

24<sup>th</sup> April 2015

Auckland Council  
 Private Bag 92300  
 Auckland 1142

Attention: Team Leader – Air Quality

Dear Sir / Madam

**Re: Investigation of Total Suspended Particulate Trigger at Three Kings Quarry**

On 11<sup>th</sup> February 2015 a new discharge to air consent (Permit Number 40041) was granted to replace the expired consent (Permit Number 21875). Winstone is currently updating the existing Air Quality Management Plan to reflect the conditions of the new consent. The primary changes will be the removal of HiVol monitoring and a decrease in the trigger level for the BAMs to 60µg/m<sup>3</sup>. The Air Quality Management Plan needs to be revised in consultation with the Three Kings Site Liaison Group and Council. We are targeting May/June 2015 for the submission of the updated management plan to Council for review.

Until the management plans is updated the HiVols continue to be run as per the previous consent (21875) requirements. With regard to condition 20 of the previous consent (21875) this report details the investigation of the probably causes of a result recorded at greater than 80µg/m<sup>3</sup> as a 24 hour average. The exceedance occurred on 12<sup>th</sup> March 2015 at the Northern Boundary HiVol with a result of 86µg/m<sup>3</sup> as a 24 hour average.

Air quality monitoring at Three Kings Quarry currently consists of:

- Two Lear Siegler Flow Set HiVol (HiVol) samplers. These units are located at the Office and the Northern Boundary.
- Two Beta Attenuation Monitors (BAM) units. These units are located at the Office and the Southern Boundary.
- A meteorological monitoring station located at the site offices that records wind speed, wind direction and rainfall on a continuous basis.
- Video cameras that monitor the site from the north and south.
- Visual inspections of air quality carried out by site staff.
- Recording of dust suppression equipment use and malfunctions.

All relevant air quality monitoring results collected on the day of the trigger have been summarised in Table 1.

**Table 1: Air Quality Monitoring Results**

<b>Date</b>	12/03/2015
<b>HiVol - Office (µg/m<sup>3</sup>)</b>	23
<b>HiVol - Northern Boundary (µg/m<sup>3</sup>)</b>	86
<b>BAM - Office (µg/m<sup>3</sup>)</b>	12.5
<b>BAM – Southern Boundary (µg/m<sup>3</sup>)</b>	12.0
<b>Daily Rainfall (mm)</b>	0.0
<b>Daily Average Wind Speed (m/s)</b>	1.728
<b>Daily Average Wind Direction (degrees)</b>	99.722
<b>Sprinklers Operational? (yes/no)</b>	Yes
<b>Video Monitors Operational (yes/no)</b>	Yes
<b>BAM Text Alarm Received (yes/no)</b>	No

#### Investigation of the Trigger:

- The daily average wind speed on the day of the trigger was 1.728m/s which was below the daily average for the month of 2.307m/s.
- There was no rainfall recorded on the day of the trigger or the three days prior. The total rainfall recorded for the month up until 12<sup>th</sup> March 2015 was only 2.0mm.
- The HiVol monitor located at the Northern Boundary was the only unit showing levels above the trigger value of 80µg/m<sup>3</sup>. The HiVol unit located at the Office Block and both BAM monitors did not show elevated results.
- The sprinkler system and water cart were fully operational on the day of the exceedance. The volume of water utilised by the water cart on the day of the exceedance was 120m<sup>3</sup>. This water is sprayed on the high activity areas of site. The volume used on 12<sup>th</sup> March 2015 was the second highest for the month and well over the daily average of 70m<sup>3</sup> for the month.
- The BAM monitors are programmed to send out text messages to the Site Manager, Supervisor and Environmental Coordinator at levels which provide an early warning of potential dust issues if action is not taken. The triggers for text messages are 80µg/m<sup>3</sup> for the 10min average and 40µg/m<sup>3</sup> for the 60min average. No text messages were received on the day of the recorded exceedance. On the day of the exceedance, the maximum 10min average was 31.4µg/m<sup>3</sup> recorded at the Office BAM and the maximum 60min average was 28.6µg/m<sup>3</sup> recorded at the Southern Boundary BAM
- Video monitors of the site have been reviewed and there are no specific dust generating activities observed on the day of the exceedance which differed from our typical daily operations. Through the 2015 summer months our normal operations have included customer trucks tipping off fill and/or being loaded with aggregates. We have also had contractors onsite loading stockpiled fill into dumpers and running this down into the south-east corner of the pit; this material is then pushed out and compacted.
- The site's Tip Register was also reviewed. The Tip Register records the number of trucks that tip off fill at the site. This register also records the size of the trucks, gives an indication of the type of material and also details the location of where in the site the trucks tip off. There were 88 trucks that tipped off on the day of the exceedance. This was below the average for the month which was 130 per day (excluding Saturdays). A number of different tip off locations were utilised on the day of the exceedance. The register shows that 8 trucks tipped off at a tip head which is located below the Northern Boundary HiVol. This tip head is separated by a two-lane haul road (approximately 10m) and is located at the current base of the quarry pit approximately 25m below the haul road. The tipping off of these trucks was specifically reviewed on the cameras and no dust can be seen coming from the loads. It is also noted that the material tipped off in this location on the day of the exceedance was mixed material (i.e. spoil and rubble).
- When the filter from the Northern Boundary HiVol was collected it was noted that there was a small amount of fines including seeds present on the filter. The dust log contains entries which note that the site's gardeners were observed weed-wacking around the bund in which the Northern Boundary HiVol is located.

#### Cause of Trigger and Corrective Actions:

The investigation into the result greater than 80µg/m<sup>3</sup> as a 24 hour average recorded at the Northern Boundary HiVol sampler on the 12<sup>th</sup> March 2015 is believed to be due to an isolated event in the direct vicinity of this HiVol (i.e. weed-wacking) impacting the result enough to cause the exceedance. The exceedance is not considered representative of the overall site activities as the variables on the date of the exceedance were not out of character for the site's operation which have been complaint.

Closing:

No complaints to date have been received as a result of this exceedance.

It is noted that unrelated to this exceedance a complaint was received in late February 2015 as a result of concrete rubble being tipped off at a location near the Northern Boundary HiVol and excessive dust could be observed coming from the load as the material exited the truck. On the day of this complaint a number of text message of dust warnings were received and trucks carrying this type of material were directed to dampen their loads with the onsite water cannon prior to tipping off. The site's watercart was also used to dampen the tipped loads. However, text message alarms continued to be received and as a result the company bringing in this material was contacted and the job stopped until measures at the source could be put in place; the company installed a sprinklers at the source to ensure the material was damp prior to it being trucked to Three Kings. As full loads of concrete rubble continue to come in to site we continue to monitor the loads and take additional action as required. No such loads (full concrete rubble) were tipped in the location of the Northern Boundary HiVol on the day of the exceedance.

If there are any further queries or comments on this investigation please do not hesitate to contact me on 027 504 3624 or at [elyse.laface@winstoneaggregates.co.nz](mailto:elyse.laface@winstoneaggregates.co.nz).

Yours faithfully

A handwritten signature in blue ink, appearing to read 'Elyse LaFace', written in a cursive style.

Elyse LaFace  
**Environmental Coordinator**