



**WHITEHAVEN COMMUNITY CONSULTATIVE COMMITTEE
ENVIRONMENTAL MONITORING REPORT
SEPTEMBER 2009 – SEPTEMBER 2010**

NOISE MONITORING:

Noise monitoring continues to occur with regard to road traffic noise, the last operational noise monitoring event occurred in November 2009. Results for each of the noise monitoring events undertaken since the previous CCC meeting are provided below.

Road Haulage Noise Monitoring:- 8th September 2009

Road noise monitoring was undertaken from the two “Brooklyn” residences between 11:05am and 12:05pm. The total measured noise contribution from mine related vehicles was 57dB(A)_{,Leq(1 hour)} from Brooklyn residence one (90m from Blue Vale Road) and 41 dB(A)_{,Leq(1 hour)} from Brooklyn residence two (480m from Blue Vale Road). The results are well within the daytime compliance criteria limit of 60dB(A)_{,Leq(1 hour)}.

Road noise monitoring was also conducted at the “Werona” residence between 9:00am and 10:00am on the 8th September 2009. The total measured noise contribution from mine related vehicles at the residence was 46dB(A)_{,Leq(1 hour)} which is well within the compliance criteria limit of 60dB(A)_{,Leq(1 hour)}.

Operational Noise Monitoring – 26th November 2009

WCM Noise Monitoring Results – 26 November 2009 (Day)

Location	Time	dB(A),L eq	Wind speed/ direction	Identified Noise Sources dB(A),Leq (15 min)
Merton	13:45	36	2-3m/s, NW	Birds & Insects (33), CCM (30), Wind (30)
Gundawarra	14:04	37	2-3m/s, NW	Birds & Insects (37), wind (32), CCM inaudible
Will-gai	14:25	40	2-3m/s, NW	Birds & insects (40), CCM (28)
Broadwater	13:10	40	2-3m/s, NW	Insects (40), CCM inaudible

WCM Noise Monitoring Results – 26 November 2009 (Evening)

Location	Time	dB(A),L eq	Wind speed/ direction	Identified Noise Sources dB(A),Leq (15 min)
Merton	21:10	48	>3m/s, W	Birds & Insects (45), Wind (45), CCM inaudible
Gundawarra	21:28	48	>3m/s, W	wind (48), CCM inaudible
Will-gai	21:45	45	>3m/s, W	Birds & insects (44), wind (40), CCM inaudible
Broadwater	20:45	45	>3m/s, W	wind (45), CCM inaudible

WCM Noise Monitoring Results – 26 November 2009 (Night)

Location	Time	dB(A),L _{eq}	Wind speed/ direction	Identified Noise Sources dB(A),Leq (15 min)
Merton	22:35	36	<0.5m/s W	Insects (36), CCM inaudible
Gundawarra	22:53	42	<0.5m/s W	Frogs (38), CCM inaudible
Will-gai	23:15	34	<0.5m/s W	insects & frogs (34), CCM inaudible
Broadwater	22:10	38	<0.5m/s W	Insects (38), CCM inaudible

The results indicate that Canyon Coal Mine did not exceed the noise criterion of 35 dB(A)_{Leq(15 min)} during any of the three surveys. This was the last round of operational noise monitoring required due to the cessation of mining in July 2009.

Road Haulage Noise Monitoring:- 8th December 2009

Road noise monitoring was undertaken from the two “Brooklyn” residences between 9:46am and 10:15am. The total measured noise contribution from mine related vehicles was 52dB(A)_{,Leq(1 hour)} from Brooklyn residence one (90m from Blue Vale Road) and 38.8 dB(A)_{,Leq(1 hour)} from Brooklyn residence two (480m from Blue Vale Road). The results are well within the daytime compliance criteria limit of 60dB(A)_{Leq(1 hour)}.

Road noise monitoring was also conducted at the “Werona” residence between 9:31am and 10:29am on the 8th December 2009. The total measured noise contribution from mine related vehicles at the residence was 49.5dB(A)_{,Leq(1 hour)} which is well within the compliance criteria limit of 60dB(A)_{,Leq(1 hour)}.

Road Haulage Noise Monitoring:- 31st March 2010

Road noise monitoring was undertaken from the two “Brooklyn” residences between 3:39pm and 4:38pm. The total measured noise contribution from mine related vehicles was 53dB(A)_{,Leq(1 hour)} from Brooklyn residence one (90m from Blue Vale Road) and 41 dB(A)_{,Leq(1 hour)} from Brooklyn residence two (480m from Blue Vale Road). The results are well within the daytime compliance criteria limit of 60dB(A)_{Leq(1 hour)}.

Road noise monitoring was also conducted at the “Werona” residence between 2:18pm and 3:15pm on the 31st March 2010. The total measured noise contribution from mine related vehicles at the residence was 48dB(A)_{,Leq(1 hour)} which is well within the compliance criteria limit of 60dB(A)_{,Leq(1 hour)}.

Road Haulage Noise Monitoring:- 22nd June 2010

Road noise monitoring was undertaken from the two “Brooklyn” residences between 10:32am and 11:32am. The total measured noise contribution from mine related vehicles was 49dB(A)_{,Leq(1 hour)} from Brooklyn residence one (90m from Blue Vale Road) and 45 dB(A)_{,Leq(1 hour)} from Brooklyn residence two (480m from Blue Vale Road). The results are well within the daytime compliance criteria limit of 60dB(A)_{Leq(1 hour)}.

Road noise monitoring was also conducted at the “Werona” residence between 2:18pm and 3:15pm on the 22nd June 2010. The total measured noise contribution from mine related vehicles at the residence was 49dB(A)_{,Leq(1 hour)} which is well within the compliance criteria limit of 60dB(A)_{,Leq(1 hour)}.

Despite the cessation of operational noise monitoring, road traffic noise monitoring will continue to be maintained with the next round of monitoring programmed for September 2010.

BLAST MONITORING

Over the last 12 months there have been no blasts at the Canyon mine.

AIR QUALITY MONITORING

Deposited Dust monitoring has continued across all sites. The results of the monitoring since the last meeting are presented below:

MONTH	D1 Whitehaven	D2 Merton House	D5 Wilga	D7 Wilgai	D8 Gundawarra	D10 Merton	D11 Merton	D12 Whitehaven	D13B Wilga
Sep 09	13.8	15.1	14.6	14.1	14.9	12.6	15.7	10.5	13.9
Oct 09	4.3	4.7	4.4	3.1	4.6	3.1	3.1	3.0	4.6
Nov 09	1.5	1.7	2.0	3.2	8.5	3.2	2.2	1.8	1.3
Dec 09	1.3	0.6	1.5	0.7	1.5	1.6	1.5	1.2	too wet
Jan 10	2.5	2.9	0.7	3.0	1.4	1.6	1.6	1.2	1.1
Feb 10	1.2	2.0	0.4	1.5	7.3	1.7	6.5	0.9	too wet
Mar 10	0.7	0.6	1.7	8.2	2.8	1.3	3.3	2.5	6.3
Apr 10	0.4	0.5	0.7	0.8	1.4	1.5	2.9	1	2.7
May 10	0.5	0.3	0.4	0.5	1.1	0.8	0.8	1	too wet
Jun 10	0.2	0.7	0.4	0.9	0.6	0.8	0.8	4.7	0.5
Jul 10	0.1	0.4	0.5	0.6	0.4	0.2	0.2	0.2	too wet
Aug 10	0.3	2	0.3	0.3	0.6	0.5	0.9	0.5	1
Average	2.2	2.6	2.3	3	3.8	2.4	3.3	2.4	3.9

Generally, the results indicate a low level of deposited dust at most receivers.

Since the last meeting, the annual average has increased (between 0.7 – 2.3 g/m²/month) at each site except for at D7 Wilgai & D11 Merton. This is based on the elevated results in September 2009 associated with regional dust storms at the time increasing the overall average at each receiver. Despite this D7 Wilgai decreased by 1.8 g/m²/month and D11 Merton decreased by 0.3 g/m²/month. This is due to the exclusion of the elevated results received for November 2008 (D7 Wilgai), October 2008 and February 2009 (D11 Merton) that were contaminated with insects and vegetation.

All sites remain within the annual average limit of 4g/m²/month.

SURFACE WATER MONITORING

Since the last meeting there have been seven surface water discharge events from the Canyon site, with analysis of results presented below. Discharge points WW9 and WW8 are subject to limits provided in the Canyon Environmental Protection License (EPL 10094). Upstream and downstream samples are also taken during each discharge event for the purpose of Whitehaven to compare water quality before and after it travels through the site.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	29/12/2009	6.96	61	114	Issues with Lab
WW12 (downstream Driggle Draggie Ck)	29/12/2009	6.94	168	21	Issues with Lab
WW9 (SD3)	29/12/2009	6.86	56	40	Issues with Lab

Discharge occurred after 95.2mm of rain over four consecutive days leading up to the event. The results indicate no exceedance of EPL criteria. The downstream sample shows a slight increase in EC but drop in TSS as compared to upstream. Grease & oil was unable to be measured due to insufficient volumes of water sent to the Lab.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	4/1/2010	7.37	98	14	<5
WW12 (downstream Driggle Draggie Ck)	4/1/2010	7.48	154	8	<5
WW9 (SD3)	4/1/2010	7.33	537	16	<5

Discharge occurred after 54mm of rain over three consecutive days leading to the event. The results indicate no exceedance of EPL criteria. The downstream sample remains relatively consist apart from a slight increase in EC as compared to upstream.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	15/1/2010	6.77	76	69	<5
WW12 (downstream Driggle Draggie Ck)	15/1/2010	6.5	132	72	<5
WW9 (SD3)	15/1/2010	6.82	204	38	<5

Discharge occurred after 31.4mm of rain on the previous day. The results indicate no exceedance of EPL criteria. Upstream and downstream samples remained relatively consistent apart from a slight increase in EC downstream.

Discharge from WW9 & WW8:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	15/2/2010	6.39	71	33	<5
WW12 (downstream Driggle Draggie Ck)	15/2/2010	6.4	80	41	<5
WW9 (SD3)	15/2/2010	6.26	267	114	<5
WW8 (SD2)	15/2/2010	6.4	102	80	7

Discharge occurred after 47mm of rain over the previous two days. The results indicate an exceedance of EPL limits for pH (6.5 - 9.0) and TSS (50 mg/l) at points WW9 and WW8. Despite this, downstream results indicate that the discharge had no impact on

the surrounding environment with the water being the same quality as the upstream sample.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	10/8/2010	7.29	66	54	<5
WW12 (downstream Driggle Draggie Ck)	10/8/2010	7.32	84	80	<5
WW9 (SD3)	10/8/2010	7.4	125	29	<5

Discharge occurred after 28.6mm of rain on the day. The results indicate no exceedance of the EPL criteria. Upstream and downstream monitoring points remained relatively consistent apart from an increase in TSS downstream that is likely due to increased runoff caused by the intensity of the rainfall.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	20/8/2010	8.14	106	22	18
WW12 (downstream Driggle Draggie Ck)	20/8/2010	8.25	178	25	20
WW9 (SD3)	20/8/2010	8.04	155	7	19

SAMPLE POINT	DATE	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	2/9/2010	<5
WW12 (downstream Driggle Draggie Ck)	2/9/2010	<5
WW9 (SD3)	2/9/2010	<5

Discharge occurred after 21mm of rain over the previous week. The results indicate an exceedance of the grease/oil limit (10mg/l) at point WW9. The grease/oil was also elevated at both the upstream and downstream sample points. After receiving the results re-sampling was undertaken at each monitoring point on the 2/9/2010. The results from the re-sample indicate no exceedance of the grease/oil limit with all points remaining below 5 mg/l. This suggests that the sample taken on the 20/8/2010 was either contaminated whilst sampling i.e. diesel on hands, or error occurred whilst conducting measurements in the lab.

Discharge from WW9:

SAMPLE POINT	DATE	pH	EC mg/l	TSS mg/l	GREASE/OIL mg/l
WW11 (upstream Driggle Draggie Ck)	10/9/2010	6.88	81	115	<5
WW12 (downstream Driggle Draggie Ck)	10/9/2010	7	104	40	<5
WW9 (SD3)	10/9/2010	6.94	140	54	<5

Discharge occurred after 31.4mm of rain over the previous eight days. The results indicate an exceedance of the EPL limit for TSS (50mg/l) at point WW9. This is most likely caused by elevated sediment levels in the water upstream. The results suggest that the sediment is settling on site before moving downstream and therefore having no impact on the surrounding environment. This is evident with the downstream TSS level dropping to 40 mg/l as compared to 54 mg/l at WW9 and 115 mg/l upstream at WW11.

It should be noted that at the time of each discharge, storage capacities could not be reduced via the use of water for dust suppression due to the cessation of mining in July 2009.

GROUNDWATER MONITORING

Groundwater monitoring continues across the range of monitoring locations. Groundwater standing water levels are presented below.

SAMPLE POINT	DATE	SWL
GW-2 - Bungalow	7-Nov-06	19.35
	7-Feb-07	19.26
	4-May-07	19.26
	3-Jul-07	
	15-Aug-07	19.27
	10-Oct-07	19.16
	15-Jan-08	19.29
	8-Apr-08	18.65
	9-Jul-08	18.76
	31-Oct-08	18.82
	12-Jan-09	18.85
	17-Jun-09	19.22
	28-Aug-09	19.87
	8-Dec-09	20.29
	4-May-10	19.03
	16-Aug-10	19.31
GW-4 - Merton	7-Nov-06	15.92
	7-Feb-07	20.20
	4-May-07	21.24
	3-Jul-07	
	15-Aug-07	21.20
	10-Oct-07	21.14
	15-Jan-08	21.00
	8-Apr-08	21.58
	10-Jul-08	20.98
	31-Oct-08	20.96
	12-Jan-09	20.94
	18-Jun-09	Unable to sample
	28-Aug-09	21.33
	23-Dec-09	21.32
	4-May-10	Pump over bore hole
	16-Aug-10	21.12
GW-5 - Merton	7-Nov-06	21.40
	7-Feb-07	24.29
	4-May-07	24.33
	3-Jul-07	
	15-Aug-07	24.37
	10-Oct-07	24.26
	15-Jan-08	24.33
	8-Apr-08	24.38
	9-Jul-08	24.36
	31-Oct-08	24.32
	12-Jan-09	No sample-Property Owner instruction
	18-Jun-09	24.12
28-Aug-09	24.64	
23-Dec-09	24.13	

	4-May-10	Plate cabled over bore
	16-Aug-10	24.14
GW-7 - Womboola	7-Nov-06	25.82
	7-Feb-07	25.55
	4-May-07	25.66
	3-Jul-07	
	15-Aug-07	25.68
	10-Oct-07	25.58
	15-Jan-08	25.79
	8-Apr-08	25.78
	9-Jul-08	25.79
	31-Oct-08	25.78
	13-Jan-09	25.75
	18-Jun-09	26.48
	28-Aug-09	26.81
	8-Dec-09	26.74
	4-May-10	26.94
	16-Aug-10	27.13
GW-8 - Wilga	7-Nov-06	22.24
	7-Feb-07	21.93
	4-May-07	21.88
	3-Jul-07	
	15-Aug-07	22.10
	10-Oct-07	22.16
	15-Jan-08	22.45
	8-Apr-08	22.67
	10-Jul-08	22.89
	30-Oct-08	23.10
	13-Jan-09	23.15
	18-Jun-09	23.31
	28-Aug-09	23.89
	8-Dec-09	23.30
	4-May-10	23.27
	16-Aug-10	23.15
GW-9 - Whitehaven	16-Nov-05	20.75
	27-Feb-06	20.70
	25-May-06	20.71
	2-Aug-06	20.62
	7-Nov-06	19.71
	7-Feb-07	19.69
	4-May-07	19.73
	3-Jul-07	
	15-Aug-07	19.77
	10-Oct-07	19.73
	15-Jan-08	19.66
	8-Apr-08	19.66
	10-Jul-08	19.68
	31-Oct-08	19.67
	13-Jan-09	19.56
	18-Jun-09	19.65
	28-Aug-09	20.39

	8-Dec-09	19.62
	4-May-10	19.80
	16-Aug-10	19.52
VNW221	7-Nov-06	11.59
	7-Feb-07	11.67
	4-May-07	12.82
	3-Jul-07	
	15-Aug-07	12.96
	10-Oct-07	12.40
	15-Jan-08	14.15
	8-Apr-08	14.25
	10-Jul-08	18.43
	30-Oct-08	21.29
	13-Jan-09	22.00
	28-Aug-09	Dry
	8-Dec-09	Dry
	4-May-10	Dry
	16-Aug-10	Dry
VNW223	7-Nov-06	19.20
	7-Feb-07	18.59
	4-May-07	18.10
	3-Jul-07	
	15-Aug-07	19.53
	10-Oct-07	19.66
	15-Jan-08	20.16
	8-Apr-08	20.64
	10-Jul-08	22.76
	30-Oct-08	24.91
	13-Jan-09	24.53
	28-Aug-09	28.16
	8-Dec-09	26.35
	4-May-10	25.05
	16-Aug-10	23.15

The above SWL results indicate minor variability in terms of the water levels in the specified monitoring bores.

VNW-221 remains dry, whilst VNW-223 has started to recharge with the water level increasing by 5 meters since August 2009. Monitoring will continue at these locations to determine extent of recharge in these piezometers which are in close proximity to the final void.

REHABILITATION

Rehabilitation across the site continues to progress with the following activities occurring over the period:

- Enrichment planting of existing rehabilitation areas with 3000 understory tube stock. The tube stock consisted predominantly of shrub species native to the area such as Hop Bush and Golden Wattle. The enrichment planting will ensure that those areas designated as Native Vegetation Zones will provide greater biodiversity in future years.
- Continued planting of 4200 tube stock incorporating a mix of tree and understory species. The planting occurred over June 2010 using a contracted tree planting machine. Areas targeted were Native Vegetation Zones within the south-east corner of the site.
- Re-shaped and seeded steep area on south eastern side of void previously left due to difficulty of access. The work was incorporated with a re-designed wall at the first dam running into the void. The new wall was built with a rock lined spillway and turfed with kikuyu grass to further stabilise the area. The work has proven effective with no collapses since the completion of the new wall despite frequent rainfall events over the period.
- Installed mounds over an area of 35.9 ha within the final void. The mounds are an alternative to rip-lines and will be incorporated into future tree planting campaigns. They also provide further stability within the void slope acting as smaller intermediate contours between larger contours.
- Re-seeded 35.9 ha area within the final void with a summer pasture mix to provide further stability on void slopes. This is particularly important in the prevention of erosion of slopes during summer storms.
- Removal of old fuel bay, crib and office facilities. Also spread and seeded topsoil below crib area and created a small waterway to slowly drain away runoff into storage dams to the east. Hydrocarbon testing was undertaken in the fuel bay area with elevated results at two points on the northern and eastern side of the bay. The areas have been excavated using backhoe with the contaminated soil set aside and banded. Treatment of the soil will begin shortly in conform to the requirements of the Contaminated Land Management Act. Reshaping and restoration activity in the fuel bay area will only proceed once soil sampling confirms contamination levels within the required threshold limits (as set in NSW EPA Guidelines for Assessing Service Station Sites).
- Removal of Coal Loader, ROM pad and ROM facilities. This area consisting of 7.5 ha was reshaped, stabilized with contours and waterways for drainage, top-soiled and seeded with a summer pasture mix. The waterway spills into a further rehabilitated area to the south of the pad that is designed to slowly drain runoff into the final void. This area has also been top-soiled and seeded with a summer pasture mix for prevention of erosion.
- Reject emplacement area to the south filled, reshaped, top-soiled and seeded with summer pasture mix.

Rehabilitation activities will continue into 2011 with all progress displayed in the next CCC report.