

# AVENUE COKING WORKS

## AIR QUALITY AND ODOUR MONITORING PROGRAMME

### Summary of Results: February 2009

#### 1.0 Introduction

This summary presents the results of the monitoring programme for February 2009, and an assessment of these results.

Air quality results are evaluated by comparison with the assessment criteria that were developed in the Jacobs report 'The Avenue Air Quality Management Programme Strategy Document' Issue 1, June 2002, and reviewed in 2006. Odour results are evaluated by comparison with the assessment criteria described in Environment Agency and VDI technical guidance documents.

#### 1.1 Alterations, Downtime and Technical Difficulties

During February 2009, the following amendments to the scope of routine fixed monitoring occurred due to equipment downtime:

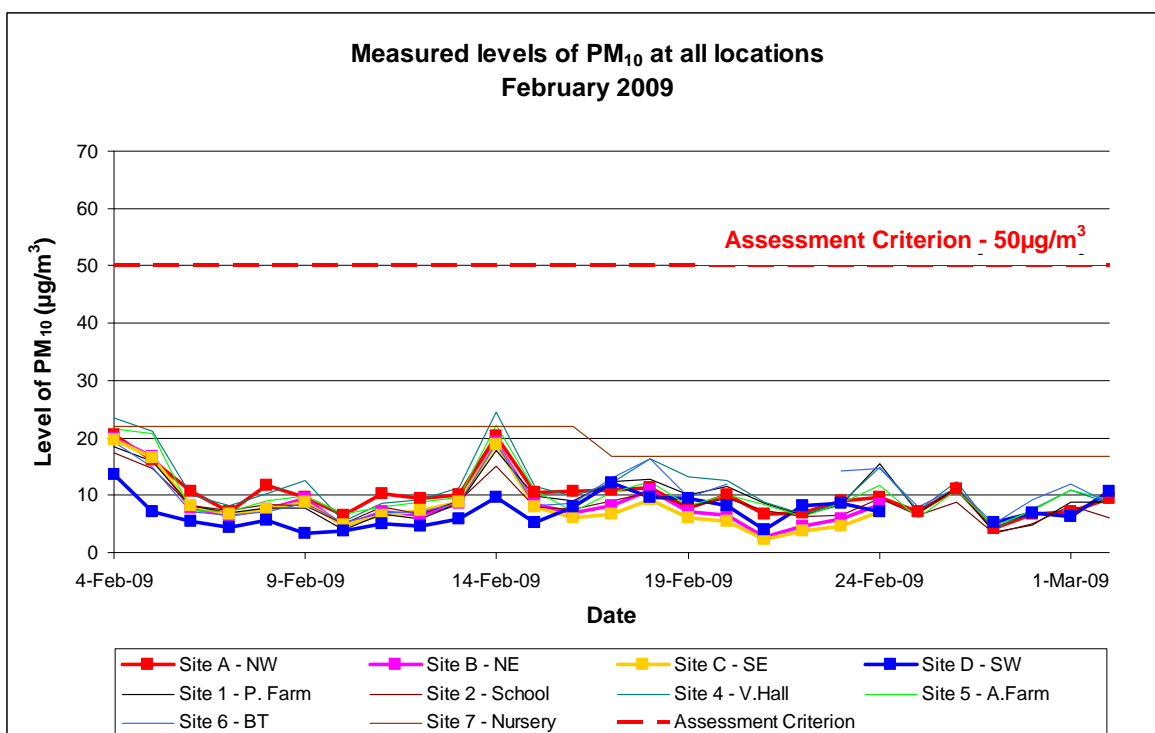
- a local power failure resulted in the loss of PM<sub>10</sub> and therefore metals data from the APM950 unit at station 6 from 20 to 23 February
- a power failure on site resulted in the loss of PM<sub>10</sub> and therefore metals data from the APM950 unit at all on-site stations from 20:00 on 20 to 09:00 on 21 February.
- a site-wide power failure resulted in the loss of PM<sub>10</sub> data from the APM950 unit at stations B and C from 24 February to the end of the second period. The APM unit appeared to be in good working order after the power was restored, however no data was logged onto the datacards. The datacards and logger are currently being investigated to determine if they are faulty.

#### 1.2 Results from Routine Air Monitoring

Of the substances monitored as part of the Avenue programme, statutory limits exist for benzene, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and SO<sub>2</sub>. Graphs depicting monthly levels of these determinands against applicable assessment criteria are presented with the results, with the exception of benzene, as results for benzene are frequently below limits of detection (LODs). Although a statutory limit does not currently exist for deposited dust, a graph has also been prepared as this has been recognised as a potential issue at and around the Avenue site.

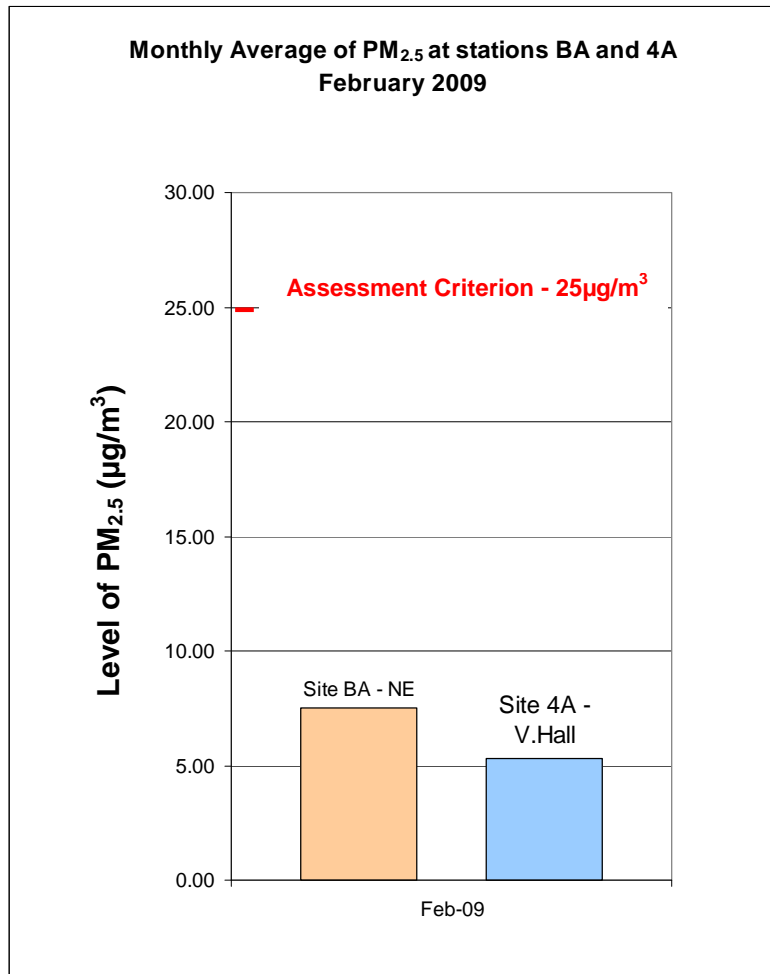
##### 1.2.1 PM<sub>10</sub> Levels

The assessment level of 50µg/m<sup>3</sup> was not exceeded during the month, with the highest result being 24.44µg/m<sup>3</sup> at station 4 on 14 February.



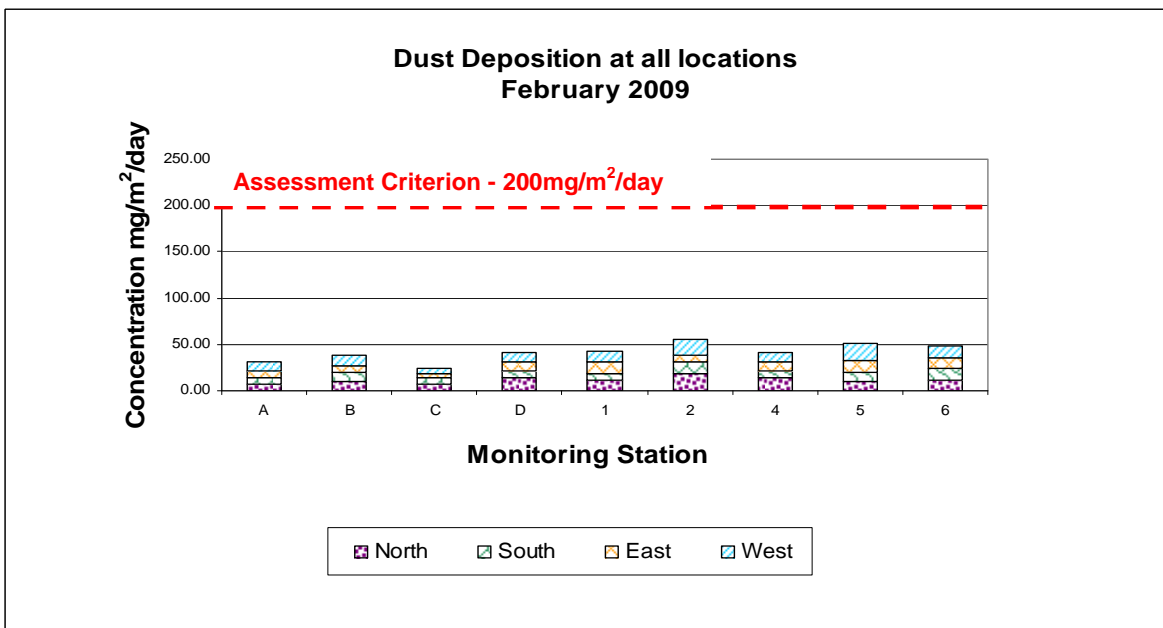
### 1.2.2 PM<sub>2.5</sub> Levels

The assessment level of 25µg/m<sup>3</sup> was not exceeded at on-site station B or off-site station 4 during the month, with the monthly mean result being 7.49µg/m<sup>3</sup> for station B, and 5.32µg/m<sup>3</sup> for station 4.



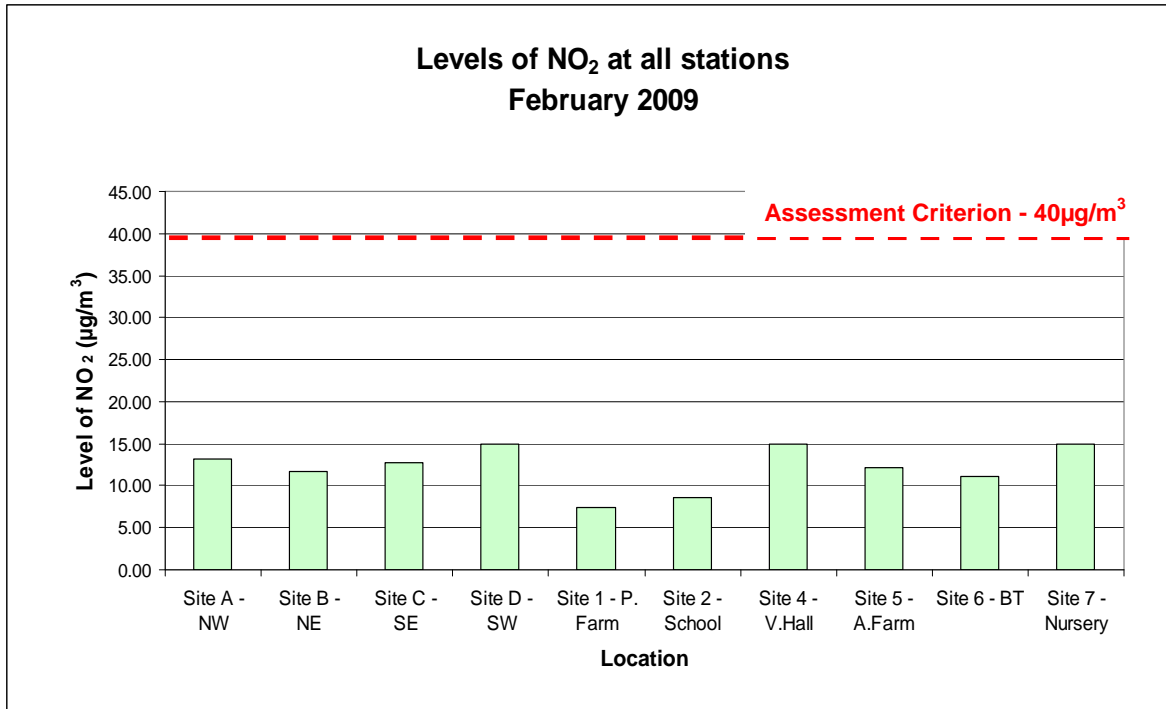
### 1.2.3 Deposited Dust

The assessment criterion level of 200mg/m<sup>2</sup>/day was not exceeded during the month, with the highest result being 55mg/m<sup>2</sup>/day recorded at station 2.



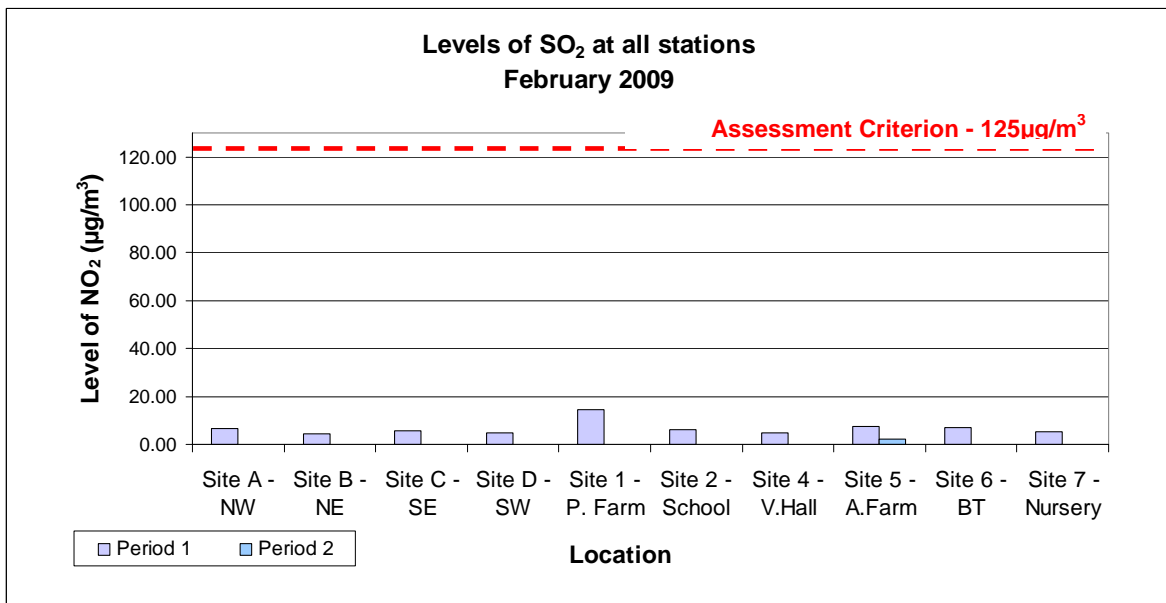
### 1.2.4 Nitrogen Dioxide

The assessment criteria level developed for NO<sub>2</sub> is 40µg/m<sup>3</sup>. No stations recorded NO<sub>2</sub> in exceedance of this level, with the highest NO<sub>2</sub> result being 15.02µg/m<sup>3</sup>, recorded at station 7.



### 1.2.5 Sulphur Dioxide

The assessment criteria levels developed for SO<sub>2</sub> is 125µg/m<sup>3</sup>. No stations recorded SO<sub>2</sub> in exceedance of this level, with the highest SO<sub>2</sub> level being 14.75µg/m<sup>3</sup> at station 1 in the first monitoring period.



### 1.2.6 BTEX Compounds

The assessment criteria limits for benzene and toluene are 5µg/m<sup>3</sup> and 1.9mg/m<sup>3</sup> per fortnight, respectively. No stations recorded levels of benzene above the LOD during the month. The highest level of toluene was recorded at station D during the first period at 0.02mg/m<sup>3</sup>.

### 1.2.7 Metals

The only metal currently falling under the control of the UK Air Quality Strategy is lead, at a maximum concentration  $0.5\mu\text{g}/\text{m}^3$  (annual mean). The highest level of lead was  $0.02\mu\text{g}/\text{m}^3$ , recorded at stations 4 and 7 during the first monitoring period.

All other metals were below the assessment criteria developed for the site, and in many cases below LODs.

### 1.2.8 Cyanide

No National Air Quality Standard has been developed for cyanide; the assessment criteria suggested for the Avenue is a maximum concentration of  $50\mu\text{g}/\text{m}^3$  per fortnight. The only station to record cyanide above the LOD was station B during the first monitoring period, at  $0.05\mu\text{g}/\text{m}^3$ .

### 1.2.9 Phenol(s)

The assessment criteria limits for phenol and cresol are  $48\mu\text{g}/\text{m}^3$  and  $220\mu\text{g}/\text{m}^3$  per fortnight, respectively. The reporting of phenols is subject to a LOD of  $0.2\mu\text{g}/\text{m}^3$  and no results were reported above this level.

### 1.2.10 PAHs

The maximum allowable fortnightly concentration of Coal Tar Pitch Volatiles is  $0.48\mu\text{g}/\text{m}^3$ , whilst for naphthalene the figure is  $126\mu\text{g}/\text{m}^3$ . None of the on or off-site stations recorded concentrations in exceedance of these criteria during February 2009. The highest concentration of total coal tar pitch volatiles was  $0.0219\mu\text{g}/\text{m}^3$ , recorded at station 1 during the second monitoring period, whilst the highest naphthalene result was  $0.00094\mu\text{g}/\text{m}^3$ , recorded at station B during the first period.

### 1.2.11 Quality Control Samples

As part of the routine monitoring programme, quality control samples are submitted in the form of duplicates for all sample media and blanks for phenols, cyanide, metals, PAHs and BTEX. This is to ensure that results generated are accurate and, essentially, reliable. The outcomes for February 2009 are as follows:

#### Media Blanks

The analysis of media blanks indicated no problems with the contamination of media used for the collection of samples during February 2009.

#### Duplicates

Duplicate  $\text{PM}_{10}$  samples taken at station A correlated well with original data during the month, with duplicate results ranging between 84% and 161% of original results.

Duplicate metals results recorded at station A correlated well with original results during both monitoring periods, with the exception of zinc during the second period when the duplicate result was 200% of the original.

Duplicate PAH results recorded at station 6 correlated well with original results during the first monitoring period, but poorly during the second. Duplicate results during the second period for acenaphthylene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, dibenzo(ah)anthracene, and total coal tar pitch volatiles were 216%, 26%, 24%, 33%, 33%, 265% and 47% of the originals, respectively.

Duplicate phenol samples were taken at station 1. No results were reported above the LOD of  $0.2\mu\text{g}/\text{m}^3$  during both monitoring periods, and as a result the duplicate results correlated exactly with original results.

Duplicate cyanide samples were taken at station A. No results were reported above the limit of detection (LOD) during both monitoring periods.

Duplicate results for BTEX,  $\text{NO}_2$  and  $\text{SO}_2$  taken from stations 6 and B correlated well with original results during both monitoring periods.

## 1.3 Results from Targeted Air Monitoring

Targeted monitoring is undertaken around specific site activities considered to have the potential to liberate airborne contaminants and also to monitor ambient conditions when no works are taking place. Due to the lack of potential for site activities to generate or liberate significant amounts of contaminative materials, targeted monitoring was not required during the month.

## **Results from Odour Monitoring**

### **1.4.1 Odour Diaries**

Background monitoring using odour diaries was suspended at the end of October 2008 following an 18 month period of monitoring; it was considered that a sufficient level of background data have been collected during this period. The odour diary programme is scheduled to resume prior to the remediation phase.

### **1.4.2 Sensory Field Odour Surveys**

A 'silage' odour was recorded at station 1 on 11 February at odour annoyance impact *medium*.

A 'diesel' odour was recorded at station 1 on 24 February at odour annoyance impact *very high*.

The wind was not from the direction of the Avenue at the time of these records, plus station 1 is located approximately 2.6km from the site. It is thus considered that the odours arising are likely to be due to conditions or activities local to station 1 rather than activities or conditions at the Avenue site.

### **1.4.3 Complaints**

No odour-related complaints were received during February 2009.