



# Attachment 4.1H - Environmental Monitoring Worksheet

Period: 1/8/2017 - 15/08/17

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	<a href="http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=31016&amp;SYSUID=1&amp;LICID=122">http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=31016&amp;SYSUID=1&amp;LICID=122</a>

Water												
Point 1	pH	After 90mm rain	6.5	8.5	pH	7/8/2017	Y	7/8/2017	14/08/2017		7.8	
	Oil and Grease	After 90mm rain	0	0	Visible		Y				NRR	
	TSS	After 90mm rain	50	50	mg/L	7/8/2017	Y	7/8/2017	14/08/2017		41	
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	50	50	mg/L		Y				NRR	
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	50	50	mg/L		Y				NRR	
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	50	50	mg/L		Y				NRR	
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	50	50	mg/L		Y				NRR	
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	50	50	mg/L		Y				NRR	

Air												
Site 1	Ash	Monthly	90	90		3/8/2017	Y				43	
Site 2	Ash	Monthly	90	90		3/8/2017	Y				8	
Site 3	Ash	Monthly	90	90		3/8/2017	Y				24	
Site 4	Ash	Monthly	90	90		3/8/2017	Y				8	

Blasting												
		Per Blast	5	5	mm/s		Y				0.3	
		Per Blast	115	115	dB		Y				83	
		Per Blast	5	5	mm/s		Y				1.1	
		Per Blast	115	115	dB		Y				83	
		Per Blast	5	5	mm/s		Y				NRR	
		Per Blast	115	115	dB		Y				NRR	
		Per Blast	5	5	mm/s		Y				NRR	
		Per Blast	115	115	dB		Y				NRR	
		Per Blast	5	5	mm/s		Y				NRR	
		Per Blast	115	115	dB		Y				NRR	
		Per Blast	5	5	mm/s		Y				NRR	

**Site:** **"Johnniefelds" 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	<a href="http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=28960&amp;SYSUID=1&amp;LICID=1371">http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=28960&amp;SYSUID=1&amp;LICID=1371</a>

Blasting												
Underdowns	Overpressure	Per Blast	115	115	dB		Y				NRR	
	Vibration	Per Blast	5	5	mm/s		Y				NRR	
Underdowns	Overpressure	Per Blast	115	115	dB		Y				NRR	
	Vibration	Per Blast	5	5	mm/s		Y				NRR	
Underdowns	Overpressure	Per Blast	115	115	dB		Y				NRR	
	Vibration	Per Blast	5	5	mm/s		Y				NRR	
Underdowns	Overpressure	Per Blast	115	115	dB		Y				NRR	
	Vibration	Per Blast	5	5	mm/s		Y				NRR	
Underdowns	Overpressure	Per Blast	115	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	<a href="http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=28690&amp;SYSUID=1&amp;LICID=12939">http://www.environment.nsw.gov.au/prpoapp/ViewPOEOLicence.aspx?DOCID=28690&amp;SYSUID=1&amp;LICID=12939</a>

Air												
DD 5	Insoluble Solids	Monthly	0	4	mg/m2/month		Y				NRR	
DD 8	Insoluble Solids	Monthly	0	4	mg/m2/month		Y				NRR	
DD 11	Insoluble Solids	Monthly	0	4	mg/m2/month		Y				NRR	
DD 12	Insoluble Solids	Monthly	0	4	mg/m2/month		Y				NRR	
DD 13	Insoluble Solids	Monthly	0	4	mg/m2/month		Y				NRR	
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m3	10/8/2017	Y	11/8/2017	17/8/17		3.00	
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m3	4/8/2017	Y	7/8/2017	11/8/2017		1.60	
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m3		Y				NRR	
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3	10/8/2017	Y	11/8/2017	17/8/17		12.60	
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3	4/8/2017	Y	7/8/2017	11/8/2017		2.40	
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3		Y				NRR	
Blasting												
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec	10/8/2017	Y	Time of Blast			11:41:00 AM	0.00
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec	10/8/2017	Y				11:41:00 AM	1.45
B3 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	10/8/2017	Y				11:41:00 AM	0.00
B3 - Resident	Overpressure	Per Blast	0	115	dB	10/8/2017	Y				11:41:00 AM	0.00
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec	15/08/2017	Y				2:03:00 PM	0.00
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec	15/08/2017	Y				2:03:00 PM	1.41
B3 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	15/08/2017	Y				2:03:00 PM	0.68
B3 - Resident	Overpressure	Per Blast	0	115	dB	15/08/2017	Y				2:03:00 PM	99.20
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec		Y					NRR
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec		Y					NRR
B3 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec		Y					NRR
B3 - Resident	Overpressure	Per Blast	0	115	dB		Y					NRR
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec		Y					NRR
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec		Y					NRR
B3 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec		Y					NRR
B3 - Resident	Overpressure	Per Blast	0	115	dB		Y					NRR
B1 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec	8/8/2017	Y				4:06:00 PM	12/30/1899
B2 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec	8/8/2017	Y				4:06:00 PM	12/30/1899
B3 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	8/8/2017	Y				4:06:00 PM	12/30/1899
B3 - Resident	Overpressure	Per Blast	0	115	dB	8/8/2017	Y				4:06:00 PM	12/30/1899
B6 - Rail	Peak Particle Velocity	Per Blast	0	25	mm/sec	8/8/2017	Y				4:06:00 PM	12/30/1899
B6 - Pipeline	Peak Particle Velocity	Per Blast	0	100	mm/sec		Y					NRR
B4 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	11/8/2017	Y				12:24:00 PM	12/30/1899



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Period: 1/8/2017 - 15/08/17

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								
NRR - No Result Recorded												
B4 - Resident	Overpressure	Per Blast	0	115	dB	11/8/2017	Y	12:24:00 PM			12/30/1899	
B5 - Resident	Peak Particle Velocity	Per Blast	0	5	mm/sec	11/8/2017	Y	12:24:00 PM			12/30/1899	
B5 - Resident	Overpressure	Per Blast	0	115	dB	11/8/2017	Y	12:24:00 PM			12/30/1899	

## Site: Cooma Road Quarry

Environment Protection Licence No.	1453
Site Name (As it appears on the licence)	Cooma Road Quarry
Site Address (As it appears on the licence)	Cooma Road Quarry Cooma Road Queanbeyan NSW 2620
Link to Licence on EPA Website	<a href="http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=28928&amp;SYSUID=1&amp;LICID=1453">http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=28928&amp;SYSUID=1&amp;LICID=1453</a>

Water												
Barracks Creek	pH	Monthly	6.5	8.5	pH	1/8/2017	Y				7.9	
	Total O&G	Monthly	0	10	mg/L	1/8/2017	Y				<1	
	Susp. Solids	Monthly	0	50	mg/L	1/8/2017	Y				<2	

Blasting												
Heffernans House	Overpressure	Per blast	0	115	dB	10/8/2017	Y				110	
	Vibration	Per blast	0	5	mm/s	10/8/2017	Y				0.27	
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	<a href="http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29038&amp;SYSUID=1&amp;LICID=2212">http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29038&amp;SYSUID=1&amp;LICID=2212</a>

Blasting												
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	<a href="http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=28958&amp;SYSUID=1&amp;LICID=1310">http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=28958&amp;SYSUID=1&amp;LICID=1310</a>

Water												
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				7	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		Y				NRR	
	pH	Daily During Discharge	6.5	8.5	pH		Y				NRR	
Sediment Basin	TSS	Daily During Discharge		50	mg/L		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	<a href="http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29168&amp;SYSUID=1&amp;LICID=3293">http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=29168&amp;SYSUID=1&amp;LICID=3293</a>

Blasting												
ID #1	pH	Weekly	6.5	8.5	pH	7/8/2017	Y				7.7	
ID #1	pH	Weekly	6.5	8.5	pH	14/8/17	Y				7.6	
ID #1	Oil&Grease	Yearly during discharge (August)	0	10	mg/L		Y				NRR	
ID #1	TSS	Yearly during discharge (August)	0	50	mg/L		Y				NRR	

Noise												
144 Stokers Lane - Murphy's Residence	dB(A) L Aeq 15 min	Not specified	0	46	dB		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	<a href="http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=31235&amp;SYSUID=1&amp;LICID=7094">http://www.environment.nsw.gov.au/epoapp/ViewPOEOLLicence.aspx?DOCID=31235&amp;SYSUID=1&amp;LICID=7094</a>



# Attachment 4.1H - Environmental Monitoring Worksheet

Period: 1/8/2017 - 15/08/17

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							
<b>Blasting (M4 &amp; L2.1 - To determine compliance with L3, measurements to be taken at any point within 1 metre of residential boundary)</b>											NRR = No Result Recorded
	Overpressure	Per blast	0	120	dB	Y				97.5	shot 180
	Vibration	Per blast	0	10	mm/s	Y				3.59	shot 180
	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)		Site Address (As it appears on the licence)	Tip Road Tuncurry NSW 2428
Link to Licence on EPA Website	<a href="http://www.environment.nsw.gov.au/iprpoapp/ViewPOEOLlicence.aspx?DOCID=309458&amp;SYSUID=1&amp;LICID=13359">http://www.environment.nsw.gov.au/iprpoapp/ViewPOEOLlicence.aspx?DOCID=309458&amp;SYSUID=1&amp;LICID=13359</a>		

Water											
ID#2 Surface H20 "Lake 1"	Arsenic	Quarterly	0		mg/L	Y					NRR
	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
ID#3 Surface H20 "Lake 2"	Arsenic	Quarterly	0		mg/L	Y					NRR
	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
ID#4 Surface H20 "Lake 3"	Arsenic	Quarterly	0		mg/L	Y					NRR
	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
ID#5 Surface H20 "Lake 4"	Arsenic	Quarterly	0		mg/L	Y					NRR
	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/m2/month	Y					8

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)		Site Address (As it appears on the licence)	Pacific Highway Possum Brush NSW 2430
Link to Licence on EPA Website	<a href="http://www.environment.nsw.gov.au/iprpoapp/ViewPOEOLlicence.aspx?DOCID=309588&amp;SYSUID=1&amp;LICID=2796">http://www.environment.nsw.gov.au/iprpoapp/ViewPOEOLlicence.aspx?DOCID=309588&amp;SYSUID=1&amp;LICID=2796</a>		

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/m2/month	Y					NRR
DD 2	Insoluble Solids	Monthly	0	4	mg/m2/month	Y					NRR
DD 3	Insoluble Solids	Monthly	0	4	mg/m2/month	Y					NRR
DD 4	Insoluble Solids	Monthly	0	4	mg/m2/month	Y					NRR
HVAS 1	Insoluble Solids	Monthly	0	4	mg/m2/month	Y					NRR
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m3	Y					NRR
HVAS 1	PM10	24hr (every 6 days)	0	50	µg/m3	Y					NRR
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3	Y					NRR
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3	Y					NRR
HVAS 2	PM10	24hr (every 6 days)	0	50	µg/m3	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