



Three Kings Quarry

Air Quality Quarterly Report

December 2012 - February 2013

In compliance with:

Permit 21875, conditions 26 & 27

Introduction

This report details the air quality monitoring results for Winstone Aggregates Three Kings Quarry for the period December 2012 – February 2013.

This report has been prepared in accordance with Conditions 26 and 27 of Permit 21875.

Condition 26 states:

That any results of total suspended particulate in ambient air monitoring showing exceedences of the prompts given in Condition 20 or specified in the TSP Monitoring Plan, shall be reported by facsimile to the Manager 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 Manager at the end of each quarter.

Condition 27 states:

That the Consent Holder shall record in a log all such information that is required to enable compliance with the conditions of this consent. 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 total suspended particulate monitoring or other monitoring required by the TSP Monitoring Plan, to enable compliance with Conditions 19, 20 and 21;*
- (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 Manager 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.

December 2012

All results for December 2012 were within the consented limits. There were two occurrences over the month of December 2012 in which the Office HiVol overran its set 24 hour sampling period. As such the results for the 3rd and 14th December 2012 have been reported as 'no data'. The results on these dates recorded at the other monitoring equipment (both BAMs and the Northern Boundary HiVol) were well within the trigger limits. Also on the 13th December 2012 a 'no data' result was recorded for the Southern Boundary BAM as it was offline for a significant part of the day as it underwent its annual calibration.

January 2013

All results for January 2013 were within consented limits with the exception of 119µg/m³ recorded at the Office HiVol on 8th January 2013. In accordance with conditions 20 and 21 of the Three Kings Quarry Air Discharge Consent (Permit Number 21875) this trigger and the investigation of the exceedance was reported to Council

by letter on 5th February 2013. The investigation concluded that the cause of the exceedance was a result of the exceptionally dry and windy conditions on this day. Our standard daily management practices were not able to cope with the extreme conditions on the day and we did not react quickly enough in altering our techniques to handle the intense condition of this day. Our delayed response was due to us not receiving the text alarms from the BAMs to give us an early warning of the issue. If the alarms had been received, we are confident this trigger could have been prevented by implementing the changes that we undertook in a more timely manner.

Please refer to the letter titled, *Re: Investigation of Total Suspended Particulate Trigger at Three Kings Quarry* and dated 5th February 2013 for more details on this trigger.

February 2012

All results for February 2013 were within consented limits. The results from the 18th January 2013 for the Southern Boundary BAM have been reported as 'no data'. This is due to a manufacturing fault occurring on this unit leaving it unable to operate. As soon as we were aware of the issue we contracted a specialist technician. The technician diagnosed the issue and contracted the manufactures. The manufactures based in Australia sent the required placement part under warranty. The part was installed in early March 2013 once received. During the period that the Southern Boundary BAM was not operating all other monitoring and management was undertaken as per usual.

Daily Log

In accordance with Condition 27 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 watercart 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:
 - That which was reported in the *Investigation of Total Suspended Particulate Trigger at Three Kings Quarry* in regards to the exceedance recorded at the Office HiVol on 8th January 2013.
 - Fine dust from sand blasting activity at adjacent property reported on 18th February 2013.
 - Smoke from chimney of Danske Moblier recorded on 22nd February 2013.

A note was also made in the log that the earthworks being undertaken by Council contractors on the Council owned cliff to the south of our boundary commenced on 7th January 2013.

- c. TSP monitoring was carried 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 4896m³ during this period. This is more than double what was used in the last quarter. The use over this quarter was made up of:

MONTH	LOADS	VOLUME (m ³)
December 2012	58	696
January 2013	186	2232
February 2013	164	1968

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

Complaints

There have been no complaints made directly to Three Kings Quarry regarding dust during the period of December 2012 to February 2013. The air monitoring programme was a topic of discussed at the last Three Kings Quarry Site Liaison Group meeting that was held on 25th Feb 2013. The minutes from this meeting will be available on our website at: <http://threekingsquarry.co.nz/consenting-sites/three-kings-quarry/community-liaison/slg-minutes/>

Next Reporting Period

The next quarterly report will be submitted in early June 2013. This report will cover the monitoring period of March 2013 to May 2013.

Monitoring Results for the Period December 2012

Date	Day	daily average WS (m/sec)	daily average WD (degrees)	Daily Rain (mm)	Site TSP Office (µg/m³)	BAM Office (µg/m³)	Site TSP North Boundary (µg/m³)	BAM South Boundary (µg/m³)
1/12/2012	Sat	3.566	226.069	0.000		29.1		32.9
2/12/2012	Sun	3.318	254.615	0.600		18.5		11.1
3/12/2012	Mon	4.023	216.660	1.600	No Data	22.3	47	20.2
4/12/2012	Tue	2.015	146.917	0.000		20.7		19.1
5/12/2012	Wed	3.149	169.243	4.400	18	10.5	14	8.2
6/12/2012	Thu	3.055	190.559	31.000		14.3		10.0
7/12/2012	Fri	3.470	263.125	5.600		23.0		14.2
8/12/2012	Sat	3.208	232.722	2.200	30	14.2	23	13.1
9/12/2012	Sun	3.018	191.823	0.000		17.4		12.8
10/12/2012	Mon	2.958	189.868	0.000		19.2		7.1
11/12/2012	Tue	3.304	207.281	0.000		10.8		6.7
12/12/2012	Wed	2.286	127.906	0.000	49	17.7	31	15.3
13/12/2012	Thu	2.557	108.701	0.400		17.7		no data
14/12/2012	Fri	2.438	123.990	0.000	No Data	17.8	27	24.3
15/12/2012	Sat	1.683	192.358	0.000		17.7		14.4
16/12/2012	Sun	2.486	100.243	0.000		10.4		10.7
17/12/2012	Mon	3.236	103.427	0.200		16.7		18.2
18/12/2012	Tue	3.695	117.826	0.200	27	14.7	24	16.2
19/12/2012	Wed	2.745	228.469	0.000		12.7		5.9
20/12/2012	Thu	2.332	136.392	0.000	36	20.5	35	21.1
21/12/2012	Fri	2.805	108.747	0.000		13.0		22.0
22/12/2012	Sat	1.653	121.865	0.000	17	9.4	52	9.5
23/12/2012	Sun	3.669	149.021	0.400		7.3		5.7
24/12/2012	Mon	3.932	109.906	3.800		3.3		4.4
25/12/2012	Tue	3.108	112.066	4.000	13	6.4	13	5.0
26/12/2012	Wed	4.179	171.365	5.800		6.8		6.2
27/12/2012	Thu	2.007	239.861	1.000		4.7		2.6
28/12/2012	Fri	1.853	167.712	0.000	10	5.3	8	4.2
29/12/2012	Sat	2.221	147.681	0.000		8.4		8.5
30/12/2012	Sun	3.116	205.108	3.800		6.4		3.4
31/12/2012	Mon	4.186	233.240	0.200	71	31.4	44	22.2

Monitoring Results for the Period January 2013

Date	Day	daily average WS m/sec	daily average WD (degrees)	Daily Rain (mm)	Site TSP Office (µg/m³)	BAM Office (µg/m³)	Site TSP North Boundary (µg/m³)	BAM South Boundary (µg/m³)
1/01/2013	Tue	2.577	248.094	0.000		17.9		21.1
2/01/2013	Wed	2.349	227.375	0.000		15.5		12.1
3/01/2013	Thu	3.031	223.840	1.600		12.9		11.0
4/01/2013	Fri	5.001	211.049	0.000		27.1		14.9
5/01/2013	Sat	3.601	192.444	0.000	57	18.2	69	15.0
6/01/2013	Sun	3.841	199.253	0.000		16.7		13.8
7/01/2013	Mon	5.381	220.444	0.000		71.9		36.3
8/01/2013	Tue	5.139	231.622	0.000	119	38.8	75	30.8
9/01/2013	Wed	2.830	177.274	0.000		29.8		28.3
10/01/2013	Thu	2.300	176.750	0.000	45	23.1	28	21.2
11/01/2013	Fri	1.910	273.944	0.000		29.7		20.9
12/01/2013	Sat	2.091	212.785	0.000		19.3		15.0
13/01/2013	Sun	1.929	235.295	0.000		9.6		7.5
14/01/2013	Mon	2.651	264.385	0.000	24	15.7	19	13.2
15/01/2013	Tue	4.201	214.667	0.000		30.6		12.1
16/01/2013	Wed	3.494	242.132	0.000	70	26.2	58	18.3
17/01/2013	Thu	3.691	250.628	1.800		17.3		10.9
18/01/2013	Fri	5.059	224.361	0.000		39.5		24.3
19/01/2013	Sat	3.737	218.486	0.000		27.7		16.7
20/01/2013	Sun	3.978	230.576	0.000	77	26.1	51	20.5
21/01/2013	Mon	3.792	204.802	0.000		38.3		30.0
22/01/2013	Tue	2.035	119.264	0.000	48	26.9	34	26.5
23/01/2013	Wed	3.044	115.601	0.000		24.6		26.4
24/01/2013	Thu	1.747	156.059	0.000	41	24.5	34	23.5
25/01/2013	Fri	2.572	106.861	0.000		17.4		22.0
26/01/2013	Sat	3.018	95.573	0.000		18.9		23.7
27/01/2013	Sun	3.123	102.087	0.000		14.1		18.3
28/01/2013	Mon	2.438	111.726	0.000	22	15.6	22	12.2
29/01/2013	Tue	2.125	122.460	0.000		22.2		26.1
30/01/2013	Wed	2.638	92.990	0.000		18.4		23.7
31/01/2013	Thu	2.122	118.313	0.000	40	18.4	35	21.1

Monitoring Results for the Period February 2013

Date	Day	daily average WS m/sec	daily average WD (degrees)	Daily Rain (mm)	Site TSP Office (µg/m ³)	BAM Office (µg/m ³)	Site TSP North Boundary (µg/m ³)	BAM South Boundary (µg/m ³)
1/02/2013	Fri	2.534	98.608	0.000		15.3		18.6
2/02/2013	Sat	1.902	117.201	0.000		20.9		18.1
3/02/2013	Sun	2.054	110.323	0.000	22	16.5	19	12.5
4/02/2013	Mon	4.968	122.035	27.000		17.2		14.9
5/02/2013	Tue	4.736	212.059	1.200	62	20.5	41	17.4
6/02/2013	Wed	2.723	188.722	0.000		10.1		8.7
7/02/2013	Thu	1.677	212.087	0.000		18.5		20.3
8/02/2013	Fri	2.021	222.861	0.000	53	20.2	51	13.2
9/02/2013	Sat	2.927	206.017	0.000		12.2		11.1
10/02/2013	Sun	3.034	212.122	0.000		10.6		8.2
11/02/2013	Mon	2.183	229.531	0.000		18.3		11.0
12/02/2013	Tue	2.094	230.486	0.000		16.4		11.6
13/02/2013	Wed	2.703	255.906	0.000	45	17.4	37.0	11.6
14/02/2013	Thu	3.978	218.601	0.000		42.5		17.4
15/02/2013	Fri	4.063	217.681	0.000		18.2		22.3
16/02/2013	Sat	4.084	212.642	0.000	49	15.1	40	6.8
17/02/2013	Sun	3.134	214.358	0.000		8.3		37.7
18/02/2013	Mon	2.140	118.483	0.000		17.7		No Data
19/02/2013	Tue	1.737	149.240	0.000	38	19.0	77	No Data
20/02/2013	Wed	1.942	98.125	0.000		4.9		No Data
21/02/2013	Thu	2.963	169.479	0.000		25.3		No Data
22/02/2013	Fri	1.643	151.656	0.000		20.5		No Data
23/02/2013	Sat	1.936	148.365	0.000		17.4		No Data
24/02/2013	Sun	1.880	143.514	0.000		15.4		No Data
25/02/2013	Mon	1.706	132.910	0.000		18.1		No Data
26/02/2013	Tue	1.531	123.403	0.000		18.9		No Data
27/02/2013	Wed	1.775	165.642	0.000		22.0		No Data
28/02/2013	Thu	2.543	170.778	0.000		28.9		No Data