	<0.01	4.35	4.44	1	9.4	149	<5
Wadwells	13/03/2012	11:45	<0.0001	0.02	0.47	0.49	0.7	1.2	0.17	0.09	8.92	9.15	1.3	6.4	166	<5
QCD	13/03/2012	12:15	<0.0001	0.03	0.61	0.64	0.7	1.3	0.21	0.13	8.55	8.63	0.5	6.6	197	<5
Paynes	13/03/2012	12:05	<0.0001	0.02	0.3	0.32	0.7	1	0.23	0.16	8.94	9.17	1.26	7.4	168	<5
QCU	13/03/2012	18:25	<0.0001	<0.01	0.05	0.05	0.2	0.2	0.05	<0.01	4.42	4.57	1.69	10	156	<5
Wadwells	13/03/2012	17:50	<0.0001	0.02	0.29	0.31	0.7	1	0.11	0.09	8.51	8.72	1.24	5.5	162	<5
QCD	13/03/2012	18:15	<0.0001	0.02	0.55	0.57	0.6	1.2	0.14	0.11	8.45	8.65	1.13	7	**202**	<5
Paynes	13/03/2012	18:00	<0.0001	0.01	0.2	0.21	0.7	0.9	0.2	0.17	8.43	8.62	1.11	5.8	162	<5
QCU	14/03/2012	7:40	<0.0001	<0.01	0.24	0.24	0.1	0.3	0.06	0.02	4.26	4.4	1.63	5.9	149	<5
Wadwells	14/03/2012	7:25	<0.0001	<0.01	0.14	0.14	0.5	0.6	0.12	0.1	8.73	8.86	0.74	6.1	171	<5
QCD	14/03/2012	7:50	<0.0001	0.01	0.37	0.38	0.4	0.8	0.13	0.11	8.33	8.47	0.79	6.6	**209**	<5
Paynes	14/03/2012	8:00	<0.0001	<0.01	0.08	0.08	0.5	0.6	0.19	0.16	8.2	8.52	1.91	7.8	159	<5
QCU	14/03/2012	13:00	<0.0001	<0.01	0.09	0.09	0.2	0.3	0.04	<0.01	4.5	4.57	0.72	9.5	153	<5
Wadwells	14/03/2012	12:50	<0.0001	<0.01	<0.01	<0.01	0.6	0.6	0.13	0.08	8.73	9.05	1.78	8.2	168	<5
QCD	14/03/2012	13:20	<0.0001	0.01	0.33	0.34	0.4	0.7	0.15	0.11	8.78	9.02	1.35	6.8	**224**	<5
Paynes	14/03/2012	13:10	<0.0001	<0.01	<0.01	<0.01	0.5	3.5	0.22	0.15	8.44	8.59	0.88	8.2	159	<5
QCU	15/03/2012	8:20	<0.0001	<0.01	0.31	0.31	<0.1	0.3	0.08	0.02	4.51	4.62	1.2	5.6	156	<5
Wadwells	15/03/2012	8:10	<0.0001	<0.01	0.04	0.04	0.4	0.4	0.25	<0.01	8.75	8.94	1.05	5.5	168	<5
QCD	15/03/2012	7:50	<0.0001	<0.01	0.29	0.29	0.2	0.5	0.16	0.1	8.79	9.03	1.35	6.8	**236**	<5
Paynes	15/03/2012	8:00	<0.0001	<0.01	0.01	0.01	2.4	2.4	0.24	0.2	9.01	9.37	1.91	4.3	185	<5
QCU	15/03/2012	12:05	<0.0001	<0.01	0.11	0.11	2.2	2.3	0.11	<0.01	4.46	4.62	1.74	8.2	156	<5
Wadwells	15/03/2012	12:00	<0.0001	<0.01	0.02	0.02	0.5	0.5	0.15	0.01	9.1	9.36	1.39	8.2	175	<5
QCD	15/03/2012	12:20	<0.0001	<0.01	0.25	0.25	0.2	0.4	0.17	0.1	8.9	9.18	1.58	6.6	**243**	<5
Paynes	15/03/2012	12:10	<0.0001	<0.01	<0.01	<0.01	0.7	0.7	0.3	0.21	9.09	9.25	0.89	4.6	185	<5
QCU	16/03/2012	7:20	<0.0001	<0.01	0.28	0.28	0.2	0.5	0.08	0.02	4.47	4.35	1.39	7.4		
Wadwells	16/03/2012	15:35	<0.0001	<0.01	4.68	4.68	3.2	7.9	0.82	<0.01	9.31	9.26	0.29	7.2		
QCD	16/03/2012	15:45	<0.0001	<0.01	0.2	0.2	0.3	0.5	0.13	0.11	8.9	9.02	0.69	8.4		
Paynes	16/03/2012	15:40	<0.0001	<0.01	<0.01	<0.01	0.8	0.8	0.26	0.22	9.19	9.08	0.59	7.9		
QCU	16/03/2012	15:30	<0.0001	<0.01	0.05	0.05	0.2	0.2	0.04	<0.01	4.53	4.53	0.03	10.7		
Wadwells	16/03/2012	7:40	<0.0001	<0.01	2.75	2.75	1.7	4.4	0.19	<0.01	9.72	9.39	1.71	5.3		
QCD	16/03/2012	6:00	<0.0001	<0.01	2.94	2.94	1.2	4.1	0.12	0.11	8.76	8.68	0.45	8		
Paynes	16/03/2012	7:30	<0.0001	<0.01	0.6	0.6	0.9	1.5	0.23	0.21	9.29	9.04	1.37	8.6		

Werris Creek Coal Community Consultative Committee

Twenty Fourth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 30th August 2012

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting.

1. Record of Attendance:

Present: Gae Swain (Independent Chairperson); Noel Taylor (Community Representative); Lindsay Bridge (Community Representative); Roslyn Marr (Community Representative); Jill Coleman (Community Representative); Andrew Wright (WCC Environmental Officer and Minute Taker); Alan Simms (WCC Operations Manager); Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services).

Apologies: Col Stewart (Liverpool Plains Shire Council - Councilor); Geoff Dunn (Community Representative).

2. Declaration of Pecuniary or other interests

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

3. New Matters for Discussion under General Business

Andrew Wright raised new items to be discussed including Former Underground Workings Spontaneous Combustion; Clearing for Western Overburden Emplacement Extension; Rehabilitation Program for Eastern Overburden Emplacement and Project Approval Modification for VWD1 Augmentation.

4. Matters Arising

a) Actions from Previous Meeting

A formal response from Mountain Industries has not yet been received regarding the misinformation provided during the train speed/noise complaint investigation. A verbal response was provided acknowledging the short comings of the investigation process and that Mountain Industries is aware of the communities concern and will endeavour to provide a more timely response in the future.

b) Other Matters Arising

None.

5. Minutes of Previous Meeting

Minutes of the previous meeting on the 31th May 2012 were accepted as true and accurate representation of business conducted on that day.

Moved: Jill Coleman. Seconded: Lindsay Bridge. Motion carried.

6. Environmental Monitoring Report: May, June and July 2012

Meteorology – Wind varied between a moderate north westerly and a south easterly over the period with 176mm of rain falling.
Air Quality – All dust deposition gauge, PM10 and TSP dust results were within compliance limits for the period. One dust complaint relating to general dust and was not specific to WCC.
Noise – There were no noise exceedances for the period. There were fifteen complaints for noise impacts from WCC operations, with eight complaints from two Werris Creek residents and seven complaints from two Quipolly residents. Real time noise monitoring and the Noise Control Operator confirmed that noise levels were in compliance.
Blasting – There were 17 blasts during the period, all were in compliance. There was one blasting complaint during the period that was in compliance but could have been enhanced by the south westerly wind present at the time of blast. Another two blasting complaints alleged structural damage to their homes but were not related to a specific blast event.
Groundwater – Groundwater levels have continued to fall over 2011 since the record high levels due to the very wet conditions at the end of 2010 and represent the groundwater aquifer returning back to normal conditions. Mining continues not to impact on groundwater aquifers.
Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values.
Surface Water Discharges – There was one wet weather and one controlled dirty water discharge during the period, both were within compliance.
Complaints – There were 24 complaints received during the period. In total there were fifteen complaints related to noise, five complaints due to lighting; three complaints related to blasting and one complaint related to dust. There were eight different complainants during the period with eight complaints from one Werris Creek resident and six complaints from one Quipolly resident.

Motion moved to accept the Environmental Monitoring Report for May, June and July 2012.

Moved: Ron Van Katwyk. Seconded: Jill Coleman. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Ron Van Katwyk gave an update on the two projects being funded from the CEF in 2012. The Skate Park project had selected an initial site, however issues with the site meant that other locations were reviewed. Neil McGarry was to contact Ros Marr regarding the proposed location. A development application is prepared and will be submitted when a site has been finalised, which will give the people of Werris Creek the opportunity to make submissions on the Skate Park project.

Installing a lift at the Rail Journeys Museum in Werris Creek is waiting on the completion of the HAZMAT project removing hazardous materials present at the Werris Creek Railway Station. The State Rail Authority would not support installing a lift without alternative disable egress in the event of a power outage, which meant that Council have investigated installing a fire refuse area in the building. A Heritage Impact Assessment is currently being completed.

b. Underground Spontaneous Combustion

Part of the former Underground Workings had spontaneously combusted and caught on fire. WCC was currently sealing all the open headings to prevent further air ingress and looking at options of pumping water back into the underground to put the fire out. This is not causing any safety issues, however WCC will need to extinguish prior to mining anymore of the former workings.

c. Clearing for Western Overburden Emplacement Extension

Clearing is currently being undertaken by WCC to allow the entrance road to be diverted and extend the Western Overburden Emplacement. Pre-Clearing Biodiversity Inspections had been completed earlier in the week and did not find any threatened species during the clearing. The extension will give up to 6 months of dump room prior to the full relocation of the office and workshop.

d. Rehabilitation Program for Eastern Overburden Emplacement

WCC has hired an additional D10 dozer to bulk shape the Eastern Overburden Emplacement to achieve the 2012-2013 rehabilitation target of 25ha. Rehabilitation will be undertaken later in the year once the shaping has been completed.

e. Project Approval Modification for VWD1 Augmentation

WCC received approval to modify Project Approval 10_0059 to increase Void Water Dam 1 (VWD1) capacity from the existing 20ML to 250ML as well as construct an Explosive Magazine in an alternate location requiring the Biodiversity Offset Area to be modified. These works will be undertaken in conjunction with deepening VWD3 from 140ML to 200ML which will give WCC the required capacity to store the estimated 400ML of water currently in pit that needs to be dewatered prior to March 2013.

Meeting Closed 11:00am.

Next Meeting scheduled for Thursday 29th November 2012.

Copy to:

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

Ron Van Katwyk	LPSC	Alan Simms	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Paul Freeman	DoPI	Andrew Wright	Werris Creek Coal
Michael Howat	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

May, June and July 2012

This Environmental Monitoring Report covers the period 1st May 2012 to 31st July 2012 for the Werris Creek No.2 Coal Mine Community Consultative Committee.

The report includes environmental monitoring results from the on-site Weather Station, Air Quality, Noise, Blasting, Surface Water, Groundwater and Discharge Water Quality together with any community complaints received and general details on site environmental matters.

Note: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

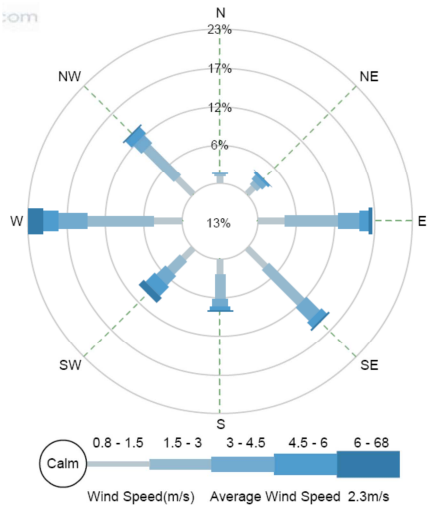
1.0 METEOROLOGY

1.1 WEATHER STATION

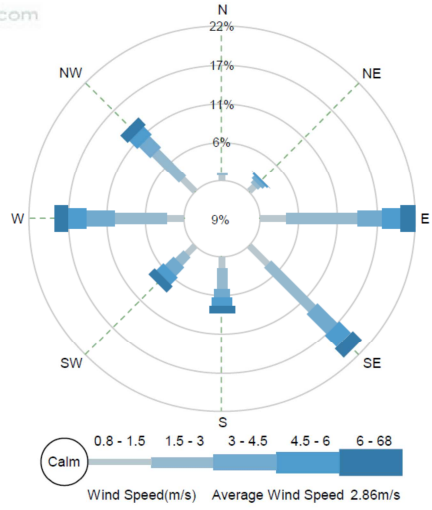
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for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

Month	Quipolly Temp (°C)			Werris Creek Temp (°C)			WCC Temp (°C) 10m			Lapse Rate (°C/100m)		Rainfall (mm)			
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Quip	WC	Annual*
May 2012	-3.7	9.8	24.9	2.3	12.8	24.7	4.8	13.5	24.6	+5.7	+15.8	32.8	21.8	24.0	47.6
June 2012	-5.6	8.8	19.7	-1.4	10.7	19.8	1.1	10.9	18.4	+3.1	+10.3	34.4	24.0	32.2	83.0
July 2012	-5.9	8.3	18.4	-0.9	10.2	18.8	0.9	10.5	18.8	+2.9	+9.0	92.0	54.0	66.4	176.0

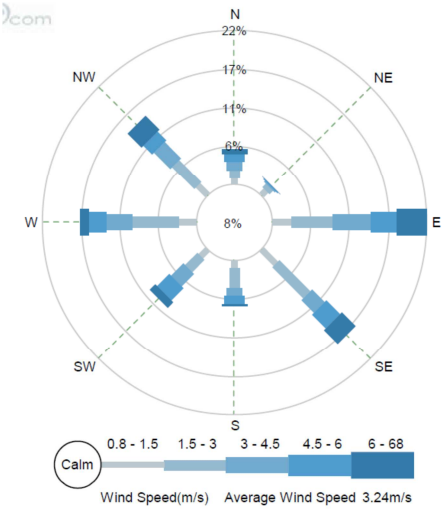
* Annual cumulative total since April 2012 to March 2013 from a composite data set based on the onsite Weather Station at WCC.



May 2012



June 2012



July 2012

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10)

High Volume Air Sampler (HVAS) monitors particulate matter less than 10 micron in size (PM10) and total suspended particulate (TSP) matter and is conducted at the 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 Environment Protection Authority (EPA) guidelines and results are reported as micro grams per cubic metre (µg/m^3) of air sampled.

2.1.1 Monitoring Data Results

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

Monitor Location	May (µg/m^3)	June (µg/m^3)	July (µg/m^3)	2012-2013 Average (µg/m^3)	Criteria (µg/m^3)
WCHV1	15.3	12.1	8.6	12.8	30
WCHV2	17.9	9.4	8.5	12.5	30
WCHV3	19.9	10.8	4.5	13.9	30
WCHV4	14.2	7.0	6.6	10.3	30
WCHV5	51.3	24.5	6.1	32.7	90

2.1.2 Discussion - Compliance / Non Compliance

The daily results, monthly and annual averages for May, June and July were all below the Air Quality criteria except for the daily result on the 8th May 2012 at the "Railway View" PM10 & TSP; however "Railway View" is owned by WCC and therefore the criteria does not apply.

2.2 WERRIS CREEK MINE 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 EPA guidelines and results are reported as grams per metre squared per month (g/m^2/month).

2.2.1 Monitoring Data Results

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

Monitor Location	May (g/m^2/month)	June (g/m^2/month)	July (g/m^2/month)	Annual (g/m^2/month)	Criteria (g/m^2/month)
WC2	1.2	1.0	1.5	1.6	4.0
WC5	1.0	0.5	0.7	0.8	4.0
WC7	0.4	0.3	0.5	0.5	4.0
WC8	2.1	3.5	*1.8	2.2	4.0
WC9	1.3	0.8	0.2	0.8	4.0
WC10	0.5	0.5	1.2	1.4	4.0
WC11	2.1	*2.6	c425	1.8	4.0

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

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results were within the Air Quality criteria of 4.0g/m^2/month. The exception was for "Glenara"'s July result which was clearly contaminated with dust from a Non-Werris Creek Coal source as the level recorded was excessive and not possible to be generated by WCC.

2.3 QUIRINDI TRAIN DUST DEPOSITION

2.3.1 Monitoring Data Results

The results for the last three months are provided in the table below; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	May 2012		June 2012		July 2012		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	1.1	30%	1.0	35%	1.2	40%	1.0
DDW20	0.7	35%	0.8	45%	0.8	40%	0.7
DDW13	0.6	20%	0.9	55%	1.2	40%	0.8
Train Line							
DDE13	0.6	40%	0.5	45%	0.7	40%	0.6
DDE20	0.4	10%	1.9	20%	2.4	10%	1.4
DDE30	0.7	25%	1.3	15%	1.5	25%	1.0

2.3.2 Discussion - Compliance / Non Compliance

Overall the dust fall out levels adjacent to the train line are low (well below the impact assessment criteria nominated by the EPA of 4.0 g/m^2/month) and comparable to the levels monitored around WCC. Since monitoring commenced in September 2011, the western dust gauges (located between the train line and George Street, Quirindi) on average have higher percentage proportion of coal. Individually, DDE20 on average records the highest dust levels but lowest percentage proportion of coal indicating that it is being influenced by a local dust source unrelated to train dust impacts.

2.4 AIR QUALITY COMPLAINTS

There was one dust complaint related to a perceived increase general dust fall out and not specific to any event. Specific action taken in relation to this complaint is outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 properties from 13 monitoring points:

- A - “Rosehill” R5;
- B1 - “Almawille” (private agreement) R8;
- B1 - 83 Wadwells Lane R7;
- B2 - “Mountain View” R22;
- B2 - “Gedhurst” R9;
- C - “Meadholme” (private agreement) R10;
- C - “Glenara” (private agreement) R11;
- D - “Hazeldene” R24;
- E - “Railway Cottage” R12;
- F - “Talavera” R96;
- G - R97;
- H - “Kyooma” (private agreement) R98;
- I - Kurrara St, Werris Creek;
- J - Coronation Ave, Werris Creek;
- K - “Tonsley Park” (private agreement) R20;
- K - “Alco Park” (private agreement) R21; and
- L - R103.

Attended noise monitoring was undertaken twice for either 60 minutes at privately owned properties or 15 minutes at properties with private agreement representative of the day period and the evening/night period.

3.1.1 Monitoring Data Results

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

Thursday 17th May 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible	35	26#	35
B1	**West Quipolly** R7, R8*	<20	37	36#	37
B2	**West Quipolly** R9 & R22	Inaudible	37/36[1]	35#	37/36[1]
C	**Central Quipolly** R10*,R11*	30	39	32#	39
D	**"Hazeldene"** R24	27	37	25#	37
E	**"Railway Cottage"** R12	Inaudible	38	26#	38
F	**"Talavera"** R96	29	35	<20#	35
G	R97	26	38	20#	37
H	**"Kyooma"** R98*	28	36	25#	36
I	**Kurrara St, WC**	Inaudible	35	<20#	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible#	35
K	**South St, WC** R20*, R21*	Inaudible	39	32#	37
L	**West St, WC** R103	Inaudible	35	33#	35
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Thursday 12th June 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible#	35	Inaudible	35
B1	**West Quipolly** R7, R8*	Inaudible#	37	Inaudible#	37
B2	**West Quipolly** R9 & R22	Inaudible#	37/36[1]	28	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible#	39	Inaudible	39
D	**"Hazeldene"** R24	Inaudible#	37	25	37
E	**"Railway Cottage"** R12	Inaudible#	38	30	38
F	**"Talavera"** R96	Barely audible#	35	25	35
G	R97	<25#	38	31#	37
H	**"Kyooma"** R98*	Barely audible#	36	38#	36
I	**Kurrara St, WC**	Inaudible#	35	34#	35
J	**Coronation Ave, WC**	Inaudible#	35	<30#	35
K	**South St, WC** R20*, R21*	Inaudible#	39	35#	37
L	**West St, WC** R103	Inaudible#	35	Inaudible#	35
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Tuesday 17th & Wednesday 18th July 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible	35	35#	35
B1	**West Quipolly** R7, R8*	24	37	34	37
B2	**West Quipolly** R9 & R22	<20	37/36[1]	32	37/36[1]
C	**Central Quipolly** R10*,R11*	Barely audible	39	25	39
D	**"Hazeldene"** R24	34	37	30#	37
E	**"Railway Cottage"** R12	30	38	31	38
F	**"Talavera"** R96	Inaudible	35	<25	35
G	R97	<25	38	24	37
H	**"Kyooma"** R98*	Barely audible	36	Inaudible	36
I	**Kurrara St, WC**	Inaudible	35	34	35
J	**Coronation Ave, WC**	Inaudible	35	<30#	35
K	**South St, WC** R20*, R21*	Inaudible	39	37	37
L	**West St, WC** R103	Inaudible	35	Inaudible	35
Rail Spur		Not Monitored			35
		Not Monitored			35

WC – Werris Creek; * - Private agreement in place with resident; # – Adverse weather with wind >3m/s; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during May, June and July 2012. The June night time monitoring at "Kyooma" recorded elevated mining noise during adverse weather conditions (wind >3m/s), therefore the noise is not applicable against the "Kyooma" noise criteria and that a private agreement is in place with "Kyooma".

3.2 NOISE COMPLAINTS

There were fifteen complaints for noise impacts from WCC operations, six complaints from one Werris Creek complainant and seven complaints from one Quipolly complainant. Nine of the noise complaints were in relation to open cut mining operations with real time noise monitoring by the Noise Control Operator actively managing noise levels and suspending activities as required. Investigation into the complaints found that on each occasion the mine was in compliance or adverse weather conditions were present and the noise criteria was not applicable. The six noise complaints in relation to the Rail Load Out Facility were found that on each occasion to either be in compliance or adverse weather conditions were present and the noise criteria was not applicable. The new D10T dozer for the Rail Load Out Facility with noise attenuated tracks went to work on 17th July to replace an old D9 dozer which should reduce overall noise emissions. Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at "Glenala", "Talavera", "Werris Creek" and "Tonsley Park" during the period. Compliance limits for blasting overpressure is 115dBL (and up to 120dBL for only 5% of blasts) and vibration is 5mm/s (and up to 10mm/s for only 5% of blasts). During the period a total of 17 blasts were fired by the blasting contractor, Orica Mining Services.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

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

May 2012	"Glenala"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.20	<109.9	0.61	88.9	0.32	96.2	0.16	96.7
Monthly Maximum	<0.20	<109.9	0.70	99.0	0.34	98.2	0.16	102.9
Annual Average	0.18	108.9	0.76	94.4	0.31	97.6	0.13	105.1
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	0/6		5/6		2/6		2/6	

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

June 2012	"Glenala"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	<0.20	<109.9	0.86	101.3	0.30	100.6	<0.20	<109.9
Monthly Maximum	<0.20	<109.9	1.30	106.2	0.34	104.9	<0.20	<109.9
Annual Average	0.18	108.9	0.79	96.7	0.31	98.6	0.13	105.1
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	0/3		3/3		2/3		0/3	

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

July 2012	"Glenala"		"Tonsley Park"		Werris Creek		"Talavera"	
	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	dB(L)
Monthly Average	0.38	105.0	1.26	111.9	0.70	104.3	0.39	109.9
Monthly Maximum	0.48	106.9	1.85	114.9	1.05	107.3	0.67	113.0
Annual Average	0.28	107.0	0.91	100.5	0.41	100.0	0.22	106.7
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	2/8		2/8		3/8		2/8	

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

4.1.2 Discussion - Compliance / Non Compliance

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

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 was only one blasting complaint (#249) from a Werris Creek complainant during the period. The blast performed as expected and all blast results at community monitoring locations were in compliance. The south westerly wind (but not towards Werris Creek) at the time of the blast could have enhanced overpressure impacts as outlined in **Section 6**.

5.0 WATER

The groundwater monitoring program has changed since the previous report that groundwater level monitoring is measured bi-monthly and groundwater quality monitoring is now sampled six monthly. Quarterly surface water monitoring was undertaken on 10th May 2012. There were two surface water discharge events during the period.

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitor 38 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 6**.

Site	pH	EC	Dip	Change from Previous Quarter
Quipolly Creek Alluvium				
MW23A	-	-	3.86	Groundwater level decreased 0.12m, No groundwater quality monitoring during the period.
MW12	-	-	8.13m	Groundwater level decreased 0.29m, No groundwater quality monitoring during the period.
Werris Basalt				
MW5	-	-	8.63	Groundwater level decreased 0.74m, No groundwater quality monitoring during the period.
MW14	-	-	16.09	Groundwater level decreased 0.69m, No groundwater quality monitoring during the period.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is distance in meters from top of bore to groundwater surface

5.1.2 Discussion - Compliance / Non Compliance

The dry weather since February 2012 has resulted in groundwater levels to fall. Current groundwater levels are at average levels since monitoring commenced in 2005. Mining continues not to impact on groundwater aquifers.

5.2 SURFACE WATER

Surface water monitoring is undertaken at key dirty and void water dams to monitor for potential contamination issues due to mining while the water is still onsite.

5.2.1 Monitoring Data Results

Summary of surface water quality monitoring results is provided below with detailed monitoring data outlined in **Appendix 7**.

Site	pH	EC	TSS	O&G	Change
ONSITE					
SB2	7.98	485	47	<5	pH decreased 0.36, EC increased 41, TSS increased 33, O&G no change.
SB9	7.78	353	63	<5	pH decreased 0.11, EC increased 47, TSS increased 35, O&G no change.
SB10	7.63	391	27	<5	pH decreased 1.05, EC increased 133, TSS increased 20, O&G no change.

OFFSITE					
QCU	7.55	465	11	<5	pH increased 0.05, EC increased 148, TSS decreased 5, O&G no change.
QCD	7.97	482	18	<5	pH increased 0.14, EC increased 367, TSS decreased 19, O&G no change.
WCU	-	-	-	-	WCU was dry at the time of monitoring
WCD	8.10	1320	18	<5	pH decreased 0.28, EC increased 10, TSS decreased 14, O&G no change.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.2.2 Discussion - Compliance / Non Compliance

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

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There was one wet weather discharge event and one controlled discharge event during the period. A summary of discharge monitoring results is provided below with detailed monitoring data outlined in **Appendix 8**.

Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
13/7/2012	**SB9**	7.79	346	**100**	<5	Compliant – 5 Day Rain >39.2mm allows TSS >50mg/L	Wet Weather	56.0mm
31/7/2012	**SB2**	8.26	507	10	<5	Compliant	Controlled	Not Applicable
Criteria		**8.5**	**N/A**	**50**	**10**			

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water; NT – Not Tested

5.3.2 Discussion - Compliance / Non Compliance

The wet weather discharge from SB9 on 13th July 2012 recorded high TSS (sediment), however was in compliance as greater than 39.2mm of rain had fallen and therefore TSS limits do not apply in accordance with EPL 12290 conditions. All dirty 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 dirty water discharge events.

5.3 WATER COMPLAINTS

There were no water related complaints during the period.

6.0 COMPLAINTS SUMMARY

There were 24 complaints received during the period with the details summarized below. In total there were 15 complaints related to noise; five complaints related to lighting, three complaints related to blasting and one complaint for dust. There were eight different complainants during the period with eleven complaints from one individual Werris Creek resident and seven from one individual Quipolly resident. The lighting complaints were all from the one Werris Creek resident with a lighting camera set up on the southern edge of Werris Creek with a view towards the mine confirming that the lighting plants had been set up appropriately and in compliance with PA 10_0059.

#	Date	Complainant	Complaint	Investigation	Action Taken
228	1/05/2012 11:00pm	L Quipolly	Complainant stated that mine was very loud tonight 11pm 1/5 and have had to move out of main bedroom.	The wind direction and inversion could cause noise enhancement, however mining noise levels were at or below the relevant criteria of 37dBA.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant.
229	10/05/2012 10:03pm	L Quipolly	Mine too noisy and its not road noise 10pm 10/5.	OCE/NCO modifying operations at time of complaint to reduce noise levels. Temperature inversion present. Extraneous noises causing measured noise level >37dB(A) not related to mining operations.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant.

230	12/05/2012 1:29am	L Quipolly	Mine noise is ridiculous 1am 12/5.	OCE/NCO modifying operations at time of complaint to reduce noise levels. A review of audio heard mining noise drowned out by road & train. Temperature inversion (>12oC/100m) present, noise levels measured under these conditions are not assessable against criteria.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant.
231	14/05/2012 2:15pm	A Werris Creek	Lights from WCC were shining at complainant's residence at 1:30am Friday 11/5.	Lighting camera confirms mobile machinery lights visible but not intrusive at time of complaint. Lighting Plants not relocated.	A written response provided to the complainant.
232	21/05/2012 10:45pm	L Quipolly	Mine noise tonight is too noisy 10:45pm 21/5.	OCE/NCO modifying operations at time of complaint to reduce noise levels. No temperature inversion present. Noise levels below relevant criteria of 37dB(A).	A written response provided to the complainant.
233	23/05/2012 9:18am	A Werris Creek	Noise complaint from coal loader at 1am 23/5.	Rail Load Out Facility operated to 3:30am with two dozers pushing up coal stockpile. 22/5/12 had >+12oC/100m inversion and noise levels not applicable against criteria.	A written response provided to the complainant.
234	23/05/2012 11:33am	AE Werris Creek	Complainant alleged mine blasting caused cracking in home.	Complainant did not identify a particular blast event.	EO visited the complainant's residence. Structural engineer undertook Property Investigation in accordance with PA10_0059.
235	24/05/2012 11:14am	L Quipolly	Noise from mine was terrible and forced complainant to change rooms at 2am 24/5. Mine related traffic using Paynes Road.	OCE/NCO modified operations at time of complaint to reduce noise levels. A review of audio heard mining noise drowned out by road & train. Temperature inversion (>3oC/100m) and wind speeds (>2m/s) present, noise levels measured under these conditions are not assessable against criteria.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant.
236	30/05/2012 10:33am	AF Werris Creek	Complainant alleged mine blasting caused cracking in home.	Complainant did not identify a particular blast event.	EO visited the complainant's residence. Structural engineer undertook Property Investigation in accordance with PA10_0059.
237	30/05/2012 2:44pm	A Werris Creek	Complainant alleged that the coal loader on Wednesday 23/5 to Friday 25/5 nights were excessively noisy.	Rail Load Out Facility operated to 3:30am with two dozers pushing up coal stockpile. 23/5/12 had >+12oC/100m inversion and 24&25/5/12 wind >3m/s and noise levels not applicable against criteria.	A written response provided to the complainant.
238	13/06/2012 10:54am	A Werris Creek	RLO lights on 8/6/12 10:30pm to late shining at house and 2 sets of RLO lights shining at house until 2am on 12/6/12.	Inspection of Rail Load Out Facility lights on 12/6/12 prior to complaint show that they are set up to north west. Possible that the lights seen are from dozers on coal stockpile.	A written response provided to the complainant.
239	20/06/2012 10:16pm	L Quipolly	Mine noise 20/6/12 getting too loud.	OCE/NCO did not modify operations at time of complaint as Quipolly noise monitor identified extraneous noises causing noise levels >37dB(A) not related to mining operations. Temperature inversion present >+12oC/100m so not assessable against criteria.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant.
240	22/06/2012 1:50am	Z Quipolly	Mine noise is keeping the complainant awake since 1am 22/6/12.	OCE drove to Paynes Road to inspect noise emissions. OCE/NCO modified operations at midnight. Quipolly noise monitor identified extraneous noises causing noise levels >35dB(A) not related to mining operations. Wind >3m/s so not assessable against criteria.	A written response provided to the complainant.
241	25/06/2012 1:42pm	A Werris Creek	Noise complaint for Coal Loader at 2am 23/6/12.	Werris Creek noise monitor identified extraneous noises causing noise levels >35dB(A) not related to mining operations. Wind and temperature inversion present so not assessable against criteria.	A written response provided to the complainant.

242	25/06/2012 1:42pm	A Werris Creek	Light complaint for Coal Loader at 2am 23/6/12.	Inspection of lighting plants at Rail Load Out Facility confirm set up appropriately and orientated to the north west. Possible that the lights seen are from dozers on coal stockpile.	A written response provided to the complainant.
243	4/07/2012 9:01am	C Werris Creek	Noise from mine very loud at 10pm 3/7/12 and can still be heard 9am 4/7/12.	Werris Creek noise monitor identified extraneous noises causing noise levels >35dB(A) not related to mining operations. Southerly wind enhanced noise propagation towards Werris Creek.	A written response provided to the complainant.
244	13/07/2012 1:04pm	A Werris Creek	Noise complaint for Coal Loader on nightshift 11/7/12.	Werris Creek noise monitor identified extraneous noises causing noise levels equal to 35dB(A) not related to mining operations and not an exceedance.	A written response provided to the complainant.
245	13/07/2012 1:04pm	A Werris Creek	Light complaint for Coal Loader on nightshift 11/7/12.	Inspection of lighting plants at Rail Load Out Facility confirm set up appropriately and orientated to the west. Possible that the lights seen are from dozers on coal stockpile.	A written response provided to the complainant.
246	17/07/2012 10:53am	L Quipolly	Mine noisy on nightshift 16/7/12. Observed allegedly unsafe equipment operation and Leading Hand that answer phone was rude.	OCE/NCO did not modify operations at time of complaint as audio from Quipolly noise monitor not working but noise levels did not exceed 37dB(A) and not an exceedance. Temperature inversion present >+12oC/100m so not assessable against criteria.	A written response provided to the complainant. WCC to cover the cost of complainant hiring own independent noise monitoring consultant. New Operations Manager to meet with complainant.
247	17/07/2012 11:16am	A Werris Creek	Noise complaint for Coal Loader on nightshift 12&13/7/12.	Werris Creek noise monitor identified extraneous noises causing noise levels equal to 35dB(A) not related to mining operations and not an exceedance. Wind >3m/s so not assessable against criteria.	A written response provided to the complainant.
248	17/07/2012 11:16am	A Werris Creek	Light complaint for Coal Loader on nightshift 12&13/7/12.	Inspection of lighting plants at Rail Load Out Facility confirm set up appropriately and orientated to the west. Possible that the lights seen are from dozers on coal stockpile.	A written response provided to the complainant.
249	17/07/2012 3:25pm	U Werris Creek	Blast at 3pm 17/7/12 impacted house similar to last years' blast when last made complaint.	Blast performed as expected and all community monitoring location in compliance. South westerly wind (but not towards Werris Creek) could have enhanced blast effects.	A written response provided to the complainant.
250	18/07/2012 12:30pm	Y Werris Creek	Grey/black dust deposited on ute and roof only appeared over last couple of years and believes not from rail.	No specific event. Complainant's residence adjacent to North West Rail Line.	Dust gauge installed on complainants property and will visually analyse dust source. A written response provided to the complainant.
251	27/07/2012 3:10pm	A Werris Creek	Noise complaint for Coal Loader from 11pm 22/7/12 to 3:45am 23/7/12.	Werris Creek noise monitor identified extraneous noises causing noise levels >35dB(A) not related to mining operations. Wind >3m/s so not assessable against criteria.	A written response provided to the complainant.

7.0 GENERAL

Please feel free to ask any questions in relation to the information contained within this document during Item 7 of the meeting agenda.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS Dust Monitoring
2012-2013

Site / Date	HVP92 Werris Creek	EPL#30 Monthly Summary	Rolling Annual Average	HVP20 Tonsley Park	EPL#1 Monthly Summary	Rolling Annual Average	HVP98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	HVP4 Eurundee	Monthly Summary	Rolling Annual Average	HVP11 Glenara	EPL#29 Monthly Summary	Rolling Annual Average	HVT98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
02-Apr-12	22	6.2	22.3	19	7.5	19.0	29	12.2	28.6	18	8.2	17.6	18	8.2	17.6	66	22.0	66.4	50	30	90
08-Apr-12	12	**15.9**	17.2	16	**15.3**	17.6	23.2	**22.6**	25.9	20	**15.1**	18.8	20	**15.1**	18.8	53	**55.3**	59.6	50	30	90
14-Apr-12	6	17.2	13.5	8	17.4	14.2	12	24.8	21.3	8	16.0	15.3	8	16.0	15.3	22	59.6	47.0	50	30	90
20-Apr-12	23	23.0	15.9	19	19.0	15.3	26	28.6	22.6	14	20.0	15.1	14	20.0	15.1	80	79.9	55.3	50	30	90
26-Apr-12	12		15.2	13		14.9	17		21.5	13		14.7	13		14.7	54		55.0	50	30	90
02-May-12	11	11.4	14.6	13	12.6	14.5	8	8.4	19.4	14	11.8	14.6	14	11.8	14.6	27.5	27.5	50.4	50	30	90
08-May-12	26	**15.3**	16.2	20	**17.9**	15.3	49	**19.9**	23.6	18	**14.2**	15.0	18	**14.2**	15.0	114	**51.3**	59.5	50	30	90
14-May-12	15	12.4	16.0	27	17.1	16.7	12	12.8	22.2	15	14.0	15.0	15	14.0	15.0	33	33.0	56.2	50	30	90
20-May-12	12	25.8	15.6	17	26.7	16.8	13	48.8	21.1	12	17.7	14.6	12	17.7	14.6	28	114.0	53.0	50	30	90
26-May-12	4		14.4	5		15.6	4		19.4	3		13.5	3		13.5	6		48.3	50	30	90
01-Jun-12	19		14.8	12		15.2	8		18.4	4		12.6	4		12.6	20		45.7	50	30	90
07-Jun-12	12	3.7	14.6	7	4.8	14.5	3	3.3	17.1	3	3.2	11.8	3	3.2	11.8	7	5.5	42.5	50	30	90
13-Jun-12	11	**12.1**	14.3	9	**9.4**	14.1	5	**10.8**	16.2	6	**7.0**	11.4	6	**7.0**	11.4	16	**24.5**	40.5	50	30	90
19-Jun-12	10	11.8	14.0	9	9.1	13.7	13	6.6	16.0	8	5.2	11.2	8	5.2	11.2	31	18.3	39.8	50	30	90
25-Jun-12	17	18.7	14.2	15	15.4	13.8	31	31.2	17.0	17	17.4	11.6	17	17.4	11.6	67	66.6	41.6	50	30	90
01-Jul-12	10		13.9	9		13.5	4		16.2	5		11.2	5		11.2	7		39.5	50	30	90
07-Jul-12	8	6.3	13.6	8	6.3	13.2	5	3.0	15.5	7	4.8	10.9	14	5.2	11.4	5	4.8	37.5	50	30	90
13-Jul-12	8	**8.6**	13.3	8	**8.5**	12.9	5	**4.5**	14.9	5	**6.6**	10.6	6	**8.4**	11.0	5	**6.1**	35.6	50	30	90
19-Jul-12	11	8.3	13.1	11	8.3	12.8	6	4.5	14.4	5	5.2	10.3	9	7.9	10.9	8	5.2	34.2	50	30	90
25-Jul-12	6	10.7	12.8	6	10.7	12.5	3	5.8	13.9	10	10.4	10.3	8	14.2	10.8	5	8.2	32.7	50	30	90
31-Jul-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
06-Aug-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
12-Aug-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
18-Aug-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
24-Aug-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
30-Aug-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
05-Sep-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
11-Sep-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
17-Sep-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
23-Sep-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
29-Sep-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
05-Oct-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
11-Oct-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
17-Oct-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
23-Oct-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
29-Oct-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
04-Nov-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
10-Nov-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
16-Nov-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
22-Nov-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
28-Nov-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
04-Dec-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
10-Dec-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
16-Dec-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
22-Dec-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
28-Dec-12			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
03-Jan-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
09-Jan-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
15-Jan-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
21-Jan-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
27-Jan-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
02-Feb-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
08-Feb-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
14-Feb-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
20-Feb-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
26-Feb-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
04-Mar-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
10-Mar-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
16-Mar-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
22-Mar-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
28-Mar-13			12.8			12.5			13.9			10.3			10.8			32.7	50	30	90
Min	**3.7**						**3.0**			**3.2**			**3.2**			**4.8**					
Max	**25.8**			**26.7**			**48.8**			**20.0**			**20.0**			**114.0**					
Capture	**33%**			**33%**			**33%**			**33%**			**33%**			**33%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2012-2013

MONTH (g/m2/month)	-		-		EPL #1		-		-		-		EPL#29		AQGHGMP Criteria
	WC-2 Cintra		WC-5 Railway View		WC-7 Tonsley Park		WC-8 Plain View		WC-9 Marengo		WC-10 Mountain View		WC-11 Glenara		
	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	Total Matter	Ash Content	
April 2011	2.5	1.4	1.1	0.6	0.6	0.3	1.0	0.6	*0.7	*0.3	3.5	2.6	1.5	0.8	4.0
May 2011	1.2	0.8	1.0	0.7	0.4	0.4	2.1	1.2	1.3	0.7	0.5	0.5	2.1	0.9	4.0
June 2011	1.0	0.8	0.5	0.5	0.3	0.3	3.5	2.5	0.8	0.5	0.5	0.4	*2.6	*0.9	4.0
July 2011	1.5	1.0	0.7	0.5	0.5	0.4	*1.8	*0.6	0.2	0.2	1.2	1.0	c425	c391	4.0
August 2011															4.0
September 2011															4.0
October 2011															4.0
November 2011															4.0
December 2011															4.0
January 2012															4.0
February 2012															4.0
March 2012															4.0
ANNUAL AVERAGE	**1.6**		**0.8**		**0.5**		**2.2**		**0.8**		**1.4**		**1.8**		**4.0**
MINIMUM	**1.0**		**0.5**		**0.3**		**1.0**		**0.2**		**0.5**		**1.5**		**-**
MAXIMUM	**2.5**		**1.1**		**0.6**		**3.5**		**1.3**		**3.5**		**2.1**		**4.0**

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

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

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2012-2013

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2012	0.8	25%	50%	25%	0.3	25%	50%	25%	0.3	30%	40%	30%	0.7	25%	50%	25%	1.0	10%	60%	30%	0.5	25%	50%	25%	4.0
May 2012	1.1	30%	40%	30%	0.7	35%	25%	40%	0.6	20%	50%	30%	0.6	40%	40%	20%	0.4	10%	60%	30%	0.7	25%	50%	25%	4.0
June 2012	1.0	35%	45%	20%	0.8	45%	35%	20%	0.9	35%	55%	10%	0.5	45%	40%	15%	1.9	20%	60%	20%	1.3	15%	65%	20%	4.0
July 2012	1.2	40%	30%	30%	0.8	40%	30%	30%	1.2	40%	30%	30%	0.7	40%	30%	30%	2.4	10%	60%	30%	1.5	25%	50%	25%	4.0
August 2012																									4.0
September 2012																									4.0
October 2012																									4.0
November 2012																									4.0
December 2012																									4.0
January 2013																									4.0
February 2013																									4.0
March 2013																									4.0
ANNUAL AVERAGE	**1.0**				**0.7**				**0.8**				**0.6**				**1.4**				**1.0**				**4.0**
Average Coal %	**32.5%**				**36.3%**				**31.3%**				**37.5%**				**12.5%**				**22.5%**				**-**
Total Coal	**0.33**				**0.24**				**0.23**				**0.23**				**0.18**				**0.23**				**-**
MINIMUM	**0.8**				**0.3**				**0.3**				**0.5**				**0.4**				**0.5**				**-**
MAXIMUM	**1.2**				**0.8**				**1.2**				**0.7**				**2.4**				**1.5**				**4.0**

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

Appendix 4 – Noise Monitoring Results

23 May 2012

Ref: 04035/4375

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

RE: MAY 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Thursday 17th May, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from Table 25 of the NMP). The monitoring locations and noise criteria for each are detailed in **Appendix 1**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

Mining operations on Thursday 17th May dayshift and nightshift had the 3600 excavator in Strip 13 east at RL390m, a 1900 excavator in Strip 12 west at RL340m, a 1900 excavator in Strip 12 centre at RL350m and a 1900 excavator coaling in Strip 12 east at RL370m. The eastern 3600/1900 truck fleets were running to the eastern RL390m dump while the other two 1900 trucks fleets were running to RL445m dump on dayshift and in pit to RL300m dump on night shift. The crushing plant operated to 3:30am and no trains were loaded.

Mining operations were modified on night shift based on continuous noise monitoring results with most activities suspended at various times to minimise noise emissions.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, noise emission from WCC did not exceed the relevant criterion at any monitoring locations at any time during the survey.

Table 2 WCC Noise Monitoring Results – 17 May 2012 (Day)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2:25 pm	33	35	n/a	1.5/197	Birds (32), traffic (26), WCC inaudible
B1 R7 83 Wadwells Lane/R8 Almawillee	1:20 pm	40	37	n/a	1.9/225	Birds (39), traffic (32), WCC (<20)
B2 R9Gedhurst/ R22 Mountain View	1:20 pm	39	37/36*	n/a	1.9/225	Insects (38), traffic (30), WCC inaudible
C R10 Meadholme/ R11 Glenara	2:20 pm	31	35	n/a	1.6/222	WCC (30), birds (25)
D R24 Hazeldene	2:45 pm	38	37	n/a	1.9/184	Birds (37), traffic (30), WCC (27)
E R12 Railway Cottage	5:00 pm	46	38	n/a	0.9/241	Traffic (46), rail works (35), birds (32), WCC inaudible
F R96 Talavera	2:45 pm	31	38	n/a	1.9/184	WCC (29), birds (24), traffic (23)
G R97	4:07 pm	34	35	n/a	1.2/163	Birds (33), WCC (26)
H R96 Kyooma	3:48 pm	43	35	n/a	2.0/169	Birds (43), WCC (28)
I R57 Kurrara St	4:16 pm	46	35	n/a	0.5/157	Traffic (45), birds (39), WCC inaudible
J R57 Coronation Ave	3:56 pm	43	35	n/a	2.0/169	Traffic (41), trains (35), birds (34), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	5:42 pm	38	35	+9.7	1.8/267	Insects (37), traffic (30), trains (20), WCC inaudible
L R103	5:22 pm	33	35	+9.1	0.9/276	Birds (32), train (25), WCC inaudible

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

Table 3 WCC Noise Monitoring Results – 17 May 2012 (Evening/Night)						
Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion ^{O}C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	9:22 pm	35	35	+13.2	0.4/238	Dogs (33), traffic (26), WCC (26)
B1 R7 83 Wadwells Lane/R8 Almawillee	7:30 pm	37	37	+13.7	1.4/85	WCC (36)[1], traffic (26), birds (25)
B2 R9Gedhurst/ R22 Mountain View	7:15 pm	35	36*	+13.6	1.3/123	WCC (35)[1]
C R10 Meadholme/ R11 Glenara	8:33 pm	39	35	+15.8	1.0/63	Traffic (37), WCC (32)
D R24 Hazeldene	8:18 pm	43	37	+14.3	0.6/25	Traffic (43), WCC (25)
E R12 Railway Cottage	10:45 pm	33	38	+12.6	0.7/122	Traffic (32), WCC (26)
F R96 Talavera	8:53 pm	30	37	+13.9	0.3/213	Traffic (30), WCC (<20)
G R97	10:05 pm	24	35	+13.5	0.5/159	Traffic (22), WCC (20)
H R96 Kyooma	10:23 pm	25	35	+12.7	0.2/27	WCC (25)
I R57 Kurrara St	10:43 pm	39	35	+12.6	0.7/122	Traffic (39), WCC (<20)
J R57 Coronation Ave	10:25 pm	29	35	+12.7	0.6/148	Traffic (29), WCC inaudible
K R20 Tonsley Park/ R21 Alco Park	10:06 pm	33	35	+13.1	0.2/257	WCC (32), traffic (27)
L R103	9:47 pm	39	35	+14.4	0.6/187	Traffic (37), WCC (33), dog (30)

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

1 See text below

At approximately 8 pm changes to mining operations resulted in lower noise levels. The results shown in Table 2 for locations B1 and B2 represent the worst case 15 minutes out of the one hour measurement periods. After 8 pm the received noise from mining at these two locations was less than 30 dB(A) Leq.

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

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

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits from EPL 12290 Condition L4.1

Locality and Location	Day LAeq (15 minute)	Evening LAeq (15 minute)	Night LAeq (15 minute)	Night LA1 (1 minute)
The residence on the property "Talavera" marked as location "R96" in Appendix 3 of Project Approval 10_0059	38	37	37	45
The residence known as "Quipolly Railway Cottage" marked as location "R12" in Appendix 3 of Project Approval 10_0059	38	38	38	45
The residence located at 83 Wadwells Lane marked as location "R7" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Gedhurst" marked as location "R0" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Hazeldene" marked as location "R24" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Mountain View" marked as location "R22" in Appendix 3 of Project Approval 10_0059	36	36	36	45
Any other affected residence not owned by the licensee or its related companies	35	35	35	45

15 June 2012

Ref: 04035/4403

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

RE: JUNE 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 12th June, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

Noise monitoring was undertaken in accordance with the WCC Noise Monitoring Programme as detailed below in **Table 1** (as adapted from Table 25 of the NMP). The monitoring locations and noise criteria for each are detailed in **Appendix 1**.

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
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		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

WCC operations on Tuesday 12th June 2012 dayshift and nightshift had the 3600 excavator in Strip 13 centre at RL400m, a 1900 excavator in Strip 11 west at RL340m, a 1900 excavator in Strip 11 centre at RL320m and a 1900 excavator in Strip 11 east at RL330m. The 3600 truck fleet was running to the RL445m dump day and RL430m dump night while the other three 1900 trucks fleets were running in pit to RL280m dump on both day and night shift. The crushing plant operated to 3:30am and one train commenced loading at 8:20pm and finish about 10pm.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, elevated noise levels were recorded at the Kyooma monitoring location during the evening/night time survey period. At the time of this measurement meteorological conditions were non compliant as per Condition L4.3 of EPL 12290. WCC has a private agreement in place with the landowner at Kyooma in relation to noise.

The noise did not exceed the criterion at any other location or time.

Table 2 WCC Noise Monitoring Results – 12 June 2012 (Day)						
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion ^{O}C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	1.37 pm	43	35	n/a	7.8/123	Birds (40), traffic (38), wind (35), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	12.45 pm	42	37	n/a	7.9/116	Traffic (39), birds (37), wind (32), **WCC inaudible**
B2 R9Gedhurst/ R22 Mountain View	12.30 pm	47	37/36*	n/a	8.0/114	Birds (45), wind (40), traffic (36), **WCC inaudible**
C R10 Meadholme/ R11 Glenara	2.00 pm	41	35	n/a	7.4/120	Wind (38), traffic (35), birds (35), **WCC inaudible**
D R24 Hazeldene	1.59 pm	40	37	n/a	7.2/117	Traffic (38), birds (35), **WCC inaudible**
E R12 Railway Cottage	4.30 pm	46	38	n/a	5.0/108	Traffic (46), birds (30), **WCC inaudible**
F R96 Talavera	3.21 pm	36	38	n/a	6.4/107	Birds (34), traffic (32), **WCC barely audible**
G R97	2.32 pm	42	35	n/a	6.9/113	Windmill (40), birds (36), **WCC (<25)**
H R96 Kyooma	2.54 pm	44	35	n/a	6.8/114	Birds (42), wind (40), **WCC barely audible**
I R57 Kurrara St	4.16 pm	45	35	n/a	5.3/108	Traffic (42), trains (40), birds (39), **WCC inaudible**
J R57 Coronation Ave	3.56 pm	42	35	n/a	6.9/113	Birds (39), traffic (38), trains (32), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	3.34 pm	50	35	+9.7	5.8/101	Birds (49), traffic (43), **WCC inaudible**
L R103	3.10 pm	46	35	+9.1	7.4/104	Train (43), birds (42), farm animals (35), **WCC inaudible**

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

Table 3 WCC Noise Monitoring Results – 12 June 2012 (Evening/Night)							
Location	**Time**	**dB(A), L1 (1min)**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion ^{O}C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	9.37 pm	n/a	38	35	+8.0	1.9/69	Traffic (38), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	7.25 pm	n/a	35	37	+5.3	3.2/105	Traffic (33), cattle (30), **WCC inaudible**
B2 R9Gedhurst/ R22 Mountain View	9.57 pm	35	36	36*	+9.2	1.0/91	Traffic (33), cattle (32), **WCC (28)**
C R10 Meadholme/ R11 Glenara	8.28 pm	n/a	37	35	+8.0	1.8/80	Traffic (36), dog (30), **WCC inaudible**
D R24 Hazeldene	11.00 pm	32	39	37	+8.1	1.3/115	Traffic (39), **WCC (25)**
E R12 Railway Cottage	11.00 pm	37	40	38	+8.1	1.3/115	Traffic (39), **WCC (30)**
F R96 Talavera	9.54 pm	28	33	37	+9.2	1.0/91	Traffic (30), insects (28), dog (26), **WCC (25)**
G R97	9.03 pm	39	31	35	+8.8	2.5/79	**WCC (31)**
H R96 Kyooma	9.25 pm	44	39	35	+8.9	2.1/71	**WCC (38)**, birds (30)
I R57 Kurrara St	8.28 pm	41	37	35	+8.4	2.1/83	**WCC (34)**, traffic (33), train (30)
J R57 Coronation Ave	8.04 pm	33	43	35	+7.2	2.5/79	Train (42), traffic (35), **WCC (<30)**
K R20 Tonsley Park/ R21 Alco Park	7.43 pm	40	38	35	+5.8	2.9/98	**WCC (35)**, traffic (35)
L R103	7.25 pm	n/a	47	35	+4.1	3.8/116	Train (47), insects (35), **WCC inaudible**

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

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

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

The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window. To avoid undue disturbance to residents observations and measurements made during the 60 minute long operational noise measurement are noted. Where maximum noise levels from mining activity are recorded in the range > 40 dB(A) L1 (1 min) then, where practical, further measurements are made at the sleep disturbance monitoring location. Note that, as the internal layout of each residence is not known, the measurements are made at the worst case façade in relation to the mine noise. This is not necessarily at the façade of a bedroom window.

During the night time measurement circuit the (1 min) noise from WCC did not exceed 45 dB(A) at any monitoring location.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits from EPL 12290 Condition L4.1

Locality and Location	Day LAeq (15 minute)	Evening LAeq (15 minute)	Night LAeq (15 minute)	Night LA1 (1 minute)
The residence on the property "Talavera" marked as location "R96" in Appendix 3 of Project Approval 10_0059	38	37	37	45
The residence known as "Quipolly Railway Cottage" marked as location "R12" in Appendix 3 of Project Approval 10_0059	38	38	38	45
The residence located at 83 Wadwells Lane marked as location "R7" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Gedhurst" marked as location "R9" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Hazeldene" marked as location "R24" in Appendix 3 of Project Approval 10_0059	37	37	37	45
The residence on the property "Mountain View" marked as location "R22" in Appendix 3 of Project Approval 10_0059	36	36	36	45
Any other affected residence not owned by the licensee or its related companies	35	35	35	45

27 July 2012

Ref: 04035/4442

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

RE: JULY 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 17th and Wednesday 18th July, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

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

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

Noise monitoring commenced during the day of July 17 and was completed in the morning (i.e. day time monitoring after 7.00am) on July 18.

WCC operations on 17 and 18 July 2012 had the 3600 excavator in Strip 13 centre at RL410m, a 1900 excavator in Strip 11 west at RL350m, a 1900 excavator in Strip 12 centre at RL320m and a 1900 excavator in Strip 12 east at RL370m. The 3600 truck fleet was running to the RL445m dump during the day and RL410m west dump at night, one 1900 truck were running to the ROM Pad while the other two 1900 trucks fleets were running to the RL410m east dump on both day and night shift. Scrapers were operating at RL410m on the eastern side of the pit. On 17 July, the crushing plant operated to 3:30am on and one train commenced loading at 8:20pm and finish about 10pm. On 18 July the crushing plant was operating.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, the measured noise from WCC operations did not exceed the relevant noise criterion at any location or time.

Table 2
WCC Noise Monitoring Results – 17 (pm) and 18 (am) July 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	1.00 pm	37	35	n/a	0.7/259	Birds & insects (35), traffic (32), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	1.23 pm	38	37	n/a	2.3/246	Birds & insects (37), traffic (29), **WCC (24)**
B2 R9Gedhurst/ R22 Mountain View	2.33 pm	48	37/36*	n/a	2.2/238	Birds (48), traffic (35), **WCC (<20)**
C R10 Meadholme/ R11 Glenara	2.49 pm	41	39	n/a	1.9/225	Birds & insects (39), traffic (36), **WCC barely audible**
D R24 Hazeldene	7.02 am	47	37	n/a	2.0/280	Traffic (46), birds (38), **WCC (34)**
E R12 Railway Cottage	7.05 am	46	38	n/a	2.0/280	Birds (44), traffic (41), **WCC (30)**
F R96 Talavera	4.09 pm	36	38	n/a	1.0/243	Birds & insects (34), traffic (32), **WCC inaudible**
G R97	4.57 pm	38	35	n/a	0.1/325	Birds (38), **WCC (<25)**
H R96 Kyooma	4.34 pm	38	36	n/a	0.3/275	Birds (37), plane (30), **WCC barely audible**
I R57 Kurrara St	4.30 pm	44	35	n/a	0.3/275	Trains (42), birds (40), traffic (32), **WCC inaudible**
J R57 Coronation Ave	5.32 pm	39	35	n/a	0.2/238	Traffic (36), trains (34), birds (30), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	4.08 pm	39	39	+9.7	1.6/261	Birds (37), traffic (33), **WCC inaudible**
L R103	3.45 pm	44	35	+9.1	2.9/239	Birds (43), construction work (32), train (30), **WCC inaudible**

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

Table 3
WCC Noise Monitoring Results – 12 June 2012 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8.36 pm	40	40	35	+4.8	2.5/282	**WCC (35)**, birds (34), dogs (33), traffic (32)
B1 R7 83 Wadwells Lane/R8 Almawillee	11.13 pm	41	37	37	+3.8	1.8/230	**WCC (34)**, insects (32), house pump (30)
B2 R9Gedhurst/ R22 Mountain View	9.07 pm	39	36	37/36*	+4.5	1.5/240	Traffic (33), **WCC (32)**, frogs (28)
C R10 Meadholme/ R11 Glenara	10.55 pm	27	39	39	+5.7	1.8/264	Traffic (38), insects (30), **WCC (25)**
D R24 Hazeldene	10.11 pm	36	43	37	+4.3	2.3/279	Traffic (43), **WCC (30)**
E R12 Railway Cottage	11.15 pm	36	38	38	+3.8	1.8/230	Traffic (37), **WCC (31)**
F R96 Talavera	7.40 pm	<30	33	37	+4.8	0.7/182	Birds (30), traffic (29), **WCC (<25)**
G R97	9.03 pm	26	29	35	+4.1	0.8/310	Traffic (26), **WCC (24)**, insects (22)
H R96 Kyooma	8.44 pm	n/a	29	36	+4.3	0.3/87	Insects (28), traffic (20), **WCC inaudible**
I R57 Kurrara St	9.44 pm	43	40	35	+5.0	1.9/282	Trains in town (38), **WCC (34 – train on loop 34, WCC ops 25)**, traffic (32)
J R57 Coronation Ave	9.29 pm	30	38	35	+4.1	2.6/281	Train (36), traffic (33), **WCC (<30)**
K R20 Tonsley Park/ R21 Alco Park	8.04 pm	43	45	37	+3.9	0.5/70	Train (44), **WCC (37)**, traffic (32)
L R103	7.25 pm	n/a	47	35	+4.8	0.7/44	Train (47), insects (35), **WCC inaudible**

1. L1 (1 min) from mine noise only

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

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

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

The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window. To avoid undue disturbance to residents observations and measurements made during the 60 minute long operational noise measurement are noted. Where maximum noise levels from mining activity are recorded in the range > 40 dB(A) L1 (1 min) then, where practical, further measurements are made at the sleep disturbance monitoring location. Note that, as the internal layout of each residence is not known, the measurements are made at the worst case façade in relation to the mine noise. This is not necessarily at the façade of a bedroom window.

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

Plant Sound Power Levels

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

The results of the sound power level calculations are shown in **Appendix III**.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

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

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.			
Haul truck CAT 785 (unattenutaed)	608	120	122	17/7/12

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

Appendix 5 – Blasting Monitoring Results

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Glenala		Tonsley Park		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)
2012-20	2/05/2012	1310	Black Seam #5	OB	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	0.16	102.9	10	120
2012-21	9/05/2012	1316	Black Seam #3	OB	<0.20	<109.9	0.62	79.5	<0.20	<109.9	<0.20	<109.9	10	120
2012-22	16/05/2012	1309	S11_8_Fcoal TSB20	TSB	<0.20	<109.9	0.70	91.5	0.29	94.2	0.16	90.5	10	120
2012-23	22/05/2012	1045	S11_5-7_Decoal	IB	<0.20	<109.9	0.37	95.2	<0.20	<109.9	<0.20	<109.9	10	120
2012-24	25/05/2012	1253	2_8-9_A2B2Coal RL350 TSB	TSB	<0.20	<109.9	0.70	79.5	<0.20	<109.9	<0.20	<109.9	10	120
2012-25	30/05/2012	1317	S13_10-11_350 TSB21	TSB	<0.20	<109.9	0.67	99.0	0.34	98.2	<0.20	<109.9	10	120
TOTALS	**MAY 2012**	**# BLAST**	**6**	**AVERAGE**	**<0.20**	**<109.9**	**0.61**	**88.9**	**0.32**	**96.2**	**0.16**	**96.7**	**5.00**	**115.0**
TOTALS	**MAY 2012**	**# BLAST**	**6**	**HIGHEST**	**<0.20**	**<109.9**	**0.70**	**99.0**	**0.34**	**98.2**	**0.16**	**102.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**11**	**AVERAGE**	**0.18**	**108.9**	**0.76**	**94.4**	**0.31**	**97.6**	**0.13**	**105.1**	**5.00**	**115.0**

WERRIS CREEK COAL

BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Glenala		Tonsley Park		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)
2012-26	6/06/2012	13:13	S13_2-3_385	OB	<0.20	<109.9	0.68	106.2	0.34	104.9	<0.20	<109.9	10.00	120.0
2012-27	15/06/2012	13:14	S13_10-11_370	OB	<0.20	<109.9	1.3	102.8	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-28	28/06/2012	13:05	S11S12_1-4_312 TSB22	TSB	<0.20	<109.9	0.6	95.0	0.26	96.3	<0.20	<109.9	10.00	120.0
TOTALS	**JUNE 2012**	**# BLAST**	**3**	**AVERAGE**	**<0.20**	**<109.9**	**0.86**	**101.3**	**0.30**	**100.6**	**<0.20**	**<109.9**	**5.00**	**115.0**
TOTALS	**JUNE 2012**	**# BLAST**	**3**	**HIGHEST**	**<0.20**	**<109.9**	**1.30**	**106.2**	**0.34**	**104.9**	**<0.20**	**<109.9**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**14**	**AVERAGE**	**0.18**	**108.9**	**0.79**	**96.7**	**0.31**	**98.6**	**0.13**	**105.1**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**14**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results July 2012									
					Glenala		Tonsley Park		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)
2012-29	4/07/2012	16:04	S11_5-7_Decoal	TSB	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-30	10/07/2012	12:13	S13_8-9_UG Collapse	TSB	0.28	103.1	<0.20	<109.9	<0.20	<109.9	0.1	113	10.00	120.0
2012-31	17/07/2012	14:48	S14_9_385	OB	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	0.67	106.8	10.00	120.0
2012-32	20/07/2012	12:10	S14_10-11_385	OB	0.48	106.9	1.85	114.9	1.05	107.3	<0.20	<109.9	10.00	120.0
2012-33	25/07/2012	12:12	S12_12-13_350	OB	<0.20	<109.9	<0.20	<109.9	0.49	100.4	<0.20	<109.9	10.00	120.0
2012-34	27/07/2012	12:12	S14.1_3-5_385	OB	<0.20	<109.9	0.67	108.8	0.55	105.1	<0.20	<109.9	10.00	120.0
2012-35	31/07/2012	12:08	S12_9_UG Decoal RL350 Secondary	TSB	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	10.00	120.0
2012-36	31/07/2012	12:08	S13_trim shot RL385	IB	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	<0.20	<109.9	10.00	120.0
TOTALS	**JULY**	**# BLAST**	**8**	**AVERAGE**	**0.38**	**105.0**	**1.26**	**111.9**	**0.70**	**104.3**	**0.39**	**109.9**	**5.00**	**115.0**
TOTALS	**JULY**	**# BLAST**	**8**	**HIGHEST**	**0.48**	**106.9**	**1.85**	**114.9**	**1.05**	**107.3**	**0.67**	**113.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**22**	**AVERAGE**	**0.28**	**107.0**	**0.91**	**100.5**	**0.41**	**100.0**	**0.22**	**106.7**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**22**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

Appendix 6 – Groundwater Monitoring Results

#WO 4320

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

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

Repetition / Analytes	Sample ID Information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge Type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	3/7/12	11:30	14.16		0.2										Rosevale - Pump in iron shelter
	MW12	3/7/12	11:15	8.8		0.5										Hazeldene - Pump in small shed
	MW13	3/7/12	10:15	4.53		0.4										Well - Wadell lane
	MW13B	25/7/12	13:00	3.15		0.3										Taylors lane - opposite [redacted] bay shed
windmill	MW13D	25/7/12	13:15	4.73		0.2										Taylors lane - windmill in next paddock
	MW15	3/7/12	9:50	3.99		0.5										Windmill - Paynes lane
	MW16	3/7/12	11:00	4.31		0.3										Maintainview - Red shed
	MW17A	3/7/12	10:30	3.54		0.5										Bore in shed (Wadell #83)
	MW18A	25/7/12	12:15	3.35		—										82 Wadell - Beside House
	MW19A	3/7/12	11:45	5.60		0.15										Lintara - Pump in front paddock
	MW21A	29-6-12	10:05	6.24		.30										Windmill" Glenara
	MW22A	25/7/12	12:00	4.53		0.55										308 Paynes, Yard shed
	MW22B	25/7/12	11:45	4.72		0.45										Well in paddock near shed / paddock pole
	MW23A	25/7/12	12:45	3.86		0.2										Paddock left of house (iron lean/to)
	MW23B	25/7/12	12:30	4.16		0.10										Paddock right of house (Iron shed)
	MW28A	29-6-12	12:15	~~10.25~~ 7.80		~~0.25~~ N/A										L side of road Windmill (Woodlawns)
	MW28B	29-6-12	12:35	—		.80										R side of road House (Woodlawns)

(TAP + CANT DIP) NO SWL

SPECIAL COMMENTS: M

Sheet: of

#WO4320

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

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

Reportables / Analytes	Sample ID Information: Sample ID / Bore ID	Date	Time	Bore Data: Standing Water Level	Bore depth	Stick up	Sampling Data: Purge Type	Purge Volume	Pump Set Depth	Field Tests: EC - field	pH - field	Temp - field	Field Observations: Appearance	Odor	Colour	Comments
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW1	2/7/12	12:50	52.37												Hillview
	MW2	2/7/12	13:05	19.32		.15										Railway view -
	MW3	2/7/12	10:00	27.12		.95	—									Eurunderee
	MW4	3/7/12	14:50	10.43		.7										
	MW4B	3/7/12	15:00	8.62		.6										
	MW5	3/7/12	14:30	8.63		1.15										Mine
	MW5B	3/7/12	14:35	7.78		.7										Mine
	MW6	2/7/12	13:30	11.96												1111 Ulan Rd.
	MW9	3/7/12	14:20	14.92		1.05										
	MW10	2/7/12	11:35	18.32		0.2										
	MW11	2/7/12	12:00	—			No point to Dip / Pump over bore.									
	MW14	3/7/12	14:00	10.09		0.95										
	MW14B	3/7/12	14:10	15.86		0.35										
	MW17B	3/7/12	10:45	9.47												Wadell Lane (windmill)
	MW20	2/7/12	9:20	18.79		.34										Tansey Park (shed)
	MW24A	11:30	29-6-12	12.94		.13										Marengo (Pump over bore on left between 2 sheds
	MW25A	27/7/12	10.20	—						"Pump covers bore - no access"						
	MW25B	27/7/12	10:00	—						"Pump covers bore"						
-	P1	27/7/12	10.40	38.72		0.9										
-	P2	27/7/12	11:00	21.74		1										
-	PUG	27/7/12	9:40	108.29		0.3										Mine site (escarp)
	MW27	2/7/12	12:30	39.97		0.45										Cintra - Escott Ln.
	MW29	29-6-12	11:00	11.91		0.33										Windmill on left @ gate (main)
	MW31	29-6-12	11:30	DRY		0.18	—	—	—	DRY	—	—	—	—	—	"264" Sign at Gate - Old windmill - no fan.

SPECIAL COMMENTS: M

Sheet: of

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1211713**	Page	: 1 of 7
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4018		
C-O-C number	: ----	Date Samples Received	: 11-MAY-2012
Sampler	: MS	Issue Date	: 22-MAY-2012
Site	: ----		
		No. of samples received	: 14
Quote number	: ----	No. of samples analysed	: 14

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB6	SB9	SB10	SD4
				Client sampling date / time: 10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00
				ES1211713-001	ES1211713-002	ES1211713-003	ES1211713-004	ES1211713-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	381	269	282	314	203
pH	----	0.01	pH Unit	9.09	9.01	9.31	8.26	9.80
Temperature	----	0.1	°C	21.0	20.2	17.6	20.2	21.8
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.98	7.75	7.78	7.63	7.86
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	485	338	353	391	262
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	47	20	63	27	104
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.04	0.01	0.13	0.30
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.04	0.01	0.13	0.30
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.1	1.2	0.6	13.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.0	1.1	1.2	0.7	14.0
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.11	0.10	0.12	0.07	2.11
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.55
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SD5	VWD1	VWD2	BGD	QCU
				Client sampling date / time: 10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00	10-MAY-2012 15:00
				ES1211713-006	ES1211713-007	ES1211713-008	ES1211713-010	ES1211713-011
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	260	715	712	666	371
pH	----	0.01	pH Unit	8.90	9.13	8.90	8.70	7.80
Temperature	----	0.1	°C	20.1	19.8	18.4	8.8	16.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.20	8.23	8.13	8.00	7.55
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	321	916	918	833	465
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	23	22	20	140	11
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.01	0.03	0.02	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.06	8.12	1.59	0.02	0.43
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.07	8.15	1.61	0.02	0.43
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	1.2	1.1	1.5	0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.9	9.4	2.7	1.5	0.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.53	0.06	0.06	0.37	0.10
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.40	<0.01	0.05	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**

Compound	CAS Number	LOR	Unit	Client sample ID: QCD Client sampling date / time: 10-MAY-2012 15:00 ES1211713-012	WCD 10-MAY-2012 15:00 ES1211713-014	200 MLD NORTH 10-MAY-2012 15:00 ES1211713-015	201 MLD SOUTH 10-MAY-2012 15:00 ES1211713-016	---- ---- ----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**680**	**1040**	**718**	**672**	----
pH	----	0.01	pH Unit	**9.10**	**8.48**	**9.25**	**9.56**	----
Temperature	----	0.1	°C	**15.7**	**13.8**	**19.7**	**19.7**	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.97**	**8.13**	**8.10**	**8.54**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**849**	**1320**	**918**	**858**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**11**	**18**	**25**	**16**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	**0.02**	**0.02**	**0.13**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.04**	**0.62**	**0.69**	**5.48**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.04**	**0.64**	**0.71**	**5.61**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**0.5**	**1.0**	**1.2**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**0.4**	**1.1**	**1.7**	**6.8**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.13**	**0.21**	**0.07**	**0.05**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.03**	**0.14**	<0.01	<0.01	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 10-MAY-2012 15:00	Clear
AC04: Appearance	SB9 - 10-MAY-2012 15:00	Clear
AC04: Appearance	SB10 - 10-MAY-2012 15:00	Clear
AC04: Appearance	SD4 - 10-MAY-2012 15:00	Turbid
AC04: Appearance	SD5 - 10-MAY-2012 15:00	Turbid
AC04: Appearance	VWD1 - 10-MAY-2012 15:00	Clear
AC04: Appearance	VWD2 - 10-MAY-2012 15:00	Clear
AC04: Appearance	BGD - 10-MAY-2012 15:00	Turbid
AC04: Appearance	QCU - 10-MAY-2012 15:00	Clear
AC04: Appearance	QCD - 10-MAY-2012 15:00	Clear
AC04: Appearance	WCD - 10-MAY-2012 15:00	Clear
AC04: Appearance	200 MLD NORTH - 10-MAY-2012 15:00	Clear
AC04: Appearance	201 MLD SOUTH - 10-MAY-2012 15:00	Clear
AC04: Odour	SB2 - 10-MAY-2012 15:00	Nil
AC04: Odour	SB9 - 10-MAY-2012 15:00	Nil
AC04: Odour	SB10 - 10-MAY-2012 15:00	Nil
AC04: Odour	SD4 - 10-MAY-2012 15:00	Nil
AC04: Odour	SD5 - 10-MAY-2012 15:00	Nil
AC04: Odour	VWD1 - 10-MAY-2012 15:00	Nil
AC04: Odour	VWD2 - 10-MAY-2012 15:00	Nil
AC04: Odour	BGD - 10-MAY-2012 15:00	Nil
AC04: Odour	QCU - 10-MAY-2012 15:00	Nil
AC04: Odour	QCD - 10-MAY-2012 15:00	Nil
AC04: Odour	WCD - 10-MAY-2012 15:00	Nil
AC04: Odour	200 MLD NORTH - 10-MAY-2012 15:00	Nil
AC04: Odour	201 MLD SOUTH - 10-MAY-2012 15:00	Nil
AC04: Colour	SB2 - 10-MAY-2012 15:00	Clear
AC04: Colour	SB9 - 10-MAY-2012 15:00	Clear
AC04: Colour	SB10 - 10-MAY-2012 15:00	Clear
AC04: Colour	SD4 - 10-MAY-2012 15:00	Turbid
AC04: Colour	SD5 - 10-MAY-2012 15:00	Turbid
AC04: Colour	VWD1 - 10-MAY-2012 15:00	Clear
AC04: Colour	VWD2 - 10-MAY-2012 15:00	Clear
AC04: Colour	BGD - 10-MAY-2012 15:00	Turbid
AC04: Colour	QCU - 10-MAY-2012 15:00	Clear
AC04: Colour	QCD - 10-MAY-2012 15:00	Clear
AC04: Colour	WCD - 10-MAY-2012 15:00	Clear
AC04: Colour	200 MLD NORTH - 10-MAY-2012 15:00	Clear
AC04: Colour	201 MLD SOUTH - 10-MAY-2012 15:00	Clear

Sub-Matrix: **WATER**

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

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1217569**	Page	: 1 of 5
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK DISCHARGE SAMPLES	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4379		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2012
Sampler	: B.PHILLIPS	Issue Date	: 23-JUL-2012
Site	: ----		
		No. of samples received	: 7
Quote number	: BN/759/11 Blanket	No. of samples analysed	: 7

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB9	SB10	QCU	QCD
				Client sampling date / time: 13-JUL-2012 11:00	13-JUL-2012 10:40	13-JUL-2012 10:20	13-JUL-2012 11:15	13-JUL-2012 11:45
				ES1217569-001	ES1217569-002	ES1217569-003	ES1217569-004	ES1217569-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	545	376	290	465	829
pH	----	0.01	pH Unit	8.73	8.18	8.32	7.60	8.00
Temperature	----	0.1	°C	14.6	15.1	15.5	16.0	14.8
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.01	7.79	7.84	7.63	7.97
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	506	346	269	427	773
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	42	100	364	29	15
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.06	0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.16	6.22	0.36	0.23	0.24
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.16	6.28	0.37	0.23	0.24
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	4.5	2.3	0.4	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.9	10.8	2.7	0.6	0.6
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.21	0.14	0.26	0.14	0.20
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.08	0.06	0.10	0.04	0.06
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: WCU	WCD	----	----	----
				Client sampling date / time: 13-JUL-2012 10:00	13-JUL-2012 09:30	----	----	----
				ES1217569-006	ES1217569-007	----	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**780**	**562**	----	----	----
pH	----	0.01	pH Unit	**8.10**	**8.11**	----	----	----
Temperature	----	0.1	°C	**14.6**	**15.0**	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.08**	**8.00**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**803**	**524**	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**24**	**522**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	**0.03**	**0.22**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.20**	**16.0**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.23**	**16.2**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.8**	**2.9**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**4.0**	**19.1**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.18**	**0.65**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	**0.11**	**0.42**	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 13-JUL-2012 11:00	Clear
AC04: Appearance	SB9 - 13-JUL-2012 10:40	Clear
AC04: Appearance	SB10 - 13-JUL-2012 10:20	Turbid
AC04: Appearance	QCU - 13-JUL-2012 11:15	Clear
AC04: Appearance	QCD - 13-JUL-2012 11:45	Clear
AC04: Appearance	WCU - 13-JUL-2012 10:00	Clear
AC04: Appearance	WCD - 13-JUL-2012 09:30	Turbid
AC04: Odour	SB2 - 13-JUL-2012 11:00	Nil
AC04: Odour	SB9 - 13-JUL-2012 10:40	Nil
AC04: Odour	SB10 - 13-JUL-2012 10:20	Nil
AC04: Odour	QCU - 13-JUL-2012 11:15	Nil
AC04: Odour	QCD - 13-JUL-2012 11:45	Nil
AC04: Odour	WCU - 13-JUL-2012 10:00	Nil
AC04: Odour	WCD - 13-JUL-2012 09:30	Nil
AC04: Colour	SB2 - 13-JUL-2012 11:00	Clear
AC04: Colour	SB9 - 13-JUL-2012 10:40	Clear
AC04: Colour	SB10 - 13-JUL-2012 10:20	Grey
AC04: Colour	QCU - 13-JUL-2012 11:15	Clear
AC04: Colour	QCD - 13-JUL-2012 11:45	Clear
AC04: Colour	WCU - 13-JUL-2012 10:00	Clear
AC04: Colour	WCD - 13-JUL-2012 09:30	Brown

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1218757**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS LESLEY MOORE	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	: lesley.moore@alsglobal.com	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 SURFACE-WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4372		
C-O-C number	: ----	Date Samples Received	: 01-AUG-2012
Sampler	: BP	Issue Date	: 03-AUG-2012
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/759/11 Blanket	No. of samples analysed	: 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: WATER			Client sample ID	SB2	QCU	QCD	----	----
			Client sampling date / time	31-JUL-2012 07:30	31-JUL-2012 09:40	31-JUL-2012 09:15	----	----
Compound	CAS Number	LOR	Unit	ES1218757-001	ES1218757-002	ES1218757-003	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	6	493	905	----	----
pH	----	0.01	pH Unit	8.81	8.07	8.60	----	----
Temperature	----	0.1	°C	----	10.2	10.0	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.26	7.52	8.04	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	507	476	822	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	10	16	8	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.06	0.17	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.06	0.17	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	<0.1	0.1	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.6	<0.1	0.3	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.10	0.07	0.06	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.06	<0.01	0.06	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 31-JUL-2012 07:30	Clear
AC04: Appearance	QCU - 31-JUL-2012 09:40	Clear
AC04: Appearance	QCD - 31-JUL-2012 09:15	Clear
AC04: Odour	SB2 - 31-JUL-2012 07:30	Nil
AC04: Odour	QCU - 31-JUL-2012 09:40	Nil
AC04: Odour	QCD - 31-JUL-2012 09:15	Nil
AC04: Colour	SB2 - 31-JUL-2012 07:30	Clear
AC04: Colour	QCU - 31-JUL-2012 09:40	Clear
AC04: Colour	QCD - 31-JUL-2012 09:15	Clear

Werris Creek Coal Community Consultative Committee

Twenty Fifth Meeting of the Committee

Training Room, Werris Creek Coal

9:30am Thursday 22nd November 2012

MINUTES

Werris Creek Coal (WCC) Community Consultative Committee (CCC) met at 9:30am and had a pit tour of the mine site prior to the meeting.

1. Record of Attendance:

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

Apologies: Ron Van Katwyk (Liverpool Plains Shire Council – Director Environmental Services); Jill Coleman (Community Representative); Geoff Dunn (Community Representative); Peter Easey (Acting WCC Operations Manager).

2. Declaration of Pecuniary or other interests

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

3. New Matters for Discussion under General Business

The Committee wanted to discuss the availability of gravel from the former gravel quarry; increased dust in Werris Creek and new Void Water Dam construction.

4. Matters Arising

a) Actions from Previous Meeting

None.

b) Other Matters Arising

None.

5. Minutes of Previous Meeting

Minutes of the previous meeting on the 30th August 2012 were accepted as true and accurate representation of business conducted on that day.

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

6. Environmental Monitoring Report: August, September and October 2012

Meteorology – Wind was predominately north westerly and dry with only 39.2mm of rain falling.
Air Quality – All dust deposition gauge, PM10 and TSP dust results were within compliance limits for the period. There were six dust complaints and the increase correlated with the high wind

speeds and dry conditions experienced during Spring. All dust complaints related to general haze and not specific to WCC operations. Investigations into each complaint found that water carts were operational at the time of each complaint to mitigate dust generation.

Noise – There were no noise exceedances for the period. There were two complaints for noise impacts from WCC operations from one Quipolly resident. Real time noise monitoring and the Noise Control Operator confirmed that noise levels were in compliance.

Blasting – There were 24 blasts during the period and all were in compliance; however WCC did receive three blasting complaints. The first complaint was in relation to dust generated by a blast on 28th September 2012 in high wind. WCC have subsequently modified the pre-blast weather assessment process to include an upper limit wind speed of 6m/s to prevent excessive dust generation during blasting. The investigation into another blast complaint on 25th October 2012 found that WCC did not blast on the alleged day of the complaint. A complaint was received on the 31st October 2012 due to a blast resulting higher than average vibration. It was found during the investigation that the Werris Creek monitor missed the blast, however based on the blast results from the closer Tonsley Park monitor that the blast would have been in compliance.

Groundwater – Groundwater levels have continued to fall due to below average rainfall over 2012. Mining continues not to impact on groundwater aquifers.

Surface Water – All onsite and offsite water quality is consistent with longer term averages and within the site water management plan trigger values. There was one surface water related complaint during the period. On 7th August 2012, a Quipolly resident alleged that WCC had changed the water runoff flow path and the water was dirty in colour. The investigation found the complaint was related to recent rainfall runoff on a neighbouring property, while owned by WCC was not on the mine site and unrelated to mining operations. Comparison of survey information with data from 2010 showed that the water runoff flow path had not been altered by the mine; however the mine agreed to modify a farm dam so that the spillway would flow to the west to appease the neighbour.

Surface Water Discharges – There were two controlled dirty water discharges during the period, both were within compliance.

Complaints – There were 12 complaints received during the period. In total there were six complaints related to dust; three complaints related to blasting, two complaints related to noise and one complaint to surface water. There were seven different complainants during the period with three complaints from one individual Werris Creek resident and two complaints each from two individual Quipolly residents.

Motion moved to accept the Environmental Monitoring Report for August, September and October 2012.

Moved: Ros Marr. Seconded: Lindsay Bridge. Motion Carried.

7. General Business

a. Community Enhancement Fund (CEF) Update

Andrew Wright repeated to the committee the status of works as discussed with Ron Van Katwyk prior to the meeting. The new elevator for the Werris Creek Railway Museum had been ordered; Council had submitted the Development Application and was awaiting NSW Heritage Office approval with installation of the elevator expected in early 2013. Council had submitted a Development Application for a new skate park to be located midway between the two hotels in Single Street, Werris Creek. The application will be placed on public exhibition to receive community feedback on the skate park proposal with a view to commence construction in early 2013.

b. Availability of Gravel from the Former Gravel Quarry

A committee member questioned whether the gravel from the former Council quarry onsite could be used for local road construction rather than being buried in the overburden emplacement. Andrew Wright said that the gravel was used by WCC to sheet haul roads onsite and the current Project Approval does not permit any material other than coal to be taken offsite. It is not likely to be commercially viable for Whitehaven Coal to investigate this further.

c. Increased Dust in Werris Creek

A committee member raised that a number of Werris Creek residents have mentioned to him that general dust levels have increased recently in the Werris Creek township. While the concerned residents were not directly blaming WCC, the inference was that the coal mine was part of the problem. It is anticipated that as production levels increase and WCC moves closer to town that the issue will increase. Andrew Wright indicated that since August 2012, WCC had been monitoring real time dust levels without any exceedances or evidence of dust impacts due to WCC. While WCC does not deny it generates dust, people's perception of dust levels and what is coal dust can be distorted. WCC will need to undertake further education of the community on dust impacts.

d. New Void Water Dam Construction

Committee members indicated that on the drive into WCC, they could see the progress made with the construction of the increased Void Water Dam 1 by the contractor Daracon. The new Void Water Dam 1 capacity was expected to be in the vicinity of 250ML and be completed in December 2012.

Meeting Closed 11:00am.

Next Meeting scheduled for Thursday 28th February 2013.

Copy to:

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

Ron Van Katwyk	LPSC	Alan Simms	Werris Creek Coal
Cr Col Stewart	LPSC	Danny Young	Whitehaven Coal
Paul Freeman	DoPI	Andrew Wright	Werris Creek Coal
Michael Howat	DRE		
Lindsay Fulloon	EPA		

WERRIS CREEK COAL PTY LTD

QUARTERLY ENVIRONMENTAL MONITORING REPORT

August, September and October 2012

This Environmental Monitoring Report covers the period 1st August 2012 to 31st October 2012 for the Werris Creek No.2 Coal Mine Community Consultative Committee.

The report includes environmental monitoring results from the on-site Weather Station, Air Quality, Noise, Blasting, Surface Water, Groundwater and Discharge Water Quality together with any community complaints received and general details on site environmental matters.

Note: Monitoring results with any non compliance of monitoring criteria are highlighted in yellow.

CONTENTS

APPENDICES

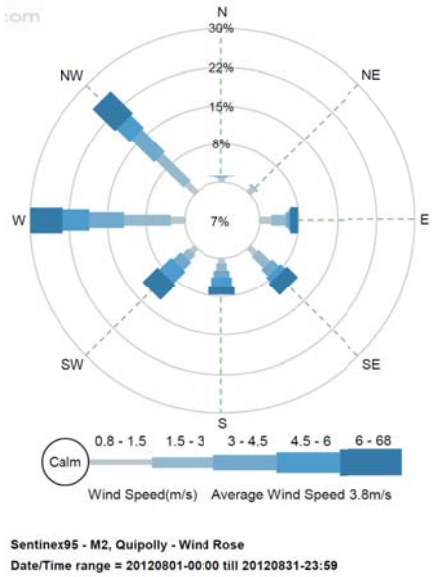
1.0 METEOROLOGY

1.1 WEATHER STATION

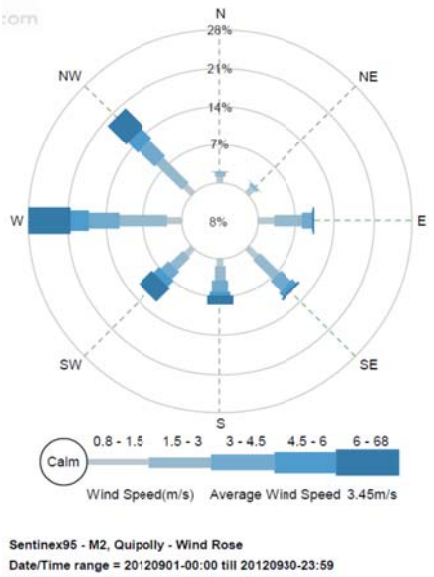
Werris Creek Coal (WCC) collects meteorological data from the onsite weather station located on the top level of the overburden emplacement and from the continuous noise monitoring units located at Quipolly and Werris Creek. The following table summarises temperature, inversion and rainfall data for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

Month	Quipolly Temp (°C)			Werris Creek Temp (°C)			WCC Temp (°C) 10m			Lapse Rate (°C/100m)		Rainfall (mm)			
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Avg	90%	Onsite	Quip	WC	Annual*
August 2012	-4.9	9.1	24.1	-0.8	11.2	23.6	1.5	11.5	23.5	+2.9	+10.6	10.4	8.0	8.2	186.4
September 2012	-3.2	12.8	28.7	2.0	15.3	28.2	4.9	15.6	27.1	+3.6	+11.3	22.6	19.2	22.4	209.0
October 2012	-1.1	16.7	34.1	3.4	18.4	33.7	4.9	18.5	32.4	+2.9	+11.4	6.2	4.0	5.6	215.2

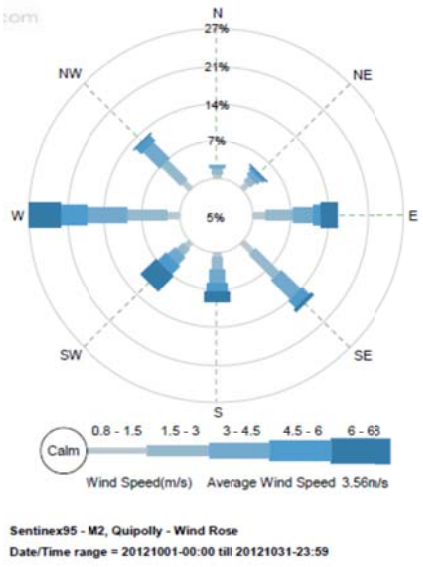
* Annual cumulative total since April 2012 to March 2013 from a composite data set based on the onsite Weather Station at WCC.



August 2012



September 2012



October 2012

The onsite weather station was fully available during the period.

2.0 AIR QUALITY

2.1 HVAS (PM10) and TEOM (PM10)

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

PM10 – TEOM92 “Werris Creek”
PM10 – HVP20 “Tonsley Park”
PM10 – HVP4 “Eurunderee”
PM10 – HVP20 “Glenara”
PM10 – HVP98 “Kyooma”
TSP – HVT98 “Kyooma”

2.1.1 Monitoring Data Results

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

Monitor Location	August 2012 (µg/m^3)	September 2012 (µg/m^3)	October 2012 (µg/m^3)	2012-2013 Average (µg/m^3)	Annual Criteria (µg/m^3)
PM10 – TEOM92 "Werris Creek"	10.4	15.3	18.1	13.7	30
PM10 – HVP20 "Tonsley Park"	10.9	20.5	14.6	13.5	30
PM10 - HVP4 "Eurunderee"	9.6	18.0	15.7	12.2	30
PM10 – HVP20 "Glenara"	12.0	18.8	15.8	13.1	30
PM10 – HVP98 "Kyooma"	8.6	20.5	11.6	13.4	30
TSP – HVT98 "Kyooma"	13.9	28.5	23.2	28.1	90

2.1.2 Discussion - Compliance / Non Compliance

The daily results and monthly averages for August, September and October were all below the relevant daily and annual Air Quality criteria.

2.2 WERRIS CREEK MINE DEPOSITED DUST

Deposited dust monitoring measures particulate matter greater than 30 micron in size that readily settles out of the air related to visual impact. Dust deposition is monitored at 20 locations around WCC. Sampling is scheduled monthly in accordance with EPA guidelines and results are reported as grams per metre squared per month (g/m^2/month).

2.2.1 Monitoring Data Results

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

Monitor Location	August 2012 (g/m^2/month)	September 2012 (g/m^2/month)	October 2012 (g/m^2/month)	2012-2013 Average (g/m^2/month)	AQGHGMP Criteria (g/m^2/month)
"Cintra"	0.4	1.3	2.3	1.5	4.0
"Railway View"	2.5	1.0	1.2	1.1	4.0
"Tonsley Park"	0.3	*1.2	1.0	0.5	4.0
"Plain View"	**5.0**	0.6	0.7	2.2	4.0
"Marengo"	0.6	0.7	0.7*	0.7	4.0
"Mountain View"	0.5	0.6	0.3*	1.1	4.0
"Glenara"	2.4	**4.5**	1.2	2.3	4.0
"Hazeldene"	0.5	0.5	0.7	0.6	4.0
"Woodlands"	0.3	0.5	2.8	1.2	4.0
"Talavera"	0.2	0.6	0.8	0.5	4.0
"Kyooma"	*0.3	0.4	1.1*	0.4	4.0
"Greenslopes"	*0.3	0.5	0.6	0.6	4.0
Werris Creek South	*0.7	0.5	0.3	0.4	4.0
Werris Creek Centre	*0.6	0.5	0.7	0.6	4.0
"Westfall"	*0.6	0.6	0.8	0.7	4.0
West Street	1.0	0.5	1.1	0.9	4.0
"Escott"	*0.5	0.3	0.5	0.4	4.0
"Eurunderee"	*0.6	0.4	0.4	0.4	4.0
8 Kurrara St	0.5	1.2	1.9*	0.9	4.0
"Villamagna"	-	0.4	0.6	0.5	4.0

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

2.2.2 Discussion - Compliance / Non Compliance

All monthly dust deposition gauge results were within the Air Quality criteria of 4.0g/m^2/month except for "Plain View"'s August result and "Glenara"s September result. Both results were a one-off and because other nearby gauges did not reflect the same increase, this indicates that the source of dust was not related to WCC operations.

2.3 QUIRINDI TRAIN DUST DEPOSITION

2.3.1 Monitoring Data Results

The results for the last three months are provided in the table below; however **Appendix 3** has more information on the Train Dust Monitoring Results.

Monitor Location	August 2012		September 2012		October 2012		Annual Average (g/m^2/month)
	g/m^2/month	% Coal	g/m^2/month	% Coal	g/m^2/month	% Coal	
DDW30	0.6	30	1.7	20	1.5	15	1.1
DDW20	0.6	30	1.2	20	1.4	15	0.8
DDW13	0.5	30	1.3	15	0.9	20	0.8
Train Line							
DDE13	0.5	30	0.9	20	1.0	25	0.7
DDE20	0.7	20	0.7	20	0.6	20	1.1
DDE30	2.7	15	0.6	10	1.6	10	1.3

2.3.2 Discussion - Compliance / Non Compliance

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

2.4 AIR QUALITY COMPLAINTS

There were six dust complaints received during this period. The increase in complaints for this period coincides with late Winter and early Spring season that is the windiest time of the year. Almost all complaints related to general haze allegedly as a result of WCC rather than specific examples of dust generation. Investigations into each complaint and reviewing real time dust monitoring data from Werris Creek and Tamworth; found on these windy days that there were regional dust events present and not specific to WCC operations. It is acknowledged that during periods of high winds that WCC would generate more dust than normal, however for each complaint the investigation did not identify any exceedances or poor practices that required any action to be taken. Routine offsite inspections by the Environmental Officer did not identify any excessive dust generation; water usage records show that WCC routinely uses greater than 1.5ML/day of water for road dust suppression and real time dust monitoring did not exceeded the daily maximum air quality criteria. There were occasion where mining operations were modified and train load out operations were suspended to minimise dust generation. Specific action taken in relation to each of these complaints is outlined in **Section 6.**

3.0 NOISE

3.1 OPERATIONAL NOISE

Monthly attended noise monitoring is undertaken representative of the following 17 properties from 13 monitoring points below. Attended noise monitoring was undertaken twice for either 60 minutes at privately owned properties or 15 minutes at properties with private agreement representative of the day period and the evening/night period.

- A - “Rosehill” R5;
- B1 - “Almawille” (private agreement) R8;
- B1 - 83 Wadwells Lane R7;
- B2 - “Mountain View” R22;
- B2 - “Gedhurst” R9;
- C - “Meadholme” (private agreement) R10;
- C - “Glenara” (private agreement) R11;
- D - “Hazeldene” R24;
- E - “Railway Cottage” R12;
- F - “Talavera” R96;
- G - R97;
- H - “Kyooma” (private agreement) R98;
- I - Kurrara St, Werris Creek;
- J - Coronation Ave, Werris Creek;

- K - "Tonsley Park" (private agreement) R20;
- K - "Alco Park" (private agreement) R21; and
- L - R103.

3.1.1 Monitoring Data Results

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

Monday 13th August 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible	35	29	35
B1	**West Quipolly** R7, R8*	Inaudible	37	33	37
B2	**West Quipolly** R9 & R22	Inaudible	37/36[1]	34	37/36[1]
C	**Central Quipolly** R10*,R11*	Inaudible	39	33	39
D	**"Hazeldene"** R24	Inaudible	37	32	37
E	**"Railway Cottage"** R12	Inaudible	38	34	38
F	**"Talavera"** R96	<25	38	33#	37
G	R97	26	35	34	35
H	**"Kyooma"** R98*	28	36	36	36
I	**Kurrara St, WC**	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	Barely audible	35
K	**South St, WC** R20*, R21*	Barely audible	39	<25	37
L	**West St, WC** R103	Inaudible	35	Inaudible#	35
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Tuesday 11th September 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible#	35	24	35
B1	**West Quipolly** R7, R8*	<25#	37	34	37
B2	**West Quipolly** R9 & R22	30#	37/36[1]	33	37/36[1]
C	**Central Quipolly** R10*,R11*	27#	39	37	39
D	**"Hazeldene"** R24	30	37	32	37
E	**"Railway Cottage"** R12	<25	38	32#	38
F	**"Talavera"** R96	22	38	Inaudible#	37
G	R97	28	35	Inaudible	35
H	**"Kyooma"** R98*	25	36	22	36
I	**Kurrara St, WC**	Barely audible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35
K	**South St, WC** R20*, R21*	Inaudible#	39	Inaudible	37
L	**West St, WC** R103	Inaudible#	35	Inaudible	35
Rail Spur		Not Monitored			35
		Not Monitored			35

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

Tuesday 30th October 2012

Location		Day dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$	Evening/Night dB(A) $L_{eq\ 15min}$	Criteria dB(A) $L_{eq\ 15min}$
A	**"Rosehill"** R5	Inaudible#	35	22	35
B1	**West Quipolly** (R7, R8*)	Barely audible#	37	37	37
B2	**West Quipolly** (R9 & R22)	25#	37/36[1]	Inaudible#	37/36[1]
C	**Central Quipolly**(R10*,R11*)	25#	39	20	39
D	**"Hazeldene"** R24	25	37	<20	37
E	**"Railway Cottage"** R12	Barely audible	38	30	38
F	**"Talavera"** R96	32	38	Inaudible	37
G	R97	<20	35	34	35
H	**"Kyooma"** R98*	29	36	36	36
I	**Kurrara St, WC**	Inaudible	35	Inaudible	35
J	**Coronation Ave, WC**	Inaudible	35	Inaudible	35

K	**South St, WC** (R20*, R21*)	Inaudible	39	Inaudible#	37
L	**West St, WC** (R103)	Inaudible	35	Inaudible	35
Rail Spur		Not Monitored			35
		Not Monitored			35

WC – Werris Creek; * - Private agreement in place with resident; # – Adverse weather with wind >3m/s; 1 – R22 criteria is 36 dB(A) $L_{eq\ 15min}$ while R9 is 37 dB(A) $L_{eq\ 15min}$

3.1.2 Discussion - Compliance / Non Compliance

There were no noise exceedances during August, September and October 2012.

3.2 NOISE COMPLAINTS

There were two complaints for noise impacts from WCC operations, both from the one Quipolly complainant. Investigation into the complaints found that on each occasion the mine was below the relevant noise criteria and adverse weather conditions were present and the noise criteria was not applicable. Specific actions taken in relation to these complaints are outlined in **Section 6.**

4.0 BLAST

Blast monitoring was undertaken at "Glenala", "Talavera", "Werris Creek" and "Tonsley Park" during the period. Compliance limits for blasting overpressure is 115dBL (and up to 120dBL for only 5% of blasts) and vibration is 5mm/s (and up to 10mm/s for only 5% of blasts). During the period a total of 24 blasts were fired by the blasting contractor, Orica Mining Services.

4.1 BLAST MONITORING

4.1.1 Monitoring Data Results

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

August 2012	**"Glenala"**		**"Tonsley Park"**		**Werris Creek**		**"Talavera"**	
	mm/s	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**
Monthly Average	<0.30	<112.0	0.54	101.6	<0.30	<112.0	<0.30	<112.0
Monthly Maximum	<0.30	<112.0	0.57	112.9	<0.30	<112.0	<0.30	<112.0
Annual Average	0.28	107.0	0.84	100.7	0.41	100.0	0.22	106.7
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	0/7		4/7		0/7		0/7	

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

September 2012	**"Glenala"**		**"Tonsley Park"**		**Werris Creek**		**"Talavera"**	
	mm/s	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**
Monthly Average	0.25	109.0	1.02	103.1	0.37	100.6	0.24	104.3
Monthly Maximum	0.35	111.0	1.40	108.6	0.47	107.5	0.30	109.0
Annual Average	0.27	107.6	0.87	101.1	0.40	100.1	0.22	106.1
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	4/10		8/10		7/10		5/10	

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

October 2012	**"Glenala"**		**"Tonsley Park"**		**Werris Creek**		**"Talavera"**	
	mm/s	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**	**mm/s**	**dB(L)**
Monthly Average	0.17	101.7	1.37	101.5	0.39	99.0	0.26	103.6
Monthly Maximum	0.25	106.0	2.14	106.0	0.56	102.6	0.41	111.0
Annual Average	0.24	106.1	0.94	101.2	0.40	99.9	0.23	105.6
Criteria	**5**	**115**	**5**	**115**	**5**	**115**	**5**	**115**
% >115dB(L) or 5mm/s	0%	0%	0%	0%	0%	0%	0%	0%
# Triggered this Month	5/7		6/7		3/7		5/7	

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

4.1.2 Discussion - Compliance / Non Compliance

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

A blast result at the Werris Creek monitor was missed for 31st October 2012 shot. This is non-compliant with Condition M7.1 of EPL 12290 and has been reported to the EPA. Orica's investigation found that a factory connection in the blast monitor was only intermittently operating resulting in the monitor not adequately charging causing the blast event to be missed. While this incident should have been avoided, it was unexpected that a factory component in the new permanent blast monitor would fail after successfully operating during the commissioning period.

4.2 BLAST COMPLAINTS

There were three blasting complaints during the period. The first complaint was in relation to dust generated by a blast on 28th September 2012 in high wind. WCC have subsequently modified the pre-blast weather assessment process to include an upper limit wind speed of 6m/s to prevent excessive dust generation during blasting. The investigation into another blast complaint on 25th October 2012 found that WCC did not blast on the alleged day of the complaint. A complaint was received on the 31st October 2012 due to a blast resulting higher than average vibration. It was found during the investigation that the Werris Creek monitor missed the blast, however based on the blast results from the closer Tonsley Park monitor that the blast would have been in compliance. Specific actions taken in relation to these complaints are outlined in **Section 6.**

5.0 WATER

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

5.1 GROUND WATER

Groundwater monitoring is undertaken to monitor if there are any impacts on groundwater quality and levels as a result of the mining operations. WCC monitors 35 groundwater bores and piezometers in the key aquifers surrounding the mine including Werris Basalt (near and further afield) and Quipolly Creek Alluvium. Bi-monthly level and 6 monthly quality groundwater monitoring was completed on 5th and 13th September 2012.

5.1.1 Monitoring Data Results

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

Site	Level		pH		EC		Comments
Werrie Basalt – Near WCC Mine							
MW1	52.71	-1%	7.49	0%	1270	-4%	
MW2	25.09	17%	7.92	0%	878	5%	Water level re-tested 25/9 25.27m – July 2012 level was erroneous.
MW3	15.26	78%	7.13	-5%	155	-1939%	Water level re-tested 25/9 15.38m – July 2012 level was erroneous. Groundwater sample retaken after extensive purging.
MW4B	10.56	-18%	7.92	0%	1020	0%	Water level re-tested 25/9 10.64m – July 2012 level was erroneous.
MW5	8.41	3%	7.68	5%	2370	-22%	Result not anomalous as long term average EC 2305µS/cm. Suspect that previous EC reading from May 2012 was erroneous. No retest required.
MW6	12.1	-1%	7.72	-1%	1920	2%	
P1	30.51	1%					
P2	22.54	-4%					
MW4	Dry	Error					Tractor slashed over bore
Werrie Basalt							
MW8	14.2	0%					
MW9	14.92	0%					
MW10	18.07	1%					
MW14	16.36	-2%					
MW14B	16.14	-2%					
MW17B	18.77	-50%					Water level re-tested 25/9 9.63m – level was erroneous due to operating windmill.
MW19A	5.77	-3%					
MW20	18.93	-1%					
MW27	39.94	0%					

Site	Level		pH	EC	Comments
Quipolly Alluvium					
MW12	8.11	0%			
MW13	4.53	0%			
MW13B	3.23	-2%			
MW13D	5.3	-11%			
MW15	4.04	-1%			
MW16	4.46	-3%			
MW17A	3.64	-3%			
MW18A	3.36	0%			
MW21A	6.4	-3%			
MW22A	4.53	0%			
MW22B	4.64	2%			
MW23A	3.9	-1%			
MW23B	4.75	-12%			
MW28A	8.45	9%			
Other Bores					
MW24A	12.78	1%			
MW29	22.84	-55%			Water level re-tested 25/9 12.52m – level was erroneous due to operating windmill.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; Dip – is distance in meters from top of bore to groundwater surface

5.1.2 Discussion - Compliance / Non Compliance

The low rainfall since February 2012 has resulted in groundwater levels to continue to fall. Current groundwater levels are at average levels since monitoring commenced in 2005. Mining continues not to impact on groundwater aquifers.

5.2 SURFACE WATER

Surface water monitoring is undertaken at key dirty and void water dams to monitor for potential contamination issues due to mining while the water is still onsite. Quarterly surface water monitoring was undertaken on 27th August 2012.

5.2.1 Monitoring Data Results

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

Site	pH	EC	TSS	O&G	Change
ONSITE					
SB2	8.75	553	9	<5	pH increased 0.41, EC increased 109, TSS decreased 5, O&G no change.
SB9	8.36	323	7	<5	pH increased 0.47, EC increased 17, TSS decreased 21, O&G no change.
SB10	8.02	300	42	<5	pH decreased 0.66, EC increased 42, TSS increased 35, O&G no change.
OFFSITE					
QCU	7.99	472	56	<5	pH increased 0.49, EC increased 155, TSS increased 40, O&G no change.
QCD	8.11	857	30	<5	pH increased 0.28, EC increased 375, TSS decreased 7, O&G no change.
WCU	Dry	Dry	Dry	Dry	Dry.
WCD	8.47	1280	37	<5	pH increased 0.09, EC decreased 30, TSS increased 5, O&G negligible change.

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water

5.2.2 Discussion - Compliance / Non Compliance

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

5.3 SURFACE WATER DISCHARGES

5.3.1 Monitoring Data Results

There were two controlled discharge events during the period. A summary of discharge monitoring results is provided below with the laboratory reports provided in **Appendix 8**.

Date	Dam	pH	EC	TSS	O&G	Compliance	Type	5 Day Rain
6/08/2012	**SB9**	7.97	732	33	<5	Compliant – Water quality within compliance	Controlled	N/A
25/09/2012	**SB9**	8.49	353	<5	<5	Compliant – Water quality within compliance	Controlled	N/A

Criteria	8.5	N/A	50	10

pH – measure of acidity/alkalinity; EC – Electrical Conductivity measures salinity; TSS – Total Suspended Solids is a measure of suspended sediment in water (i.e. similar to turbidity); O&G – Oil and Grease measures amount of hydrocarbons (oils and fuels) in water; NT – Not Tested

5.3.2 Discussion - Compliance / Non Compliance

All dirty 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 dirty water discharge events.

5.3 WATER COMPLAINTS

There was one surface water related complaint during the period. On 7th August 2012, a Quipolly resident alleged that WCC had changed the water runoff flow path and the water was dirty in colour. Comparison of survey information with data from 2010 showed that the water runoff flow path had not been altered by the mine; however the mine agreed to modify a farm dam so that the spillway would flow to the west.

6.0 COMPLAINTS SUMMARY

There were 12 complaints received during the period with the details summarised below. In total there were six complaints related to dust; three complaints related to blasting, two complaints related to noise and one complaint to surface water. There were seven different complainants during the period with three complaints from one individual Werris Creek resident and two complaints each from two individual Quipolly residents.

#	Date	Complainant	Complaint	Investigation	Action Taken
252	7/08/2012 7:40am	AG Quipolly	Complaint related to alleged new spillway on dam on "Plain View" property south of mine changing flow path and water was dirty in colour.	Dam on "Plain View" is off the mine site. Spillway was present on dam prior to Whitehaven purchasing the property and was not modified during discharge incident. Water runoff due to 75mm rain the previous week and unrelated to WCC.	Additional earthworks undertaken to repair temporary banks constructed during discharge event, fill in spillway and repair boundary fence. Verbal response provided by Regional Operations Manager and Coal Processing Manager to the complainant.
253	7/08/2012 8:30am	Q Quipolly	Complainant stated that the mine looked dusty this morning (7/8/12) as it was hazy and concerned about their drinking water.	Complainant called back indicating that it was hazy in all directions and not necessarily the mine. Temperature inversion present potentially trapping and concentrating dust emissions.	Installed dust gauge on property and sampled drinking water for potable water analysis. A written response provided to the complainant.
254	15/08/2012 11:15am	M Quipolly	Complainant was cleaning outdoor table and wiped up black dust and assumed that it was coal dust.	Analysis of wind rose found that wind was from the North West for 25% of last fortnight was not unusual. Excessively high dust level recorded in dust gauge for July unrelated to mining. EPA PM10 in Tamworth showing regional dust event for last 5 days.	Check August dust results at property and organise for visual analysis of dust source. A written response provided to the complainant.
255	22/08/2012 11:45am	A/EPA Werris Creek	Complainant alleges dust blowing off mine site on 16, 17 & 18/8/12.	Five offsite visual inspections undertaken on 16&17/8/12 did not identify excessive dust. Scrapers did not operate on 18/8/12. Over 5ML water used for dust suppression to minimise dust. RLO suspended activities on 17/8/12 due to excessive wind.	Email response sent to EPA and complaint.
256	27/08/2012 10:55pm	L Quipolly	Mine very noisy at 11pm 27/8/12.	OCE/NCO did not modify operations at time of complaint due to dominant train noise and mining noise levels below 37dB(A) criteria.	A written response provided to the complainant.

257	3/09/2012 10:59pm	L Quipolly	Complainant alleges that the mine was very noisy at 11pm 3/9/12.	11 hours of production lost due to operations being suspended. WCC mining noise would have been equal to or below the "Hazeldene" noise criteria of 37dB(A) indicating that the OCE was appropriately managing mining operations to minimise noise levels. Noise levels measured under extreme temperature inversions (>+12oC/100m) are not assessable against noise criteria.	A written response provided to the complainant.
258	5/09/2012 11:59am	AD Quipolly	The complainant indicated that the laundry is covered in a layer of black dust after being recently cleaned. The complainant is concerned about the black dust from WCC coal mine getting into her drinking water and wants WCC to put a filter on her drinking water supply.	Winds at time of complaint were from north west and had been for the last three days which is not towards the complainant's residence. No change in dust levels measured at complainant's residence. While it was windy, the Tamworth EPA PM10 indicated that there was a regional dust event present at the time.	In recognition of complainant's concerns, WCC will investigate installing a filter on drinking water supply. A written response provided to the complainant.
259	6/09/2012 11:24am	EPA/ Anonymous	Complainant alleges dust blowing off mine site at 11am 6/9/12.	Four offsite visual inspections undertaken on 6/9/12 did not identify excessive dust. Five water carts in operation. Trucks from 3600 were dumping on RL430m level east side which was the most sheltered dump available in the high westerly winds. Tamworth EPA PM10 indicated that there was a regional dust event present at the time.	Operations Manager relocated 3600 lower in pit so not as exposed to westerly winds. Verbal response provided to EPA.
260	28/09/2012 12:30pm	Lawson	Complaint stated large dust cloud generated by blast towards Quipolly.	Dry weather and high winds at time of blast would have contributed the larger than normal dust cloud generated by the blast.	Orica to review blast performance. WCC to review controls for blasting in high winds.
261	25/10/2012 2:24pm	A/EPA Werris Creek	Complainant alleges that WCC blasted between 12:30 & 12:45pm on 18/10/12.	WCC did not blast on 18/10/12.	Email response sent to EPA and complainant.
262	25/10/2012 2:24pm	EPA/AA Werris Creek	Complainant alleged heavy dust from mine on 23&24/10/12 covering his house and car.	Dust gauge on property did not indicate that October was a dusty month. The highest result from real time dust monitoring for 23&24/10/12 was 23µg/m3 which is below criteria. Offsite visual inspections support that there was no excessive dust generation from the mine on those days.	Email response sent to EPA and letter to complainant.
263	31/10/2012 1:35pm	A/EPA Werris Creek	Complainant alleges that blast on 31/10/12 shook house and created "brownish/rusty" colour dust cloud.	Except for Werris Creek monitor, blast results were in compliance. The Werris Creek monitor missed the blast and no result is available. The blast scored a "0" for fume and the colour was due to the rock type.	Orica to investigate Werris Creek monitor failure. Email response sent to EPA and complainant.

7.0 GENERAL

Please feel free to ask any questions in relation to the information contained within this document during Item 7 of the meeting agenda.

Regards
Andrew Wright
Environmental Officer

Appendix 1 – Dust Monitoring Results – PM10

Werris Creek Coal
HVAS TEOM Dust Monitoring
2012-2013

Site / Date	2.5TEOM92 Werris Creek	Monthly Summary	Annual Average	10TEOM92 Werris Creek	EPL#30 Monthly Summary	Annual Average	HVP20 Tonsley Park	EPL#1 Monthly Summary	Rolling Annual Average	HVP98 Kyooma	EPL#28 Monthly Summary	Rolling Annual Average	HVP4 Eurunderee	Monthly Summary	Rolling Annual Average	HVP11 Glenara	EPL#29 Monthly Summary	Rolling Annual Average	HVT98 Kyooma	Monthly Summary	Rolling Annual Average	PM10 24hr Limit	PM10 Annual Average	TSP Annual Average
02-Apr-12				22	6.2		19	7.5	19.0	29	12.2	28.6	18	8.2	17.6	18	8.2	17.6	66	22.0	66.4	50	30	90
08-Apr-12				12	**15.9**	15.9	16	**15.3**	17.6	23.2	**22.6**	25.9	20	**15.1**	18.8	20	**15.1**	18.8	53	**55.3**	59.6	50	30	90
14-Apr-12				6	17.2		8	17.4	14.2	12	24.8	21.3	8	16.0	15.3	8	16.0	15.3	22	59.6	47.0	50	30	90
20-Apr-12				23	23.0		19	19.0	15.3	26	28.6	22.6	14	20.0	15.1	14	20.0	15.1	80	79.9	55.3	50	30	90
26-Apr-12				12			13		14.9	17		21.5	13		14.7	13		14.7	54		55.0	50	30	90
02-May-12				11	11.4		13	12.6	14.5	8	8.4	19.4	14	11.8	14.6	14	11.8	14.6	27.5	27.5	50.4	50	30	90
08-May-12				26	**15.3**	15.6	20	**17.9**	15.3	49	**19.9**	23.6	18	**14.2**	15.0	18	**14.2**	15.0	114	**51.3**	59.5	50	30	90
14-May-12				15	12.4		27	17.1	16.7	12	12.8	22.2	15	14.0	15.0	15	14.0	15.0	33	33.0	56.2	50	30	90
20-May-12				12	25.8		17	26.7	16.8	13	48.8	21.1	12	17.7	14.6	12	17.7	14.6	28	114.0	53.0	50	30	90
26-May-12				4			5		15.6	4		19.4	3		13.5	3		13.5	6		48.3	50	30	90
01-Jun-12				19			12		15.2	8		18.4	4		12.6	4		12.6	20		45.7	50	30	90
07-Jun-12				12	3.7		7	4.8	14.5	3	3.3	17.1	3	3.2	11.8	3	3.2	11.8	7	5.5	42.5	50	30	90
13-Jun-12				11	**12.1**	14.4	9	**9.4**	14.1	5	**10.8**	16.2	6	**7.0**	11.4	6	**7.0**	11.4	16	**24.5**	40.5	50	30	90
19-Jun-12				10	11.8		9	9.1	13.7	13	6.6	16.0	8	5.2	11.2	8	5.2	11.2	31	18.3	39.8	50	30	90
25-Jun-12				17	18.7		15	15.4	13.8	31	31.2	17.0	17	17.4	11.6	17	17.4	11.6	67	66.6	41.6	50	30	90
01-Jul-12				10			9		13.5	4		16.2	5		11.2	5		11.2	7		39.5	50	30	90
07-Jul-12				8	6.3		8	6.3	13.2	5	3.0	15.5	7	4.8	10.9	14	5.2	11.4	5	4.8	37.5	50	30	90
13-Jul-12				8	**8.6**	13.0	8	**8.5**	12.9	5	**4.5**	14.9	5	**6.6**	10.6	6	**8.4**	11.0	5	**6.1**	35.6	50	30	90
19-Jul-12				11	8.3		11	8.3	12.8	6	4.5	14.4	5	5.2	10.3	9	7.9	10.9	8	5.2	34.2	50	30	90
25-Jul-12				6	10.7		6	10.7	12.5	3	5.8	13.9	10	10.4	10.3	8	14.2	10.8	5	8.2	32.7	50	30	90
31-Jul-12				17			18		12.8	11		13.7	15		10.5	16		11.0	15		31.9	50	30	90
06-Aug-12				10	7.1		10	7.1	12.6	6	5.3	13.4	7	4.8	10.4	9	8.6	10.9	13	10.7	31.0	50	30	90
12-Aug-12				9	**10.4**	12.5	10	**10.9**	12.5	10	**8.6**	13.2	9	**9.6**	10.3	11	**12.0**	10.9	15	**13.9**	30.3	50	30	90
18-Aug-12				7	9.0		7	9.8	12.3	5	10.1	12.9	5	9.0	10.1	11	10.8	10.9	11	14.6	29.5	50	30	90
24-Aug-12				9	17.0		10	17.8	12.2	11	10.6	12.8	12	15.0	10.2	14	16.3	11.0	16	16.3	29.0	50	30	90
30-Aug-12							17		12.4	20		13.1	15		10.4	19		11.3	30		29.0	50	30	90
05-Sep-12		3.1			7.3		23	10.8	12.8	19	10.8	13.3	30	6.9	11.1	29	9.1	12.0	30	17.3	29.1	50	30	90
11-Sep-12		**8.9**	8.9		**15.3**	13.0	29	**20.5**	13.4	23	**18.0**	13.6	26	**18.8**	11.6	28	**20.5**	12.6	36	**28.5**	29.3	50	30	90
17-Sep-12		8.1			14.6		22	21.9	13.6	17	19.1	13.8	16	16.4	11.8	17	19.2	12.7	29	30.0	29.3	50	30	90
23-Sep-12		16.4			26.5		11	29.2	13.6	11	23.1	13.7	7	29.8	11.6	9	29.2	12.6	17	35.8	28.9	50	30	90
29-Sep-12							14		13.6	8		13.5	15		11.7	13		12.6	16		28.5	50	30	90
05-Oct-12		2.3			4.6		17	7.3	13.7	12	5.6	13.5	19	11.2	11.9	20	9.7	12.9	21	14.4	28.2	50	30	90
11-Oct-12		**10.7**	9.8		**18.1**	13.7	7	**14.6**	13.5	6	**11.6**	13.2	11	**15.7**	11.9	10	**15.8**	12.8	14	**23.2**	27.8	50	30	90
17-Oct-12		10.1			17.7		22	14.4	13.8	23	9.1	13.5	18	15.3	12.1	25	13.2	13.1	47	17.8	28.4	50	30	90
23-Oct-12		29.1			41.4		12	22.0	13.7	9	22.6	13.4	15	19.2	12.2	11	24.9	13.1	18	46.9	28.1	50	30	90
29-Oct-12									13.7			13.4			12.2			13.1			28.1	50	30	90
04-Nov-12									13.7			13.4			12.2			13.1			28.1	50	30	90
10-Nov-12									13.7			13.4			12.2			13.1			28.1	50	30	90
16-Nov-12									13.7			13.4			12.2			13.1			28.1	50	30	90
22-Nov-12									13.7			13.4			12.2			13.1			28.1	50	30	90
28-Nov-12									13.7			13.4			12.2			13.1			28.1	50	30	90
04-Dec-12									13.7			13.4			12.2			13.1			28.1	50	30	90
10-Dec-12									13.7			13.4			12.2			13.1			28.1	50	30	90
16-Dec-12									13.7			13.4			12.2			13.1			28.1	50	30	90
22-Dec-12									13.7			13.4			12.2			13.1			28.1	50	30	90
28-Dec-12									13.7			13.4			12.2			13.1			28.1	50	30	90
03-Jan-13									13.7			13.4			12.2			13.1			28.1	50	30	90
09-Jan-13									13.7			13.4			12.2			13.1			28.1	50	30	90
15-Jan-13									13.7			13.4			12.2			13.1			28.1	50	30	90
21-Jan-13									13.7			13.4			12.2			13.1			28.1	50	30	90
27-Jan-13									13.7			13.4			12.2			13.1			28.1	50	30	90
02-Feb-13									13.7			13.4			12.2			13.1			28.1	50	30	90
08-Feb-13									13.7			13.4			12.2			13.1			28.1	50	30	90
14-Feb-13									13.7			13.4			12.2			13.1			28.1	50	30	90
20-Feb-13									13.7			13.4			12.2			13.1			28.1	50	30	90
26-Feb-13									13.7			13.4			12.2			13.1			28.1	50	30	90
04-Mar-13									13.7			13.4			12.2			13.1			28.1	50	30	90
10-Mar-13									13.7			13.4			12.2			13.1			28.1	50	30	90
16-Mar-13									13.7			13.4			12.2			13.1			28.1	50	30	90
22-Mar-13									13.7			13.4			12.2			13.1			28.1	50	30	90
28-Mar-13									13.7			13.4			12.2			13.1			28.1	50	30	90
Min		**2.3**			**3.7**					**3.0**			**3.2**			**3.2**			**4.8**					
Max		**29.1**			**41.4**		**29.2**			**48.8**			**29.8**			**29.2**			**114.0**					
Capture							**57%**			**57%**			**57%**			**57%**			**57%**					

Appendix 2 – Dust Monitoring Results – Deposited Dust

Deposited Dust - Werris Creek Coal Mine 2012-2013

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

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

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

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

Appendix 3 – Train Dust Deposition Monitoring

Deposited Dust - Quirindi Trains 2012-2013

	DDW30				DDW20				DDW13				DDE13				DDE20				DDE30				Guideline
	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	Total Matter	% Coal	% Vegetation/ Insects	% Dirt	
April 2012	0.8	25%	50%	25%	0.3	25%	50%	25%	0.3	30%	40%	30%	0.7	25%	50%	25%	1.0	10%	60%	30%	0.5	25%	50%	25%	4.0
May 2012	1.1	30%	40%	30%	0.7	35%	25%	40%	0.6	20%	50%	30%	0.6	40%	40%	20%	0.4	10%	60%	30%	0.7	25%	50%	25%	4.0
June 2012	1.0	35%	45%	20%	0.8	45%	35%	20%	0.9	35%	55%	10%	0.5	45%	40%	15%	1.9	20%	60%	20%	1.3	15%	65%	20%	4.0
July 2012	1.2	40%	30%	30%	0.8	40%	30%	30%	1.2	40%	30%	30%	0.7	40%	30%	30%	2.4	10%	60%	30%	1.5	25%	50%	25%	4.0
August 2012	0.6	30%	30%	40%	0.6	30%	30%	30%	0.5	30%	50%	20%	0.5	30%	50%	20%	0.7	20%	50%	30%	2.7	15%	20%	60%	4.0
September 2012	1.7	20%	20%	60%	1.2	20%	50%	30%	1.3	15%	55%	30%	0.9	20%	50%	30%	0.7	20%	60%	20%	0.6	10%	60%	30%	4.0
October 2012	1.5	15%	50%	35%	1.4	15%	50%	35%	0.9	20%	40%	40%	1.0	25%	50%	25%	0.6	20%	40%	40%	1.6	10%	50%	40%	4.0
November 2012																									4.0
December 2012																									4.0
January 2013																									4.0
February 2013																									4.0
March 2013																									4.0
ANNUAL AVERAGE	**1.1**				**0.8**				**0.8**				**0.7**				**1.1**				**1.3**				**4.0**
Average Coal %	**27.9%**				**30.0%**				**27.1%**				**32.1%**				**15.7%**				**17.9%**				**-**
Average Coal g/m2	**0.31**				**0.25**				**0.22**				**0.23**				**0.17**				**0.23**				**-**
MINIMUM	**0.6**				**0.3**				**0.3**				**0.5**				**0.4**				**0.5**				**-**
MAXIMUM	**1.7**				**1.4**				**1.3**				**1.0**				**2.4**				**2.7**				**4.0**

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

Appendix 4 – Noise Monitoring Results

15 August 2012

Ref: 04035/4490

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

RE: AUGUST 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 13th August, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

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

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

WCC operations on 13th August 2012 had the 3600 excavator in Strip 13 centre at RL390m, a 1900 excavator in Strip 11 centre at RL300m, a 1900 excavator in Strip 12 west at RL330m and a 1900 excavator in Strip 12 east at RL370m. The 3600 and a 1900 truck fleet was running to the RL445m dump during the day and RL430m centre dump at night, one 1900 truck were running to the ROM Pad while the other 1900 trucks fleet were running to the RL360m centre dump on both day and night shift. Scrapers were operating at RL410m on the eastern side of the pit. On 13th August, the crushing plant operated to 3:30am with no trains loaded.

Noise Compliance Assessment

The results shown in **Tables 2** and **3** indicate that, under the operational and atmospheric conditions at the time, there were elevated noise levels measured at the Kyooma monitoring location during the evening/night time monitoring period. There is a private agreement in place with the owner of Kyooma in relation to noise impacts.

Table 2 WCC Noise Monitoring Results – 13 August 2012 (Day)						
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	2.34 pm	32	35	n/a	2.0/153	Birds (31), traffic (25), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	5.07 pm	38	37	n/a	1.0/209	Birds (36), traffic (32), **WCC inaudible**
B2 R9Gedhurst/ R22 Mountain View	2.54 pm	37	37/36*	n/a	2.0/157	Birds (36), traffic (30), **WCC inaudible**
C R10 Meadholme/ R11 Glenara	4.50 pm	39	39	n/a	1.7/178	Birds (38), traffic (32), **WCC inaudible**
D R24 Hazeldene	3.57 pm	35	37	n/a	1.4/163	Birds (34), traffic (29), **WCC inaudible**
E R12 Railway Cottage	5.00 pm	48	38	n/a	1.0/209	Traffic (48), birds (38), **WCC inaudible**
F R96 Talavera	3.45 pm	41	38	n/a	1.3/159	Birds (41), **WCC (<25)**
G R97	3.03 pm	38	35	n/a	2.3/150	Birds (38), **WCC (26)**
H R96 Kyooma	3.25 pm	37	36	n/a	2.0/163	Birds (37), **WCC (28)**
I R57 Kurrara St	1.38 pm	49	35	n/a	1.6/140	Birds (47), trains (41), traffic (40), **WCC inaudible**
J R57 Coronation Ave	2.41 pm	54	35	n/a	1.8/157	Traffic (53), birds (45), roadwork (40), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	2.07 pm	36	39	n/a	1.8/137	Birds (33), traffic (33), **WCC barely audible**
L R103	1.44 pm	48	35	n/a	1.0/138	Birds (47), trains (41), **WCC inaudible**

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

Table 3 WCC Noise Monitoring Results – 13 August 2012 (Evening/Night)							
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	8.15 pm	34	40	35	+11.4	0.4/94	Traffic (34), dogs (33), **WCC (29)**,
B1 R7 83 Wadwells Lane/R8 Almawillee	11.08 pm	38	35	37	+11.2	Calm	**WCC (33)**, traffic (30), insects (27)
B2 R9Gedhurst/ R22 Mountain View	8.35 pm	42	36	37/36*	+9.1	1.0/129	Traffic (34), **WCC (34)**, frogs & insects (33)
C R10 Meadholme/ R11 Glenara	10.50 pm	37	34	39	+10.7	Calm	**WCC (33)** traffic (28)
D R24 Hazeldene	9.38 pm	39	43	37	+11.6	0.4/124	Traffic (43), **WCC (32)**, insects (23)
E R12 Railway Cottage	10.43 pm	42	43	38	+10.9	Calm	Traffic (42), **WCC (34)**
F R96 Talavera	7.30 pm	39	38	37	+11.9	2.0/290	Traffic (36), **WCC (33)**, insects (25)
G R97	9.02 pm	43	35	35	+8.7	0.8/125	**WCC (34)**
H R96 Kyooma	8.34 pm	43	36	36	+9.1	1.0/129	**WCC (36)**
I R57 Kurrara St	9.45 pm	n/a	46	35	+11.6	0.6/105	Trains (43), traffic (43), **WCC inaudible**
J R57 Coronation Ave	9.26 pm	n/a	41	35	+10.8	0.3/143	Traffic (40), trains (35), **WCC barely audible**
K R20 Tonsley Park/ R21 Alco Park	7.50 pm	n/a	45	37	+11.4	0.3/41	Trains (41), traffic (35), **WCC (<25)**
L R103	7.31 pm	n/a	45	35	+11.9	2.0/290	Trains (45), traffic (36), **WCC inaudible**

1. L1 (1 min) from mine noise only

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

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

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

The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window. To avoid undue disturbance to residents observations and measurements made during the 60 minute long operational noise measurement are noted. Where maximum noise levels from mining activity are recorded in the range > 40 dB(A) L1 (1 min) then, where practical, further measurements are made at the sleep disturbance monitoring location. Note that, as the internal layout of each residence is not known, the measurements are made at the worst case façade in relation to the mine noise. This is not necessarily at the façade of a bedroom window.

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

Plant Sound Power Levels

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

The results of the sound power level calculations to date are shown in **Appendix III**. For logistical reasons no plant noise measurements were made at the time of the August 2012 monitoring survey.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

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

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.			
Haul truck CAT 785 (unattenutaed)	608	120	122	17/7/12
Haul truck CAT 785 (unattenutaed)	614		120	17/7/12

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

20 September 2012

Ref: 04035/4511

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

RE: SEPTEMBER 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 11th September, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

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

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

WCC operations on 11th September 2012 had the 3600 excavator in Strip 13 east at RL380m, a 1900 excavator in Strip 11 west at RL320m, a 1900 excavator in Strip 12 east at RL350m and a 1900 excavator in Strip 12 centre at RL350m. The 3600 and two 1900 truck fleets were running to the RL430m east dump during both day and night, and the other 1900 truck fleet was running to the RL290m in pit dump both day and night shift. Scrapers were operating at RL410m on the eastern side of the pit at night only. The crushing plant operated to 3:30am with one train loaded starting 5:13pm and finishing at 7:30pm.

Noise Compliance Assessment

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

Table 2 WCC Noise Monitoring Results – 11 September 2012 (Day)						
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	12.50 pm	44	35	n/a	4.3/274	Birds (41), farm noise (40), traffic (35), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	1.10 pm	48	37	n/a	3.1/247	Birds (48), traffic (35), **WCC (<25)**
B2 R9Gedhurst/ R22 Mountain View	2.12 pm	43	37/36*	n/a	3.6/248	Birds (42), traffic & planes (34), **WCC (30)**
C R10 Meadholme/ R11 Glenara	3.14 pm	34	39	n/a	3.0/238	Birds & insects (31), traffic (30), **WCC (27)**
D R24 Hazeldene	3.32 pm	41	37	n/a	2.5/254	Birds & insects (40), traffic (32), **WCC (30)**
E R12 Railway Cottage	4.34 pm	46	38	n/a	1.8/254	Traffic (46), birds & insects (33), **WCC (<25)**
F R96 Talavera	4.54 pm	34	38	n/a	1.8/288	Birds (33), traffic (28), **WCC (22)**
G R97	4.34 pm	41	35	n/a	2.1/211	Birds (40), traffic (34), **WCC (28)**
H R98 Kyooma	5.44 pm	40	36	n/a	2.0/313	Birds & insects (39), plane (33), **WCC (25)**
I R57 Kurrara St	3.11 pm	40	35	n/a	2.6/259	Traffic (38), birds & insects (36), **WCC barely audible**
J R57 Coronation Ave	4.15 pm	45	35	n/a	2.8/219	Dogs (42), birds (42), trains (35), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	2.53 pm	32	39	n/a	3.2/243	Birds (32), **WCC inaudible**
L R103	2.35 pm	33	35	n/a	3.4/239	Birds & insects (33), **WCC inaudible**

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

Table 3 WCC Noise Monitoring Results – 11 September 2012 (Evening/Night)							
Location	**Time**	**dB(A), L1 (1min)[1]**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Inversion °C/100m**	**Wind speed/ dir**	**Identified Noise Sources**
A R5 Rosehill	8.10 pm	<30	53	35	+10.9	1.0/276	Dogs (53), traffic (37), **WCC (24)**,
B1 R7 83 Wadwells Lane/R8 Almawillee	9.50 pm	41	37	37	+9.6	1.0/262	**WCC (34)**, irrigator (32), insects (28)
B2 R9Gedhurst/ R22 Mountain View	8.30 pm	41	38	37/36*	+9.4	1.4/275	Water pump (35), **WCC (33)**, frogs & insects (28)
C R10 Meadholme/ R11 Glenara	9.21 pm	42	38	39	+8.1	0.4/248	**WCC (37)** traffic (31)
D R24 Hazeldene	9.35 pm	38	38	37	+9.3	1.3/271	Traffic (37), **WCC (32)**
E R12 Railway Cottage	10.40 pm	35	38	38	+9.8	2.3/280	Traffic (37), **WCC (32)**
F R96 Talavera	11.00 pm	n/a	27	37	+10.0	2.0/262	Frogs & insects (27), **WCC inaudible**
G R97	8.43 pm	/a	29	35	+10.3	1.5/264	Insects (27), plane (22), **WCC inaudible**
H R98 Kyooma	9.01 pm	<25	28	36	+10.2	1.7/289	Insects (28), **WCC (22)**
I R57 Kurrara St	7.20 pm	n/a	46	35	+10.8	0.8/276	Trains (43), traffic (43), **WCC inaudible**
J R57 Coronation Ave	9.26 pm	n/a	39	35	+10.9	1.0/266	Trains (35), dogs (35), traffic (32), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	7.38 pm	n/a	39	37	+11.0	0.8/250	Trains (38), traffic (30), **WCC inaudible**
L R103	7.20 pm	n/a	41	35	+11.0	0.6/288	Traffic (41), **WCC inaudible**

1. L1 (1 min) from mine noise only

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

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

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

The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window. To avoid undue disturbance to residents observations and measurements made during the 60 minute long operational noise measurement are noted. Where maximum noise levels from mining activity are recorded in the range > 42 dB(A) L1 (1 min) then, where practical, further measurements are made at the sleep disturbance monitoring location. Note that, as the internal layout of each residence is not known, the measurements are made at the worst case façade in relation to the mine noise. This is not necessarily at the façade of a bedroom window.

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

Plant Sound Power Levels

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

The results of the sound power level calculations to date are shown in **Appendix III**.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

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

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

Plant Item		dB(A) Leq	dB(A) Lmax	Date Measured
Type	No.			
Haul truck CAT 785 (unattenuated)	608	120	122	17/7/12
Haul truck CAT 785 (unattenuated)	614		120	17/7/12
Haul truck CAT 785 (unattenuated)	609	120		11/9/12
Haul truck CAT 785 (unattenuated)	610	121		11/9/12
Haul truck CAT 785 (unattenuated)	611	120		11/9/12
Haul truck CAT 785 (unattenuated)	600	119		11/9/12
Haul truck CAT 785 (attenuated)	608	117	120	11/9/12
Water Cart	WA897	113		11/9/12
Scraper	SC882	113		11/9/12
Excavator (PC 3600)	EX551	115		11/9/12
Dozer	829	114		11/9/12

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

5 November 2012

Ref: 04035/4576

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

RE: OCTOBER 2012 NOISE MONITORING RESULTS – WERRIS CREEK MINE

This letter report presents the results of noise compliance monitoring conducted for the Werris Creek Coal Mine (WCC) on Tuesday 30th October, 2012 as required by the draft Noise Management Plan (NMP), Project Approval 10_0059 and the Environmental Protection Licence (EPL) 12290 and must be submitted to the Environment Protection Authority within 30 days of the completion of monitoring.

Attended Noise Monitoring Program

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

Table 1
WCC Attended Noise Monitoring Program

Monitoring Point	Duration	ID	Receiver	Relevant Monitoring Requirements
A	15 minutes[1]	R5	Rosehill	PA10_0059 Private Property outside NMZ
B1	60 minutes[2]	R7	83 Wadwells Lane	60 minutes as per EPL 12290
		R8*	Almawillee	Private Agreement
B2	60 minutes[2]	R9	Gedhurst	60 minutes as per EPL 12290
		R22	Mountain View	60 minutes as per EPL 12290
C	15 minutes[1]	R10*	Meadholme	Private Agreement
		R11*	Glenara	
D	60 minutes[2]	R24	Hazeldene	60 minutes as per EPL 12290
E	60 minutes[2]	R12	Quipolly Railway Cottage	60 minutes as per EPL 12290
F	60 minutes[2]	R96	Talavera	60 minutes as per EPL 12290
G	15 minutes[1]	R97		PA10_0059 Private Property outside NMZ
H	15 minutes[1]	R98*	Kyooma	Private Agreement
I	60 minutes[2]	R57	Kurrara Street[@]	60 minutes as per EPL 12290
J	15 minutes[1]		Coronation Avenue[@]	PA10_0059 Private Property outside NMZ
K	15 minutes[1]	R20*	Tonsley Park	Private Agreement
		R21*	Alco Park	
L	15 minutes[1]	R103		PA10_0059 Private Property outside NMZ

Notes accompanying the table are on the following page

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters” and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (15 or 60 minutes) with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is

required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

Measurement Analysis

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

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from WCC was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from WCC is shown in the tables in bold type. Where noise from WCC is listed as faintly audible, this means the noise levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

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

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

Meteorological data used in this report were supplied by the mine from their automatic weather station.

WCC Operations

WCC operations on 30th October 2012 had the 3600 excavator in Strip 12 west at RL340m, a 1900 excavator in Strip 11 west at RL300m, a 1900 excavator in Strip 12 centre at RL340m and a 1900 excavator in Strip 14 centre at RL385m. The 3600 and two 1900 truck fleets were running to the RL430m east dump during both day and night, and the other 1900 truck fleet was running to the RL360m in pit dump both day and night shift. Scraper operations were limited to day shift only stripping soil ahead of the western dump extension. The crushing plant operated to 3:30am with one train loaded starting 8:33pm and finishing at 10:32pm.

Noise Compliance Assessment

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

Table 2
WCC Noise Monitoring Results – 30 October 2012 (Day)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	2.07 pm	45	35	n/a	3.7/267	Birds (44), traffic (38), **WCC inaudible**
B1 R7 83 Wadwells Lane/R8 Almawillee	12.55 pm	49	37	n/a	4.4/277	Birds & insects (49), rooster (40), **WCC barely audible**
B2 R9Gedhurst/ R22 Mountain View	1.00 pm	55	37/36*	n/a	4.4/277	Birds (55), **WCC (25)**
C R10 Meadholme/ R11 Glenara	2.00 pm	38	39	n/a	3.5/251	Birds & insects (38), **WCC (25)**
D R24 Hazeldene	2.30 pm	37	37	n/a	1.6/324	Traffic (36), birds & insects (30), **WCC (25)**
E R12 Railway Cottage	4.35 pm	43	38	n/a	2.4/244	Traffic (43), **WCC barely audible**
F R96 Talavera	2.26 pm	35	38	n/a	1.9/291	Birds & insects (32), **WCC (32)**
G R97	3.48 pm	34	35	n/a	1.9/279	Birds & insects (34), **WCC (<20)**
H R98 Kyooma	3.30 pm	37	36	n/a	2.4/280	Birds & insects (36), **WCC (29)**
I R57 Kurrara St	4.30 pm	47	35	n/a	2.4/224	Birds & insects (45), train (41), traffic (30), **WCC inaudible**
J R57 Coronation Ave	4.10 pm	48	35	n/a	2.6/244	Birds & insects (46), traffic (42), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	4.06 pm	32	39	n/a	2.6/244	Birds (31), traffic (25), **WCC inaudible**
L R103	3.41 pm	44	35	n/a	1.9/279	Birds & insects (42), domestic noise (38), cattle (35), **WCC inaudible**

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

Table 3
WCC Noise Monitoring Results – 30 October 2012 (Evening/Night)

Location	Time	dB(A), L1 (1min)[1]	dB(A), Leq	Criterion dB(A) Leq	Inversion °C/100m	Wind speed/ dir	Identified Noise Sources
A R5 Rosehill	8.24 pm	<30	33	35	+0.5	2.4/286	Bird & insects (32), traffic (25), **WCC (22)**
B1 R7 83 Wadwells Lane/R8 Almawillee	10.36 pm	43	43	37	+3.8	1.3/256	Insects (40), irrigator (38), **WCC (37)**
B2 R9Gedhurst/ R22 Mountain View	7.20 pm	n/a	38	37/36*	lapse	3.3/84	Insects (39), irrigator (30), **WCC inaudible**
C R10 Meadholme/ R11 Glenara	8.44 pm	34	34	39	+1.2	0.6/301	Insects (32), traffic (28), **WCC (20)**
D R24 Hazeldene	9.05 pm	25	39	37	+2.8	1.0/309	Traffic (38), birds & insects (33), **WCC (<20)**
E R12 Railway Cottage	11.00 pm	42	38	38	+4.7	0.8/251	Traffic (37), **WCC (30)**, insects (28)
F R96 Talavera	7.15 pm	n/a	36	37	lapse	2.0/50	Birds & insects (36), traffic (25), **WCC inaudible**
G R97	8.41 pm	44	44	35	+1.2	0.6/301	Birds & insects (44), **WCC (34)**
H R98 Kyooma	8.21 pm	43	38	36	+0.5	2.4/286	**WCC (36)**, insects (34)
I R57 Kurrara St	9.23 pm	n/a	43	35	+2.2	1.4/262	Frogs & insects (42), trains (35), **WCC inaudible**
J R57 Coronation Ave	9.03 pm	n/a	36	35	+1.4	1.0/320	Trains (33), traffic (31), insects (28), **WCC inaudible**
K R20 Tonsley Park/ R21 Alco Park	10.33 pm	n/a	39	37	+3.2	2.2/277	Insects (38), traffic (32), **WCC inaudible**
L R103	10.14 pm	n/a	48	35	+3.1	1.9/287	Insects (48), train (35), **WCC inaudible**

1. L1 (1 min) from mine noise only

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

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

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

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

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

Plant Sound Power Levels

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

The results of the sound power level calculations to date are shown in **Appendix III**.

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

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

Appendix I

Attended Noise Monitoring Locations

Appendix II

Noise Limits

LOM Project Revised Noise Criteria

Location		Day $L_{Aeq,15minute}$	Evening/Night $L_{Aeq,15minute}$	Night $L_{A1(1min)}$	Long Term $L_{Aeq,15minute}$	Acquisition $L_{Aeq,15minute}$
R7	83 Wadwells Lane	37	37	45	35	40
R9	"Gedhurst"	37	37	45	35	40
R12	"Quipolly Railway Cottage"	38	38	45	35	40
R22	"Mountain View"	36	36	45	35	40
R24	"Hazeldene"	37	37	45	35	40
R96	"Talavera"#	38	37	45	35	40
All other privately-owned land		35	35	45	35	40

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

Table 21: Properties with Private Agreements Noise Criteria

Location		Noise Works Criteria dB(A) Leq	Noise Acquisition Criteria dB(A) Leq
R8	"Almawillee"	40	45
R10	"Meadholme"	40	45
R11	"Glenara"	40	45
R20	"Tonsley Park"	40	45
R21	"Alco Park"	40	45
R98	"Kyooma"	40	45

Appendix III

Plant Sound Power Levels

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

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

Appendix 5 – Blasting Monitoring Results

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	Werris Creek Coal Blasting Results August 2012									
					Glenala R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
2012-37	10/08/2012	12:10	S13_blackseam secondary_385	OB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-38	17/08/2012	14:25	S12_7_350	OB	<0.30	<112.0	0.57	112.9	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-39	17/08/2012	14:25	S13_10-11_385	OB	<0.30	<112.0	0.57	112.9	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-40	22/08/2012	12:05	S13_8-9_385	OB	<0.30	<112.0	0.51	101.2	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-41	24/08/2012	12:12	S13_6-7_385	OB	<0.30	<112.0	0.50	79.3	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-42	28/08/2012	12:03	S12_10-17_Decoal PS pt1	OB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-43	31/08/2012	12:13	S12_10-14_330 Ramp	OB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
TOTALS	**AUGUST 2012**	**# BLAST**	**7**	**AVERAGE**	**<0.30**	**<112.0**	**0.54**	**101.6**	**<0.30**	**<112.0**	**<0.30**	**<112.0**	**5.00**	**115.0**
TOTALS	**AUGUST 2012**	**# BLAST**	**7**	**HIGHEST**	**<0.30**	**<112.0**	**0.57**	**112.9**	**<0.30**	**<112.0**	**<0.30**	**<112.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**29**	**AVERAGE**	**0.28**	**107.0**	**0.84**	**100.7**	**0.41**	**100.0**	**0.22**	**106.7**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**29**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS SEPTEMBER 2012									
					Glenala R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
2012-44	3/09/2012	12:13	S12_trim TSB22_312	TSB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-45	5/09/2012	15:20	S12_10-17_Decoal PS pt2	OB	0.35	106.9	1.34	101.2	0.47	97.5	<0.30	<112.0	10.00	120.0
2012-46	5/09/2012	15:20	S12_7_350 hard dig pt2	IB	0.35	106.9	1.34	101.2	0.47	97.5	<0.30	<112.0	10.00	120.0
2012-47	6/09/2012	12:41	S11_4_312 pt1	IB	<0.30	<112.0	0.45	108.6	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-48	7/09/2012	12:09	S11_4_312 pt2	IB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-49	11/09/2012	12:07	S13_10-13_370	OB	<0.30	<112.0	0.80	100.8	0.32	99.0	0.30	102.8	10.00	120.0
2012-50	14/09/2012	12:22	S14_12-15_385	OB	<0.30	<112.0	0.72	105.3	0.34	107.5	0.28	100.4	10.00	120.0
2012-51	14/09/2012	12:22	S13.1_10-13_370	OB	<0.30	<112.0	0.72	105.3	0.34	107.5	0.28	100.4	10.00	120.0
2012-52	28/09/2012	12:15	S12_5-8_330 TSB23	TSB	0.14	111.0	1.40	101.0	0.32	97.5	0.18	109.0	10.00	120.0
2012-53	28/09/2012	12:15	S11_14-18_F Frcoal	IB	0.14	111.0	1.40	101.0	0.32	97.5	0.18	109.0	10.00	120.0
TOTALS	**SEPTEMBER**	**# BLAST**	**10**	**AVERAGE**	**0.25**	**109.0**	**1.02**	**103.1**	**0.37**	**100.6**	**0.24**	**104.3**	**5.00**	**115.0**
TOTALS	**SEPTEMBER**	**# BLAST**	**10**	**HIGHEST**	**0.35**	**111.0**	**1.40**	**108.6**	**0.47**	**107.5**	**0.30**	**109.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**39**	**AVERAGE**	**0.27**	**107.6**	**0.87**	**101.1**	**0.40**	**100.1**	**0.22**	**106.1**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**39**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

WERRIS CREEK COAL
BLASTING DATABASE

Shot number	Date fired	Time Fired	Location	Type	WERRIS CREEK COAL BLASTING RESULTS OCTOBER 2012									
					Glenala R11		Tonsley Park R20		Werris Creek R62		Talavera R96		COMPLIANCE	
					Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)	Vib (mm/s)	OP (dB)
2012-54	5/10/2012	12:41	S12_5-7_330 TSB24	TSB	<0.30	<112.0	1.35	96.3	0.50	102.6	<0.30	<112.0	10.00	120.0
2012-55	9/10/2012	12:20	S13_14-16_370	OB	0.14	104.0	1.32	105.0	<0.30	<112.0	0.21	102.0	10.00	120.0
2012-56	11/10/2012	12:47	S12_12-15_B2coal	IB	0.18	104.0	1.75	97.5	0.56	94.5	0.34	104.0	10.00	120.0
2012-57	15/10/2012	12:03	S11_16_Fcoal	IB	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	<0.30	<112.0	10.00	120.0
2012-58	19/10/2012	12:13	S11_16-19_302 TSB25	TSB	0.10	99.0	0.38	102.0	0.12	100.0	0.12	99.0	10.00	120.0
2012-59	25/10/2012	12:10	S12_15-18_B2coal	IB	0.25	106.0	1.27	102.0	<0.30	<112.0	0.23	111.0	10.00	120.0
2012-60	31/10/2012	12:13	S15_2-6_385	OB	0.18	95.5	2.14	106.0			0.41	102.0	10.00	120.0
TOTALS	**OCTOBER**	**# BLAST**	**7**	**AVERAGE**	**0.17**	**101.7**	**1.37**	**101.5**	**0.39**	**99.0**	**0.26**	**103.6**	**5.00**	**115.0**
TOTALS	**OCTOBER**	**# BLAST**	**7**	**HIGHEST**	**0.25**	**106.0**	**2.14**	**106.0**	**0.56**	**102.6**	**0.41**	**111.0**	**10.00**	**120.0**
TOTALS	**ANNUAL**	**# BLAST**	**46**	**AVERAGE**	**0.24**	**106.1**	**0.94**	**101.2**	**0.40**	**99.9**	**0.23**	**105.6**	**5.00**	**115.0**
TOTALS	**ANNUAL**	**%**	**>115dB(L) or 5mm/s**	**46**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**5%**	**5%**

Appendix 6 – Groundwater Monitoring Results

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

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

Replicate/Analysis	Sample ID information			Bore Data			Sampling Data			Field Tests			Field Observations			Comments
	Sample ID / Bore ID	Date	Time	Standing Water Level	Bore depth	Stick up	Purge type	Purge Volume	Pump Set Depth	EC - field	pH - field	Temp - field	Appearance	Odor	Colour	
			(24hr)	□mbgl □mbtoc □m	□mbgl □mbtoc □m	m	Pump / Bailer	L	□mbgl □mbtoc □m	uS/cm	pH units	°C				
	MW8	5/9/12	11:30	4.20		0.2										*Roseneath - pump.
	MW12	5/9/12	12:30	6.41		0.5										
	MW13	5/9/12	14:10	4.53		0.4										
	MW13B	5/9/12	15:55	3.23		0.3										*Taylors lane (Rakhill.)
	MW13D	5/9/12	13:40	5.30		0.2										* Taylors lane - windmill (Rankhill)
	MW15	5/9/12	13:25	4.04		0.5										* Payne lane. + windmill.
	MW16	5/9/12	12:30	4.46		0.3										*mountain view
	MW17A	5/9/12	12:50	3.64		0.5										*Wedell lane (Red shed
	MW18A	5/9/12	12:45	3.36		—										*82 wedell lane (House)
	MW19A	5/9/12	14:25	5.77		0.15										* Lantana
	MW21A	5/9/12	11:50	6.40		0.3										*Glenara.
	MW22A	5/9/12	12:15	4.53		0.55										*Lochlevet - 308 house
	MW22B	5/9/12	12:00	4.64		0.45										*Lochlevet - 308 irrigation
	MW23A	5/9/12	12:06	3.90		0.2										*left paddock
	MW23B	5/9/12	12:10	4.75		0.1										*left paddock
	MW28A	13/9/12	12:50	6.45		0.25										*Wedlawn (windmill on left)
	MW28B	13/9/12	13:00	—		0.8	(Bore cap — no SWL)									" (House Right)

SPECIAL COMMENTS: M

Sheet: of

FIELD SAMPLING SHEET - SURFACE & GROUND WATERS

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

ALS ACIRL

Suite / Analytes	Sample ID / Hole ID	Date	Time (24hr)	Standing Water Level (□mbgl □mbtoc □m)	Bore depth (□mbgl □mbtoc □m)	Stick up (m)	Purge Type (Pump / Bailer)	Purge Volume (L)	Pump Set Depth (□mbgl □mbtoc □m)	EC - field (uS/cm)	pH - field (pH units)	Temp - field (°C)	Appearance	Odor	Colour	Comments	
	MW1	5/9/12	10:15	52.71			Bail			1180	6.94	21.2	Clear	Nil	Clear	6 Monthly	Hillview
	MW2	5/9/12	10:40	25.09		0.15	~~Pump~~			815	7.60	20.3	Clear	Nil	Clear	6 Monthly	Railway view ? (water level/EC?)
	MW3	13/9/12	10:20	15.26		0.95	Bail			185	6.89	20.9	Clear	Nil	Clear	6 Monthly	eurundree
	MW4 B	13/9/12	11:30	10.56		0.7	Bail			970	7.70	19.5	Clear	Nil	Clear	6 Monthly	
	MW4	13/9/12	11:40	Dry		0.6	—									6 Monthly	* (Stick up Broken by slasher)
	MW5	13/9/12	11:00	8.41		1.15	Bail			2030	7.43	19.9	Clear	Nil	Clear	6 Monthly	
	MW5B	13/9/12	11:15	7.96		0.7											
	MW6	5/9/12	11:10	12.10			Bail			1749	7.14	20.8	Clear	Nil	Clear	6 Monthly	1171 W/C Rd.
	MW9	13/9/12	9:40	14.92		1.05											
	MW10	5/9/12	9:40	18.07		0.2										Escot ln.	
	MW11	5/9/12	9:50	—			"No point to Dip - Pump over bore."									✓ ✓ "Gap."	
	MW14	13/9/12	9:30	16.36		0.95											
	MW14B	13/9/12	9:20	16.14		0.75											
	MW17B	5/9/12	13:10	18.77												* Wadell lane - Windmill	
	MW20	5/9/12	9:10	18.93		0.54										* Tonsley Park - shed.	
	MW24A	13/9/12	13:40	12.78		.13										* Marengo	
	MW25A	5/9/12	10:00	—			"No access - pump over bore."									Brenga - little shed.	
	MW25B	5/9/12	10:05	—			"No access - pump over bore."									Brenga - Tank.	
	P1	13/9/12	10:00	30.51													
	P2	13/9/12	10:40	22.54												Bottom Admin	
	PUG	—															
	MW27	5/9/12	9:30	39.94		0.45										* Cintra - Escot lane.	
	MW29	13/9/12	14:00	22.84		0.33										* Kyoana - Windmill left gate	
	MW31	15/9/12	13:20	—		0.18	—	"Dry"		—						* 264 Blackgulley Rd - Windmill no "Blades"	

SPECIAL COMMENTS: M

Sheet: of

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1221521**	Page	: 1 of 4
Amendment	: **1**		
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER 6 MONTHLY	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4668		
C-O-C number	: ----	Date Samples Received	: 06-SEP-2012
Sampler	: BP/CE	Issue Date	: 14-SEP-2012
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/759/11 Blanket	No. of samples analysed	: 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Pabi Subba	Senior Organic Chemist	Sydney Organics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **AC01: Bore data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes the standing water level on sample MW2.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW1	MW2	MW6	----	----
				Client sampling date / time: 05-SEP-2012 10:15	05-SEP-2012 10:40	05-SEP-2012 11:10	----	----
				ES1221521-001	ES1221521-002	ES1221521-003	----	----
AC01: Bore Data								
Standing Water Level	----	0.01	m	52.7	25.1	12.1	----	----
AC02: Sampling Data								
Purge Type	----	-	-	Bail	Tap	Bail	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	1180	815	1750	----	----
pH	----	0.01	pH Unit	6.94	7.60	7.14	----	----
Temperature	----	0.1	°C	21.2	20.3	20.8	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.49	7.92	7.72	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1270	878	1920	----	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	10	mg/L	722	470	1070	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.01	<0.01	0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	4.59	0.08	3.89	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.60	0.08	3.90	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	<0.1	1.1	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.6	<0.1	5.0	----	----
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	MW1 - 05-SEP-2012 10:15	Clear
AC04: Appearance	MW2 - 05-SEP-2012 10:40	Clear
AC04: Appearance	MW6 - 05-SEP-2012 11:10	Clear
AC04: Odour	MW1 - 05-SEP-2012 10:15	Nil
AC04: Odour	MW2 - 05-SEP-2012 10:40	Nil
AC04: Odour	MW6 - 05-SEP-2012 11:10	Nil
AC04: Colour	MW1 - 05-SEP-2012 10:15	Clear
AC04: Colour	MW2 - 05-SEP-2012 10:40	Clear
AC04: Colour	MW6 - 05-SEP-2012 11:10	Clear

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1222156**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK GROUNDWATER 6 MONTHLY	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4668		
C-O-C number	: ----	Date Samples Received	: 14-SEP-2012
Sampler	: ----	Issue Date	: 21-SEP-2012
Site	: ----		
		No. of samples received	: 3
Quote number	: BN/759/11 Blanket	No. of samples analysed	: 3

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

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Signatories

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Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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- **AC02: Sampling data supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **EA015: TDS for sample ID 'MW3' has been confirmed by reanalysis.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MW3	MW4B	MW5	----	----
				Client sampling date / time: 13-SEP-2012 15:00	13-SEP-2012 15:00	13-SEP-2012 15:00	----	----
				ES1222156-001	ES1222156-002	ES1222156-003	----	----
AC01: Bore Data								
Standing Water Level	----	0.01	m	15.3	10.6	8.41	----	----
Stick up	----	0.01	m	0.95	0.70	1.15	----	----
AC02: Sampling Data								
Purge Type	----	-	-	Bail	Bail	Bail	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	185	970	2030	----	----
pH	----	0.01	pH Unit	6.89	7.70	7.43	----	----
Temperature	----	0.1	°C	20.9	19.5	19.9	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.13	7.92	7.68	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	155	1020	2370	----	----
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	10	mg/L	158	648	1540	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	0.02	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.78	1.34	0.55	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.78	1.34	0.57	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.4	16.4	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.7	17.0	----	----
EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	MW3 - 13-SEP-2012 15:00	Clear
AC04: Appearance	MW4B - 13-SEP-2012 15:00	Clear
AC04: Appearance	MW5 - 13-SEP-2012 15:00	Clear
AC04: Odour	MW3 - 13-SEP-2012 15:00	Nil
AC04: Odour	MW4B - 13-SEP-2012 15:00	Nil
AC04: Odour	MW5 - 13-SEP-2012 15:00	Nil
AC04: Colour	MW3 - 13-SEP-2012 15:00	Clear
AC04: Colour	MW4B - 13-SEP-2012 15:00	Clear
AC04: Colour	MW5 - 13-SEP-2012 15:00	Clear

Appendix 7 – Surface Water Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1220855**	Page	: 1 of 7
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: A WRIGHT	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: awright@whitehavencoal.com.au	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK SURFACE- WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4611		
C-O-C number	: ----	Date Samples Received	: 28-AUG-2012
Sampler	: ----	Issue Date	: 04-SEP-2012
Site	: ----		
		No. of samples received	: 14
Quote number	: BN/759/11 Blanket	No. of samples analysed	: 14

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **AC03: Field tests supplied by ALS ACIRL. NATA Accreditation No.15784.**
- **AC04: Field observations supplied by ALS ACIRL.**
- **EK071G: It has been noted that Reactive Phophorus is greater than Total Phosphorus for sample ID 'QCD', however this difference is within the limits of experimental variation.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB2	SB6	SB9	SB10	SD4
				Client sampling date / time: 27-AUG-2012 12:40	27-AUG-2012 12:15	27-AUG-2012 11:50	27-AUG-2012 11:30	27-AUG-2012 13:20
				ES1220855-001	ES1220855-002	ES1220855-003	ES1220855-004	ES1220855-005
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	523	483	304	289	271
pH	----	0.01	pH Unit	9.19	7.93	8.89	8.77	8.88
Temperature	----	0.1	°C	16.7	20.6	16.3	17.9	17.4
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.75	7.52	8.36	8.02	8.51
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	553	502	323	300	284
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	9	38	7	42	8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.33	0.16	0.01	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	14.9	2.99	0.38	0.09
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	15.2	3.15	0.39	0.11
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	3.1	2.2	1.2	0.8
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.6	18.3	5.4	1.6	0.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.06	0.18	0.16	0.10	0.77
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	0.03	<0.01	0.06	0.43
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SD5	VWD1	VWD2	BGD	QCD
				Client sampling date / time: 27-AUG-2012 13:10	27-AUG-2012 12:30	27-AUG-2012 12:00	27-AUG-2012 10:25	27-AUG-2012 10:50
				ES1220855-006	ES1220855-007	ES1220855-008	ES1220855-009	ES1220855-010
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	334	858	882	352	805
pH	----	0.01	pH Unit	9.18	9.21	8.67	8.62	8.17
Temperature	----	0.1	°C	18.3	15.4	15.8	15.1	14.2
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.59	8.72	8.38	8.08	8.11
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	350	918	939	364	857
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	16	11	9	150	30
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.10	0.58	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.11	0.58	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	0.6	0.4	1.8	0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	0.7	1.0	1.8	0.1
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.26	<0.01	0.15	0.67	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.16	<0.01	<0.01	0.20	0.03
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: WCD Client sampling date / time: 27-AUG-2012 10:00 ES1220855-012	Client sample ID: 200MLD-NORTH Client sampling date / time: 27-AUG-2012 12:50 ES1220855-013	Client sample ID: 200MLD-SOUTH Client sampling date / time: 27-AUG-2012 13:00 ES1220855-014	Client sample ID: QCU Client sampling date / time: 27-AUG-2012 10:35 ES1220855-015	Client sample ID: ---- Client sampling date / time: ---- ----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**1200**	**824**	**872**	**441**	----
pH	----	0.01	pH Unit	**8.69**	**8.87**	**8.91**	**8.29**	----
Temperature	----	0.1	°C	**12.5**	**17.9**	**18.2**	**12.7**	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.47**	**8.48**	**8.52**	**7.99**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1280**	**888**	**942**	**472**	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	**37**	**14**	**67**	**56**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	**0.06**	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.03**	**3.50**	**0.03**	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.03**	**3.56**	**0.03**	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	**0.6**	**0.7**	**0.9**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.8**	**4.2**	**0.7**	**0.9**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	**0.05**	**0.08**	**0.16**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB2 - 27-AUG-2012 12:40	Clear
AC04: Appearance	SB6 - 27-AUG-2012 12:15	Clear
AC04: Appearance	SB9 - 27-AUG-2012 11:50	Clear
AC04: Appearance	SB10 - 27-AUG-2012 11:30	Clear
AC04: Appearance	SD5 - 27-AUG-2012 13:10	Clear
AC04: Appearance	VWD1 - 27-AUG-2012 12:30	Clear
AC04: Appearance	VWD2 - 27-AUG-2012 12:00	Clear
AC04: Appearance	BGD - 27-AUG-2012 10:25	Turbid
AC04: Appearance	QCD - 27-AUG-2012 10:50	Clear
AC04: Appearance	WCD - 27-AUG-2012 10:00	Clear
AC04: Appearance	200MLD-NORTH - 27-AUG-2012 12:50	Clear
AC04: Appearance	200MLD-SOUTH - 27-AUG-2012 13:00	Clear
AC04: Appearance	QCU - 27-AUG-2012 10:35	Clear
AC04: Odour	SB2 - 27-AUG-2012 12:40	Nil
AC04: Odour	SB6 - 27-AUG-2012 12:15	Nil
AC04: Odour	SB9 - 27-AUG-2012 11:50	Nil
AC04: Odour	SB10 - 27-AUG-2012 11:30	Nil
AC04: Odour	SD5 - 27-AUG-2012 13:10	Nil
AC04: Odour	VWD1 - 27-AUG-2012 12:30	Nil
AC04: Odour	VWD2 - 27-AUG-2012 12:00	Nil
AC04: Odour	BGD - 27-AUG-2012 10:25	Nil
AC04: Odour	QCD - 27-AUG-2012 10:50	Nil
AC04: Odour	WCD - 27-AUG-2012 10:00	Nil
AC04: Odour	200MLD-NORTH - 27-AUG-2012 12:50	Nil
AC04: Odour	200MLD-SOUTH - 27-AUG-2012 13:00	Nil
AC04: Odour	QCU - 27-AUG-2012 10:35	Nil
AC04: Colour	SB2 - 27-AUG-2012 12:40	Clear
AC04: Colour	SB6 - 27-AUG-2012 12:15	Light Brown
AC04: Colour	SB9 - 27-AUG-2012 11:50	Clear
AC04: Colour	SB10 - 27-AUG-2012 11:30	Slight Brown
AC04: Colour	SD5 - 27-AUG-2012 13:10	Clear
AC04: Colour	VWD1 - 27-AUG-2012 12:30	Clear
AC04: Colour	VWD2 - 27-AUG-2012 12:00	Clear
AC04: Colour	BGD - 27-AUG-2012 10:25	Light Brown
AC04: Colour	QCD - 27-AUG-2012 10:50	Clear
AC04: Colour	WCD - 27-AUG-2012 10:00	Clear
AC04: Colour	200MLD-NORTH - 27-AUG-2012 12:50	Clear
AC04: Colour	200MLD-SOUTH - 27-AUG-2012 13:00	Clear
AC04: Colour	QCU - 27-AUG-2012 10:35	Clear

Sub-Matrix: **WATER**

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

Appendix 8 – Discharge Monitoring Results

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1219352**	Page	: 1 of 4
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS LESLEY MOORE	Contact	: Client Services
Address	: 5-7 TALBOT RD GUNNEDAH NSW 2380	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: lesley.moore@alsglobal.com	E-mail	: sydney@alsglobal.com
Telephone	: 02 6742 0058	Telephone	: +61-2-8784 8555
Facsimile	: 02 6742 0068	Facsimile	: +61-2-8784 8500
Project	: WERRIS CREEK DISCHARGE SAMPLES	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 4507		
C-O-C number	: ----	Date Samples Received	: 08-AUG-2012
Sampler	: ----	Issue Date	: 13-AUG-2012
Site	: ----		
		No. of samples received	: 3
Quote number	: ----	No. of samples analysed	: 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: SB9	QCD	QCU	----	----
				Client sampling date / time: 06-AUG-2012 09:00	06-AUG-2012 10:00	06-AUG-2012 09:30	----	----
				ES1219352-001	ES1219352-002	ES1219352-003	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	320	830	457	----	----
pH	----	0.01	pH Unit	8.76	8.17	8.00	----	----
Temperature	----	0.1	°C	12.7	11.2	10.8	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.97	8.02	7.52	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	732	829	528	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	33	8	95	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	0.20	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	3.96	0.11	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.16	0.11	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	0.1	0.3	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.8	0.2	0.3	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.09	0.05	0.01	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.01	0.04	<0.01	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **WATER**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
AC04: Field Observations		
AC04: Appearance	SB9 - 06-AUG-2012 09:00	Clear
AC04: Appearance	QCD - 06-AUG-2012 10:00	Clear
AC04: Appearance	QCU - 06-AUG-2012 09:30	Clear
AC04: Odour	SB9 - 06-AUG-2012 09:00	Nil
AC04: Odour	QCD - 06-AUG-2012 10:00	Nil
AC04: Odour	QCU - 06-AUG-2012 09:30	Nil
AC04: Colour	SB9 - 06-AUG-2012 09:00	Clear
AC04: Colour	QCD - 06-AUG-2012 10:00	Clear
AC04: Colour	QCU - 06-AUG-2012 09:30	Clear

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1223084**	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	: 4773		
C-O-C number	: ----	Date Samples Received	: 26-SEP-2012
Sampler	: BP	Issue Date	: 03-OCT-2012
Site	: ----		
		No. of samples received	: 3
Quote number	: ----	No. of samples analysed	: 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Kim Phan	Sample Receipt Clerk	ACIRL Sampling
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

General Comments

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

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

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Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

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

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QCD	QCU	SB9	----	----
				Client sampling date / time: 25-SEP-2012 10:30	25-SEP-2012 10:00	25-SEP-2012 08:30	----	----
				ES1223084-001	ES1223084-002	ES1223084-003	----	----
AC03: Field Tests								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	829	456	----	----	----
pH	----	0.01	pH Unit	8.27	8.39	----	----	----
Temperature	----	0.1	°C	17.0	16.1	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.13	7.87	8.49	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	884	486	353	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	13	22	<5	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	0.17	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.02	0.03	1.26	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.03	1.43	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.4	1.5	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.2	0.4	2.9	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.10	0.10	0.05	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	----	0.01	mg/L	0.06	0.01	<0.01	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----