

**AVENUE COKING WORKS**  
**AIR QUALITY AND ODOUR MONITORING PROGRAMME**  
**Summary of Results: July 2009**

## **1.0 Introduction**

This summary presents the results of the monitoring programme for July 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 July 2009, the following amendments to the scope of routine fixed monitoring occurred due to equipment downtime:

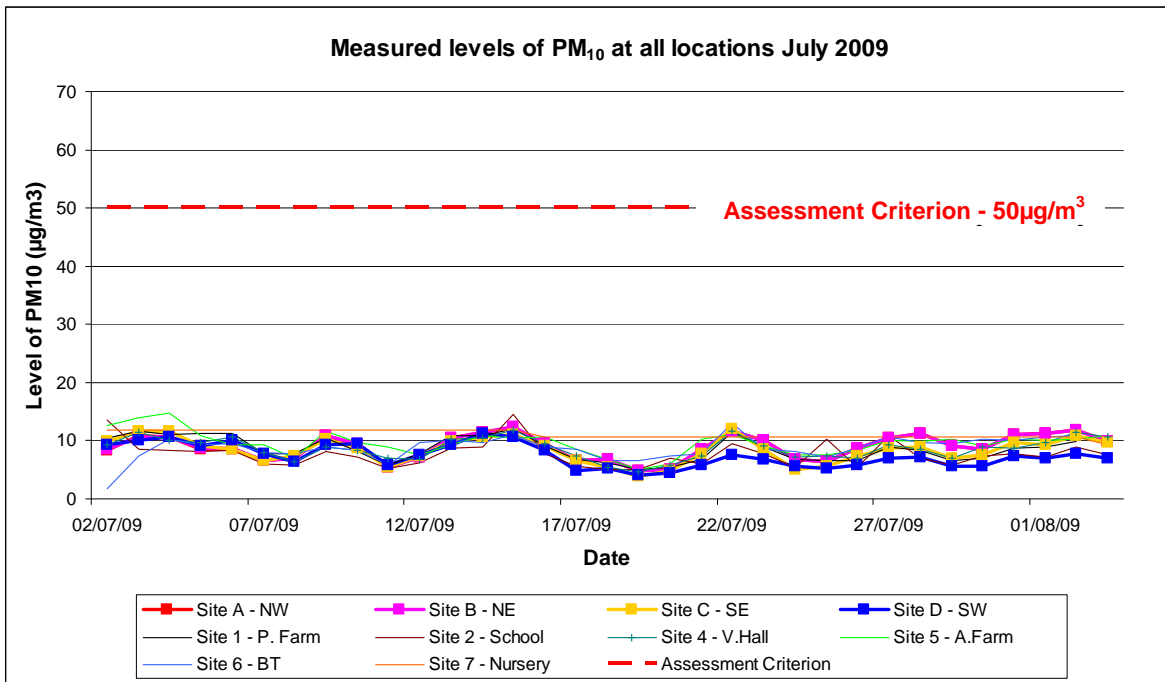
- The power supply at station 6 failed at 12:30 on 2 July due to a local power cut; this was reinstated at 13:15 on 3 July. No data have been reported for this period.
- as reported previously, in order to determine the technical feasibility and impacts on quality of rationalising the types/number of automatic monitors used for sampling for metals, cyanide, PAHs and phenols (M-type, Hi-vol and Mini-vol samplers – as proposed by the Air Quality Management Plan prepared by the remediation contractor), a 'filter-splitting trial' is currently being undertaken. This comprises cutting the filter from the duplicate APM950 unit at station A into 4 and undertaking analyses for these determinands on each of the portions, over a period of three months. This trial began at the filter-changeover in mid-April; no duplicate metals results are therefore available for the month.

## **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.

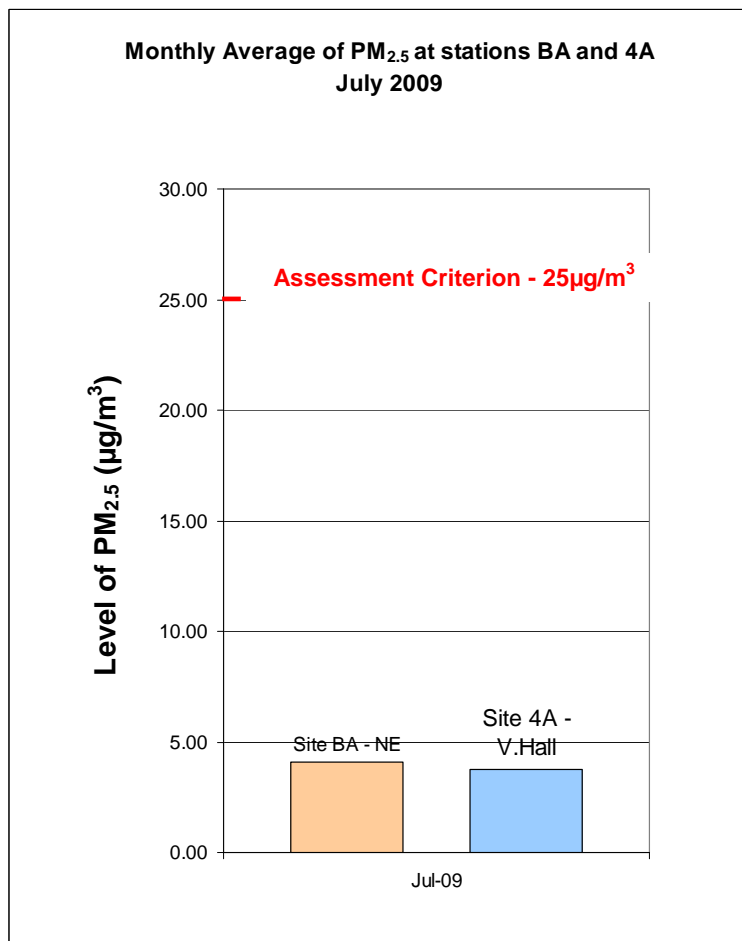
### 1.2.1 PM<sub>10</sub> Levels

The assessment level of 50µg/m<sup>3</sup> was not exceeded during the month, with the highest result being 14.8µg/m<sup>3</sup> at station 5 on 4 July.



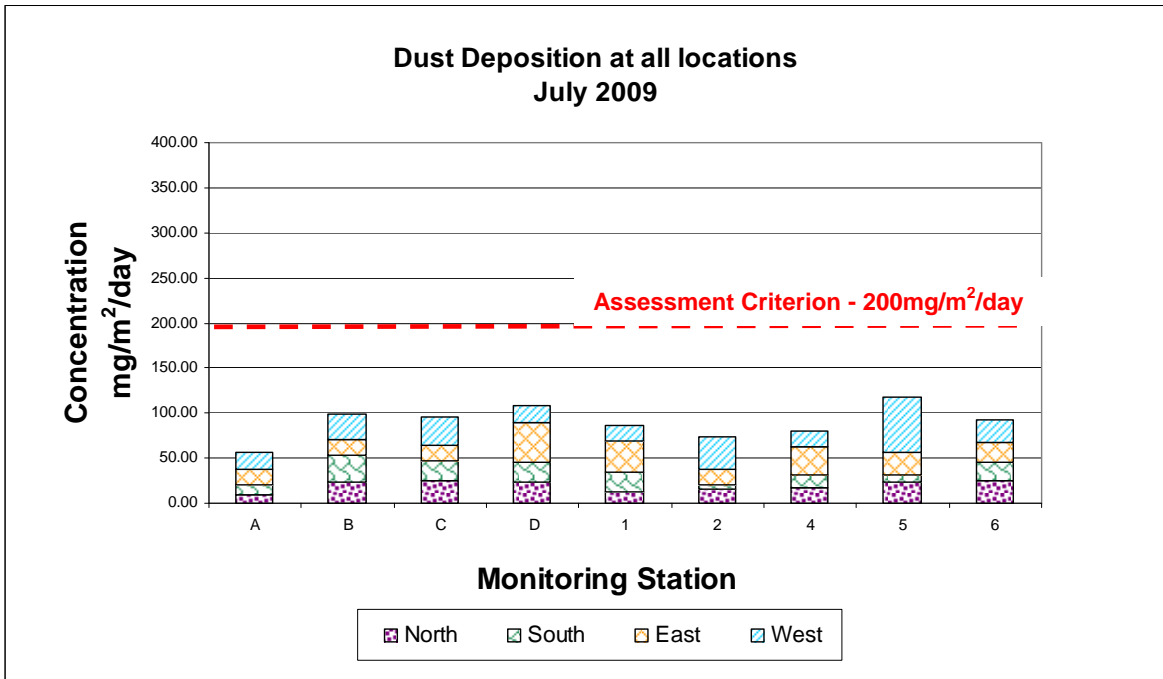
### 1.2.2 PM<sub>2.5</sub> Levels

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 4.1µg/m<sup>3</sup> for station B, and 3.76µg/m<sup>3</sup> for station 4.



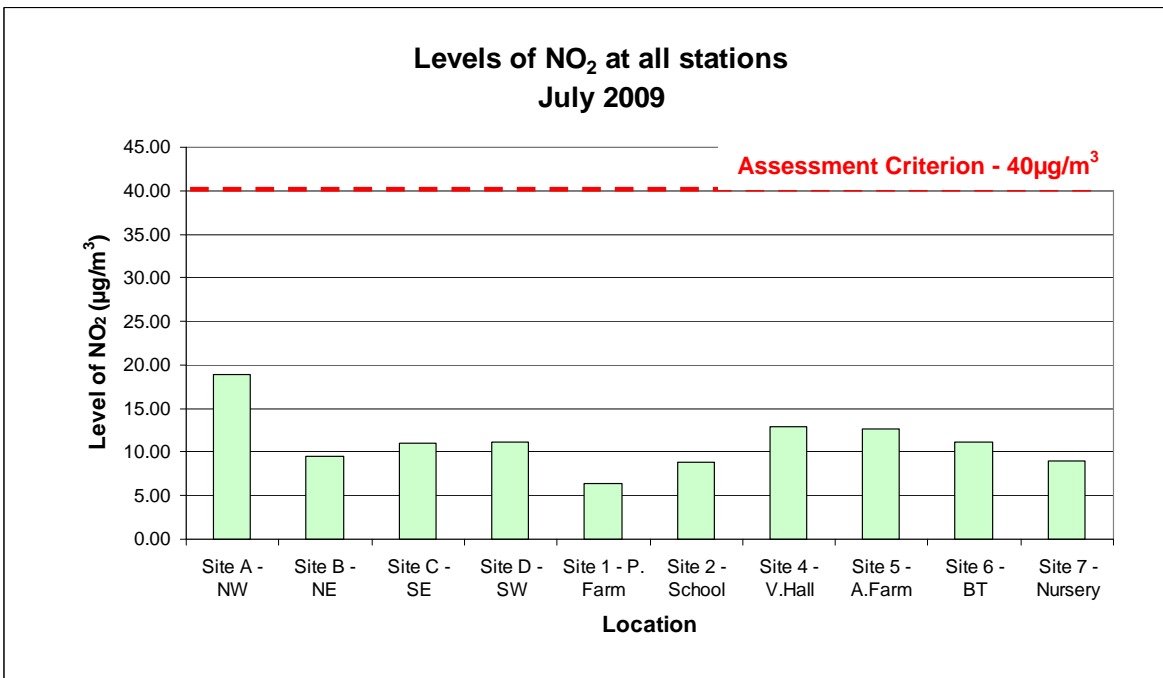
### 1.2.3 Deposited Dust

The assessment criterion level of 200mg/m<sup>2</sup>/day was not exceeded during the month, with the highest result being 117mg/m<sup>2</sup>/day recorded at station 5.



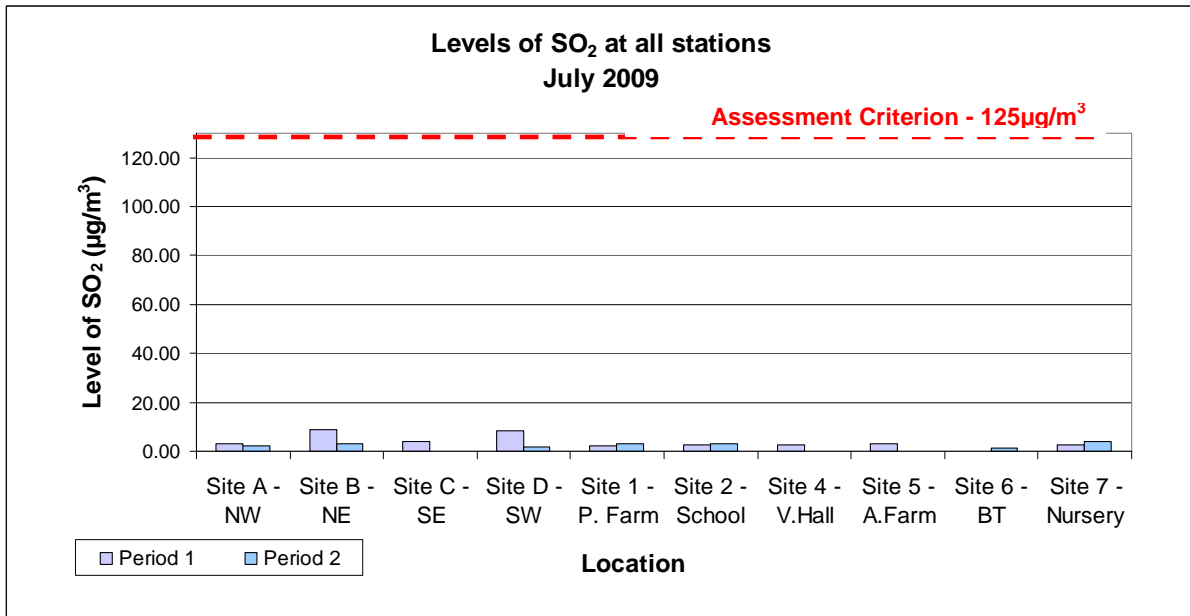
### 1.2.4 Nitrogen Dioxide

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 18.96µg/m<sup>3</sup>, recorded at station A.



### 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 8.62µg/m<sup>3</sup> at station B 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 or toluene above the LOD this month.

### 1.2.7 Metals

The only metal currently falling under the control of the UK Air Quality Strategy is lead, at a maximum concentration 0.5µg/m<sup>3</sup> (annual mean). The highest level of lead was 0.009µg/m<sup>3</sup>, recorded at off-site stations 1 and 4 during the first monitoring period and 5 during the second period.

Cadmium was recorded at levels around the applicable LOD (0.005µg/m<sup>3</sup>) at station 7 due to smaller sample volume as a result of downtime experienced at that station.

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 50µg/m<sup>3</sup> per fortnight. No stations recorded cyanide levels above the LOD during either monitoring periods.

### 1.2.9 Phenol(s)

The assessment criteria limits for phenol and cresol are 48µg/m<sup>3</sup> and 220µg/m<sup>3</sup> per fortnight, respectively. The reporting of phenols is subject to a LOD of 0.2µg/m<sup>3</sup> and no results were reported above this level.

### 1.2.10 PAHs

The maximum allowable fortnightly concentration of Coal Tar Pitch Volatiles is 0.48µg/m<sup>3</sup>, whilst for naphthalene the figure is 126µg/m<sup>3</sup>. No stations recorded concentrations in exceedance of these criteria during July 2009. The highest concentration of total coal tar pitch volatiles was 0.01338µg/m<sup>3</sup>, recorded at station B during the first monitoring period, whilst the highest naphthalene result was 0.00013µg/m<sup>3</sup>, also 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 July 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 July 2009.

### Duplicates

Duplicate PM<sub>10</sub> samples taken at station A correlated well with original data during the month, with duplicate results ranging between 74% and 99% of original results.

Duplicate metals results correlated reasonably well across both periods, with the exceptions of cadmium and copper in both periods (33% and 45%, and 200% and 250%, of original results, respectively), and zinc in the second period (200% of the original result).

Duplicate phenol samples were taken at station 1. No results were reported above the LOD of 0.2µg/m<sup>3</sup> during both monitoring periods, and as a result the duplicate results correlated exactly with original results.

The first period SO<sub>2</sub> result showed poor correlation with the original result (26%), but better in the second period (79%)

Duplicate results for cyanide, PAHs, BTEX, SO<sub>2</sub> and NO<sub>2</sub> taken from stations 1, 6, A 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.

## **1.4 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**

Two surveys yielded odour record returns at odour annoyance impact level 'medium'. These were a 'grass' odour recorded at station 4 on 2 July, and a 'cattle' odour recorded at station 1 on 23 July.

As there was no significant clearance of vegetation at the Avenue during the month, it is considered that the former occurrence is most likely to be due to grass cutting activities local to the station. The wind was not from the direction of the Avenue at the time of the latter record, and is it therefore again not considered to be due to activities or conditions at the Avenue site.

### **1.4.3 Complaints**

No odour-related complaints were received during July 2009.