



Three Kings Quarry

Air Quality Quarterly Report

September 2015 – November 2015

In compliance with: Permit 40041, Conditions 27 & 28

Introduction

This report details the air quality monitoring results for Winstone Aggregates Three Kings Quarry for the period September 2015 – November 2015.

On 11th February 2015 a new discharge to air consent (40041) was granted. The primary changes are the removal of HiVol monitoring and a decrease in the trigger level for the BAMs to 60µg/m³ as a 24hour average. The HiVol monitors have continued to be run as per the previous consent (21875) requirements until the 20th September 2015 when they were discontinued with the approval of Council.

The Air Quality Management Plan has been revised in consultation with the Three Kings Site Liaison Group and Council to reflect the conditions of the new consent.

This report has been prepared in accordance with Conditions 27 and 28 of Permit 40041.

Condition 27 states:

TSP monitoring showing exceedance of the trigger value given in Condition 21, shall be reported to the Team Leader – Air Quality as soon as practicable. A summary of all monitoring results, including references where applicable to wind and rainfall data, and any remedial actions taken shall be submitted to the Team Leader – Air Quality at the end of each quarter.

Condition 28 states:

A daily log of all such information that is required to enable compliance with the conditions of this consent shall be kept and maintained. The log shall record, on a daily basis, information including, but not limited to:

- (a) any dust control equipment malfunctions and any remedial action taken;*
- (b) any visible emissions of dust and the source;*
- (c) all relevant details relating to the TSP monitoring or other monitoring required by the TSP Monitoring Plan, to enable compliance with Conditions 19 to 24;*
- (d) when a water cart was used and, if so, the frequency of use and the volume of water used;*
and
- (e) the date and time of the entry and the signature of the person entering the information.*

The log shall be made available on request, during operating hours, to an enforcement officer and shall be kept for the term of the consent. A summary of the information recorded shall be submitted to the Team Leader – Air Quality at the end of each quarter.

Details of the monitoring undertaken as part of the air permit are described below and actual monitoring results are presented in tables attached to the report.

Summary of Monitoring Results

Summary tables of the monitoring results for each month of the reporting period are attached to this report. An overview of the quarter is provided below.

September 2015

All results for September 2015 were within the consented limits.

The Southern Boundary BAM unit experienced a pressure sensor board malfunction on the afternoon of Monday the 28th September 2015. The malfunction of the unit was alerted to our Air Quality Technician

(Duncan Backshall, Air Quality Technician) via text message from the 2G cellular device installed to the southern boundary BAM. Duncan was able to visit our site the following morning and discovered that the pressure board malfunction had caused the barometric pressure of the unit to drop significantly. A replacement part was ordered and installed into the southern boundary BAM unit on the afternoon of Monday the 5th October 2015. Subsequently, the southern boundary BAM data was deemed invalid from the 28/9/2015 – 30/09/2015. The data from the 01/10/2015 – 5/10/2015 was able to be corrected by Duncan as the barometric pressure reading stabilised during this time. The letter *Southern Boundary Dust Monitor, Pressure Board Fault* Prepared by Duncan Backshall, Air Quality NZ Limited, Dated 21 November 2015 is attached for your reference.

October 2015

All results for October 2015 were within the consented limits.

The Southern Boundary BAM unit was unable to record data on Friday the 30th October 2015 due to a filter tape error. Duncan Backshall (Air Quality Technician) was alerted to the unit malfunction via text message from the 2G cellular device installed to the southern Boundary BAM on Friday evening. Upon inspection the following morning he found that the internal filter tape had broken. The tape was replaced and an adjustment made to reduce tension on the feed reel.

November 2015

All results for November 2014 were within the consented limits.

Daily Log

In accordance with Condition 28 of the air permit a daily log of monitoring results is maintained on site. The log includes information about equipment malfunctions, visible dust emissions, water cart use and all relevant details relating to particulate monitoring. A summary of the daily log is provided below.

- a. Over the last quarter all dust control equipment has functioned as required with maintenance being undertaken on both the sprinkler system and water cart as necessary.
- b. No visible dust emissions (that went over or were over the boundary) were noted in the daily log for this period with the exception of the following comments:
 - Visible dust coming from Danske Mobler recorded on multiple days throughout September 2015
 - Visible dust generated from a rock breaker working in the SHA site adjacent to Three Kings Quarry on the 7th October 2015 at approximately 12:00pm.
- c. TSP monitoring was carried out as per TSP monitoring procedures documented in the site Air Quality Management Plan. A summary of the results is provided above and the tabled results for this reporting period are attached to this report.
- d. The water cart used 4,080m³ during this period. The use over this quarter was made up of:

MONTH	LOADS	VOLUME (m ³)
September 2015	70	840
October 2015	125	1500
November 2015	145	1740

- e. The daily log sheet is dated and signed by the person entering the information.

Complaints

There has been one complaint made directly to Three Kings Quarry regarding dust during the period of September 2015 – November 2015. On the 23rd October 2015 a member of the public in charge of a commercial business adjacent to Three Kings Quarry informed the Environmental Fill Specialist of visible dust within the boundary of their section, deposited on outdoor furniture and staff vehicles. The Environmental Fill Specialist reviewed the activities within the quarry and no onsite dust was being created. Upon the conclusion of the investigation it was established that the offending dust was being generated by another adjacent property in close proximity to Three Kings Quarry and their personnel were notified immediately to rectify the situation.

The Three Kings Quarry air monitoring results have been reviewed and were compliant.

Next Reporting Period

The next quarterly report will be submitted in early March 2016. This report will cover the monitoring period of December 2015 to February 2016.

Monitoring Results for the Period September 2015

Date	Day	daily average WS m/sec	daily average WD (degrees)	Daily Rain (mm)	Site TSP Office ($\mu\text{g}/\text{m}^3$)	BAM Office ($\mu\text{g}/\text{m}^3$)	Site TSP North Boundary ($\mu\text{g}/\text{m}^3$)	BAM South Boundary ($\mu\text{g}/\text{m}^3$)
1/09/2015	Tue	2.452	217.597	43.200	31	16.3		12.4
2/09/2015	Wed	3.157	267.774	4.000		17.3		11.1
3/09/2015	Thu	4.839	248.493	4.000	22	12.6	20	14.5
4/09/2015	Fri	1.627	250.128	4.200		25.7		15.6
5/09/2015	Sat	3.409	192.104	5.800		4.5		12.0
6/09/2015	Sun	3.908	251.837	3.800	36	13.5		10.9
7/09/2015	Mon	3.942	227.993	2.600		20.2		28.0
8/09/2015	Tue	3.513	234.063	0.000		17.1		20.5
9/09/2015	Wed	1.656	225.240	0.200	37	10.9	14	8.5
10/09/2015	Thu	3.329	170.299	6.800		12.0		12.1
11/09/2015	Fri	6.026	233.313	6.800	59	21.7		20.7
12/09/2015	Sat	4.692	209.795	6.400		17.2		10.1
13/09/2015	Sun	4.365	224.986	0.000		21.5		18.8
14/09/2015	Mon	1.474	200.899	0.000		25.5		17.6
15/09/2015	Tue	4.041	236.545	0.000	55	21.1	39	20.3
16/09/2015	Wed	3.109	241.490	0.000		11.0		9.2
17/09/2015	Thu	2.366	232.736	0.000	35	17.6		10.5
18/09/2015	Fri	2.503	240.135	1.600		15.1		8.2
19/09/2015	Sat	1.660	208.253	2.600		10.1		7.9
20/09/2015	Sun	1.748	200.389	17.400		4.3		4.5
21/09/2015	Mon	5.073	187.552	0.200		12.8		6.7
22/09/2015	Tue	2.936	220.969	0.400		11.9		8.3
23/09/2015	Wed	3.711	240.816	0.800		10.7		12.3
24/09/2015	Thu	1.590	185.844	2.200		11.7		6.0
25/09/2015	Fri	1.961	178.045	1.200		11.7		3.3
26/09/2015	Sat	1.771	179.799	0.000		11.5		8.3
27/09/2015	Sun	1.794	149.882	0.000		6.6		5.7
28/09/2015	Mon	1.471	161.080	6.800		10.1		no data
29/09/2015	Tue	1.508	164.438	0.600		15.6		no data
30/09/2015	Wed	2.434	230.566	42.600		11.1		no data

164.200

Monitoring Results for the Period October 2015

Date	Day	daily average WS m/sec	daily average WD (degrees)	Daily Rain (mm)	BAM Office ($\mu\text{g}/\text{m}^3$)	BAM South Boundary ($\mu\text{g}/\text{m}^3$)
1/10/2015	Thu	1.939	217.656	0.000	16.7	8.0
2/10/2015	Fri	3.542	287.993	5.800	15.4	5.3
3/10/2015	Sat	4.833	223.840	3.600	20.9	25.4
4/10/2015	Sun	3.184	251.705	0.000	23.2	17.1
5/10/2015	Mon	5.459	222.997	0.000	49.2	41.4
6/10/2015	Tue	3.588	216.823	0.000	40.1	33.8
7/10/2015	Wed	2.933	224.743	0.000	25.7	21.0
8/10/2015	Thu	5.246	237.313	0.400	34.2	21.6
9/10/2015	Fri	2.972	196.830	0.000	21.9	17.0
10/10/2015	Sat	3.503	229.014	0.000	11.4	8.2
11/10/2015	Sun	4.715	221.813	0.000	16.2	16.5
12/10/2015	Mon	3.893	239.368	0.000	14.7	9.9
13/10/2015	Tue	3.038	279.774	1.200	13.1	5.2
14/10/2015	Wed	4.333	222.000	6.200	16.1	13.4
15/10/2015	Thu	4.799	210.559	0.000	24.6	29.5
16/10/2015	Fri	4.445	222.281	0.000	17.7	15.0
17/10/2015	Sat	4.127	239.205	0.000	10.8	6.9
18/10/2015	Sun	2.648	264.351	0.000	10.9	8.6
19/10/2015	Mon	5.861	229.295	0.000	40.9	29.5
20/10/2015	Tue	5.141	220.191	0.000	26.2	21.0
21/10/2015	Wed	3.258	251.392	0.000	12.4	10.5
22/10/2015	Thu	3.492	277.076	0.000	20.3	14.6
23/10/2015	Fri	3.492	280.681	0.000	22.9	10.4
24/10/2015	Sat	3.124	230.503	9.600	13.5	12.8
25/10/2015	Sun	4.665	204.177	0.000	18.4	18.7
26/10/2015	Mon	3.508	225.514	0.000	18.1	16.9
27/10/2015	Tue	4.221	237.326	0.000	20.9	12.9
28/10/2015	Wed	2.003	238.128	0.000	21.1	12.3
29/10/2015	Thu	2.275	135.543	7.200	8.8	12.6
30/10/2015	Fri	3.952	200.215	0.800	13.2	no data
31/10/2015	Sat	3.926	221.448	0.000	18.1	8.7

34.800

Monitoring Results for the Period November 2015

Date	Day	daily average WS m/sec	daily average WD (degrees)	Daily Rain (mm)	BAM Office ($\mu\text{g}/\text{m}^3$)	BAM South Boundary ($\mu\text{g}/\text{m}^3$)
1/11/2015	Sun	3.381	216.927	0.000	9.8	11.3
2/11/2015	Mon	1.908	240.858	0.000	15.3	5.8
3/11/2015	Tue	2.403	275.955	0.000	no data	6.4
4/11/2015	Wed	4.869	232.274	11.000	16.4	30.4
5/11/2015	Thu	3.315	180.899	0.000	13.3	10.4
6/11/2015	Fri	2.860	182.771	0.000	18.5	12.7
7/11/2015	Sat	2.546	174.861	0.000	23.1	25.9
8/11/2015	Sun	3.218	216.156	0.000	8.4	7.7
9/11/2015	Mon	2.009	240.132	0.000	12.3	8.3
10/11/2015	Tue	2.249	213.531	0.000	14.9	8.8
11/11/2015	Wed	4.113	226.535	0.000	17.6	10.1
12/11/2015	Thu	4.801	191.653	0.000	15.9	15.8
13/11/2015	Fri	2.991	183.969	0.000	17.9	8.9
14/11/2015	Sat	2.033	238.372	0.000	21.3	12.8
15/11/2015	Sun	2.685	290.517	0.000	18.5	21.2
16/11/2015	Mon	3.071	163.278	21.000	9.4	21.0
17/11/2015	Tue	6.109	224.358	0.000	22.3	32.9
18/11/2015	Wed	5.255	211.993	0.000	20.8	19.2
19/11/2015	Thu	2.330	112.899	2.600	22.6	23.9
20/11/2015	Fri	4.057	212.781	0.800	24.1	15.6
21/11/2015	Sat	4.003	260.115	8.000	14.1	12.2
22/11/2015	Sun	5.356	234.792	12.600	18.6	15.6
23/11/2015	Mon	3.303	229.927	0.000	30.3	23.1
24/11/2015	Tue	1.689	194.094	0.000	24.8	19.6
25/11/2015	Wed	1.960	239.861	0.000	22.0	no data
26/11/2015	Thu	2.112	225.951	1.000	17.9	10.6
27/11/2015	Fri	2.734	173.340	6.400	15.0	15.5
28/11/2015	Sat	3.330	219.753	11.000	8.2	11.3
29/11/2015	Sun	2.386	183.851	0.000	14.9	9.9
30/11/2015	Mon	1.651	110.288	0.000	9.8	16.1

74.400