



Attachment 4.1H - Environmental Monitoring Worksheet

Period: 16/11/17 - 30/11/17

Location	Test	Freq	Limit		Units	Sample Date	NSW Environment Protection Licence Requirement	Date Sample Transferred to Laboratory	Date Sample Results Received by Holcim	Date of Remote Data Download	Result	Comments
			min	max								

Site: Albion Park Quarry NRR = No Result Recorded

Environment Protection Licence No.	122
Site Name (As it appears on the licence)	Albion Park Quarry
Site Address (As it appears on the licence)	Albion Park Quarry Woollybutt Drive ALBION PARK RAIL NSW 2527
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=31018ASYSUID=1&LICID=122

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 1	pH	After 90mm rain	6.5	8.5	pH	11/9/17	Y	11/9/17	21/11/2017	7.8	
	Oil and Grease	After 90mm rain	0	0	Visible		Y			NRR	
	TSS	After 90mm rain	0	50	mg/L	11/9/17	Y	11/9/17	21/11/2017	12	
Point 2	pH	After 90mm rain	6.5	8.5	pH		Y			NRR	
	Oil and Grease	After 90mm rain	0	0	Visible		Y			NRR	
	TSS	After 90mm rain	0	50	mg/L		Y			NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 1	pH	After 90mm rain	6.5	8.5	pH		Y			NRR	
	Oil and Grease	After 90mm rain	0	0	Visible		Y			NRR	
	TSS	After 90mm rain	0	50	mg/L		Y			NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 1	pH	After 90mm rain	6.5	8.5	pH		Y			NRR	
	Oil and Grease	After 90mm rain	0	0	Visible		Y			NRR	
	TSS	After 90mm rain	0	50	mg/L		Y			NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 2	pH	After 90mm rain	6.5	8.5	pH		Y			NRR	
	Oil and Grease	After 90mm rain	0	0	Visible		Y			NRR	
	TSS	After 90mm rain	0	50	mg/L		Y			NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 3	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 4	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 5	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 6	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	
	Ash	Monthly		90		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 1	Per Blast		5	mm/s	20/11/2017	Y	20/11/2017	20/11/2017		1.34	
	Per Blast		115	dB	20/11/2017	Y	20/11/2017	20/11/2017		99.4	
	Per Blast		5	mm/s		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 2	Per Blast		115	dB		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 3	Per Blast		115	dB		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 4	Per Blast		115	dB		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 5	Per Blast		115	dB		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	
	Per Blast		5	mm/s		Y				NRR	

Site: "Johnniefields" Marulan Quarry											
Environment Protection Licence No.											1371
Site Name (As it appears on the licence)											Marulan Quarry
Site Address (As it appears on the licence)											Marulan Quarry Brayton Road MARULAN NSW 2579
Link to Licence on EPA Website											http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29660ASYSUID=1&LICID=1371

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
Point 1	Underdowns	Overpressure	Per Blast	115	dB		Y			NRR	
	Underdowns	Vibration	Per Blast	5	mm/s		Y			NRR	
	Underdowns	Overpressure	Per Blast	115	dB		Y			NRR	

Site: Lynwood Quarry											
Environment Protection Licence No.											12939
Site Name (As it appears on the licence)											Lynwood Quarry
Site Address (As it appears on the licence)											Lynwood Quarry 278 Stoney Creek Road, MARULAN NSW 2579
Link to Licence on EPA Website											http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29660ASYSUID=1&LICID=12939

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
DD 5	Insoluble Solids	Monthly	0	4	mg/m ² /month	0/1/00	Y	0/1/00	0/1/00	NRR	
	Insoluble Solids	Monthly	0	4	mg/m ² /month	0/1/00	Y	0/1/00	0/1/00	NRR	
	Insoluble Solids	Monthly	0	4	mg/m ² /month	0/1/00	Y	0/1/00	0/1/00	NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
DD 13	Insoluble Solids	Monthly	0	4	mg/m ² /month	12:00:00 AM	Y	0/1/00	0/1/00	NRR	
	Insoluble Solids	Monthly	0	4	mg/m ² /month	12:00:00 AM	Y	0/1/00	0/1/00	NRR	
	Insoluble Solids	Monthly	0	4	mg/m ² /month	12:00:00 AM	Y	0/1/00	0/1/00	NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
HWAS 1	PM10	24hr (every 6 days)	0	50	µg/m ³	20/11/17	Y	27/11/17	29/11/17	5.90	
	PM10	24hr (every 6 days)	0	50	µg/m ³	12:00:00 AM	Y	12:00:00 AM	12:00:00 AM	NRR	
	PM10	24hr (every 6 days)	0	50	µg/m ³	12:00:00 AM	Y	12:00:00 AM	12:00:00 AM	NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
HWAS 2	PM10	24hr (every 6 days)	0	50	µg/m ³	20/11/17	Y	27/11/17	29/11/17	8.49	
	PM10	24hr (every 6 days)	0	50	µg/m ³	12:00:00 AM	Y	12:00:00 AM	12:00:00 AM	NRR	
	PM10	24hr (every 6 days)	0	50	µg/m ³	12:00:00 AM	Y	12:00:00 AM	12:00:00 AM	NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec	16/11/2017	Y	2:13 PM		6.00	
	Peak Particle Velocity	Per Blast	0	100	mm/sec	16/11/2017	Y	2:13 PM		2.84	
	Peak Particle Velocity	Per Blast	0	5	mm/sec	16/11/2017	Y	2:13 PM		6.00	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec	23/11/2017	Y	1:34 PM		6.83	
	Peak Particle Velocity	Per Blast	0	5	mm/sec	23/11/2017	Y	1:34 PM		6.00	
	Peak Particle Velocity	Per Blast	0	115	dB	23/11/2017	Y	1:34 PM		6.00	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B3 - Resident	Peak Particle Velocity	Per Blast	0	25	mm/sec	29/11/2017	Y	1:41 PM		6.00	
	Peak Particle Velocity	Per Blast	0	100	mm/sec	29/11/2017	Y	1:41 PM		6.87	
	Peak Particle Velocity	Per Blast	0	5	mm/sec	29/11/2017	Y	1:41 PM		6.00	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B4 - Resident	Peak Particle Velocity	Per Blast	0	115	dB	29/11/2017	Y	1:41 PM		6.00	
	Peak Particle Velocity	Per Blast	0	25	mm/sec	0/1/00	Y	12:00 AM		NRR	
	Peak Particle Velocity	Per Blast	0	100	mm/sec	0/1/00	Y	12:00 AM		NRR	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B5 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	0/1/00	Y	12:00 AM		NRR	
	Peak Particle Velocity	Per Blast	0	100	mm/sec	0/1/00	Y	12:00 AM		NRR	
	Peak Particle Velocity	Per Blast	0	115	dB	21/11/2017	Y	1:28 PM		6.00	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B6 - Resident	Peak Particle Velocity	Per Blast	0	25	mm/sec	21/11/2017	Y	1:28 PM		6.00	
	Peak Particle Velocity	Per Blast	0	100	mm/sec	21/11/2017	Y	1:28 PM		6.00	
	Peak Particle Velocity	Per Blast	0	5	mm/sec	30/11/2017	Y	1:39 PM		6.00	

Point	Test	After Rain	Limit	Units	Sample Date	Requirement	Transferred	Received	Download	Result	Comments
B7 - Resident	Peak Particle Velocity	Per Blast	0	115	dB	30/11/2017	Y	1:39 PM		6.00	
	Peak Particle Velocity	Per Blast	0	5	mm/sec	30/11/2017	Y	1:39 PM		6.00	
	Peak Particle Velocity	Per Blast	0								

Blasting		Susp. Solids	Monthly	0	50	mg/L		Y			NRR
Heffernans House	Overpressure	Per blast	0	115	dB			Y			NRR
	Vibration	Per blast	0	5	mm/s			Y			NRR
Heffernans House	Overpressure	Per blast	0	115	dB			Y			NRR
	Vibration	Per blast	0	5	mm/s			Y			NRR
Heffernans House	Overpressure	Per blast	0	115	dB			Y			NRR
	Vibration	Per blast	0	5	mm/s			Y			NRR
Heffernans House	Overpressure	Per blast	0	115	dB			Y			NRR
	Vibration	Per blast	0	5	mm/s			Y			NRR

Site: Dubbo Quarry

Environment Protection Licence No.	2212
Site Name (As it appears on the licence)	Dubbo Quarry
Site Address (As it appears on the licence)	Sheraton Road, Dubbo, NSW, 2830
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epo/epoapp/ViewPOEOLLicence.aspx?DOCID=29038&SYSUID=1&LICID=2212

Blasting		WARRENS HOUSE	Overpressure	Per blast	120	dB	Y			NRR
WARRENS HOUSE	Overpressure	Per blast	120	dB		Y				NRR
	Vibration	Per blast	10	mm/s		Y				NRR
WARRENS HOUSE	Overpressure	Per blast	120	dB		Y				NRR
	Vibration	Per blast	10	mm/s		Y				NRR
WARRENS HOUSE	Overpressure	Per blast	120	dB		Y				NRR
	Vibration	Per blast	10	mm/s		Y				NRR
WARRENS HOUSE	Overpressure	Per blast	120	dB		Y				NRR
	Vibration	Per blast	10	mm/s		Y				NRR

Site: Humes - Blacktown

Environment Protection Licence No.	1310
Site Name (As it appears on the licence)	Humes Blacktown
Site Address (As it appears on the licence)	Humes Blacktown Lot 1 Woodstock Ave ROOTY HILL NSW 2766
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epo/epoapp/ViewPOEOLLicence.aspx?DOCID=28988&SYSUID=1&LICID=1310

Water		Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH	Y			NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				7
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR
Sediment Basin	TSS	Daily During Discharge	6.5	8.5	pH		Y				NRR
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR

Site: Teven Quarry

Environment Protection Licence No.	3293
Site Name (As it appears on the licence)	Readymix Teven Quarry
Site Address (As it appears on the licence)	Stokers Lane Teven NSW 2478
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epo/epoapp/ViewPOEOLLicence.aspx?DOCID=29168&SYSUID=1&LICID=3293

Blasting		ID #1	pH	Weekly	6.5	8.5	pH	Y			NRR
ID #1	pH	Weekly	6.5	8.5	pH		Y				NRR
	pH	Weekly	6.5	8.5	pH		Y				NRR
ID #1	Oil&Grease	Yearly during discharge (August)	0	10	mg/L		Y				NRR
	TSS	Yearly during discharge (August)	0	50	mg/L		Y				NRR

Site: Boambee Quarry

Environment Protection Licence No.	7094
Site Name (As it appears on the licence)	Boambee Quarry
Site Address (As it appears on the licence)	Boambee Quarry North Boambee Road BOAMBE NSW 2450
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epo/epoapp/ViewPOEOLLicence.aspx?DOCID=31235&SYSUID=1&LICID=7094

Blasting (M4 & L2.1 - To determine compliance with L3, measurements to be taken at any point within 1 metre of residential boundary)		Overpressure	Per blast	0	120	dB	20-11-17	Y			84.8	Shot 186
Overpressure	Per blast	0	120	dB		20-11-17	Y				84.8	Shot 186
	Vibration	Per blast	0	10	mm/s		Y				NRR	Shot 186
Overpressure	Per blast	0	120	dB		Y					NRR	
	Vibration	Per blast	0	10	mm/s		Y				NRR	
Overpressure	Per blast	0	120	dB		Y					NRR	
	Vibration	Per blast	0	10	mm/s		Y				NRR	
Overpressure	Per blast	0	120	dB		Y					NRR	
	Vibration	Per blast	0	10	mm/s		Y				NRR	

Site: Tuncurry Sand

Environment Protection Licence No.	13359
Site Name (As it appears on the licence)	Tuncurry Sand Quarry
Site Address (As it appears on the licence)	Tip Road Tuncurry NSW 2428
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/epo/epoapp/ViewPOEOLLicence.aspx?DOCID=30645&SYSUID=1&LICID=13359

Water		ID#2 Surface H20 "Lake 1"	Arsenic	Quarterly	0	mg/L	Y				NRR
ID#2 Surface H20 "Lake 1"	Conductivity	Quarterly	0	µS/cm		Y					NRR
	Copper	Quarterly	0	mg/L		Y					NRR
ID#2 Surface H20 "Lake 1"	Iron	Quarterly	0	mg/L		Y					NRR
	pH	Quarterly	0	pH		Y					NRR
ID#2 Surface H20 "Lake 1"	Zinc	Quarterly	0	mg/L		Y					NRR
	Arsenic	Quarterly	0	mg/L		Y					NRR
ID#3 Surface H20 "Lake 2"	Conductivity	Quarterly	0	µS/cm		Y					NRR
	Copper	Quarterly	0	mg/L		Y					NRR
ID#3 Surface H20 "Lake 2"	Iron	Quarterly	0	mg/L		Y					NRR
	pH	Quarterly	0	pH		Y					NRR
ID#3 Surface H20 "Lake 2"	Zinc	Quarterly	0	mg/L		Y					NRR
	Arsenic	Quarterly	0	mg/L		Y					NRR
ID#4 Surface H20 "Lake 3"	Conductivity	Quarterly	0	µS/cm		Y					NRR
	Copper	Quarterly	0	mg/L		Y					NRR
ID#4 Surface H20 "Lake 3"	Iron	Quarterly	0	mg/L		Y					NRR
	pH	Quarterly	0	pH		Y					NRR
ID#4 Surface H20 "Lake 3"	Zinc	Quarterly	0	mg/L		Y					NRR
	Arsenic	Quarterly	0	mg/L		Y					NRR
ID#5 Surface H20 "Lake 4"	Conductivity	Quarterly	0	µS/cm		Y					NRR
	Copper	Quarterly	0	mg/L		Y					NRR

	Iron	Quarterly	0		mg/L		Y				NRR	
	pH	Quarterly	0		pH		Y				NRR	
	Zinc	Quarterly	0		mg/L		Y				NRR	
Air	ID #1	Deposited Matter	Monthly	0	4	g/m ² /month	21/11/2017	Y	21/11/2017	27/11/2017	6.1	Significant bush fires nearby

Site: Jandra Quarry

Environment Protection Licence No.	2796
Site Name (As it appears on the licence)	Jandra Quarry
Site Address (As it appears on the licence)	Pacific Highway Possum Brush NSW 2430
Link to Licence on EPA Website	http://www.environment.nsw.gov.au/eprospect?ViewContent.aspx?DOCID=30568ASYSUJD1&LICID=2796

Water											
ID #1	Discharge pH	Each overflow event	6.5	8.5	pH		Y				NRR
ID #1	Discharge TSS	2 X Daily during discharge	0	50	mg/L		Y				NRR
ID #1	Discharge TSS	2 X Daily during discharge	0	50	mg/L		Y				NRR
ID #1	Discharge Turbidity	2 X Daily during discharge	0		ntu		Y				NRR
ID #1	Discharge Turbidity	2 X Daily during discharge	0		ntu		Y				NRR
ID #1	Discharge pH	Each overflow event	6.5	8.5	pH		Y				NRR
ID #1	Discharge TSS	2 X Daily during discharge	0	50	mg/L		Y				NRR
ID #1	Discharge TSS	2 X Daily during discharge	0	50	mg/L		Y				NRR
ID #1	Discharge Turbidity	2 X Daily during discharge	0		ntu		Y				NRR
ID #1	Discharge Turbidity	2 X Daily during discharge	0		ntu		Y				NRR
ID #1	Discharge pH	Each overflow event	6.5	8.5	pH		Y				NRR
DD 1	Insoluble Solids	Monthly	0	4	mg/m ² /month		Y				NRR
DD 2	Insoluble Solids	Monthly	0	4	mg/m ² /month		Y				NRR
DD 3	Insoluble Solids	Monthly	0	4	mg/m ² /month		Y				NRR
DD 4	Insoluble Solids	Monthly	0	4	mg/m ² /month		Y				NRR
HVAS 1	Insoluble Solids	Monthly	0	4	mg/m ² /month		Y				NRR
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m ³		Y				NRR
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m ³		Y				NRR
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m ³		Y				NRR
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m ³		Y				NRR

Blasting (To determine compliance with L3, measurements to be taken at any point within 1 metre of residential boundary)											
	Overpressure	Per blast	0	120	dB		Y				NRR
	Vibration	Per blast	0	10	mm/s		Y				NRR
	Overpressure	Per blast	0	120	dB		Y				NRR
	Vibration	Per blast	0	10	mm/s		Y				NRR
	Overpressure	Per blast	0	120	dB		Y				NRR
	Vibration	Per blast	0	10	mm/s		Y				NRR
	Overpressure	Per blast	0	120	dB		Y				NRR
	Vibration	Per blast	0	10	mm/s		Y				NRR

Annual Blasting Requirements (Calculated each month on a cumulative basis)											
	Overpressure	Monthly (Cumulative)	115	120	dB		Y				NRR
	Vibration	Monthly (Cumulative)	5	10	mm/s		Y				NRR