

# AVENUE COKING WORKS

## AIR QUALITY AND ODOUR MONITORING PROGRAMME

### Summary of Results: July 2008

#### 1.0 Introduction

This summary presents the results of the monitoring programme for July 2008, 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 2008, the following amendments to the scope of routine fixed monitoring occurred due to equipment downtime:

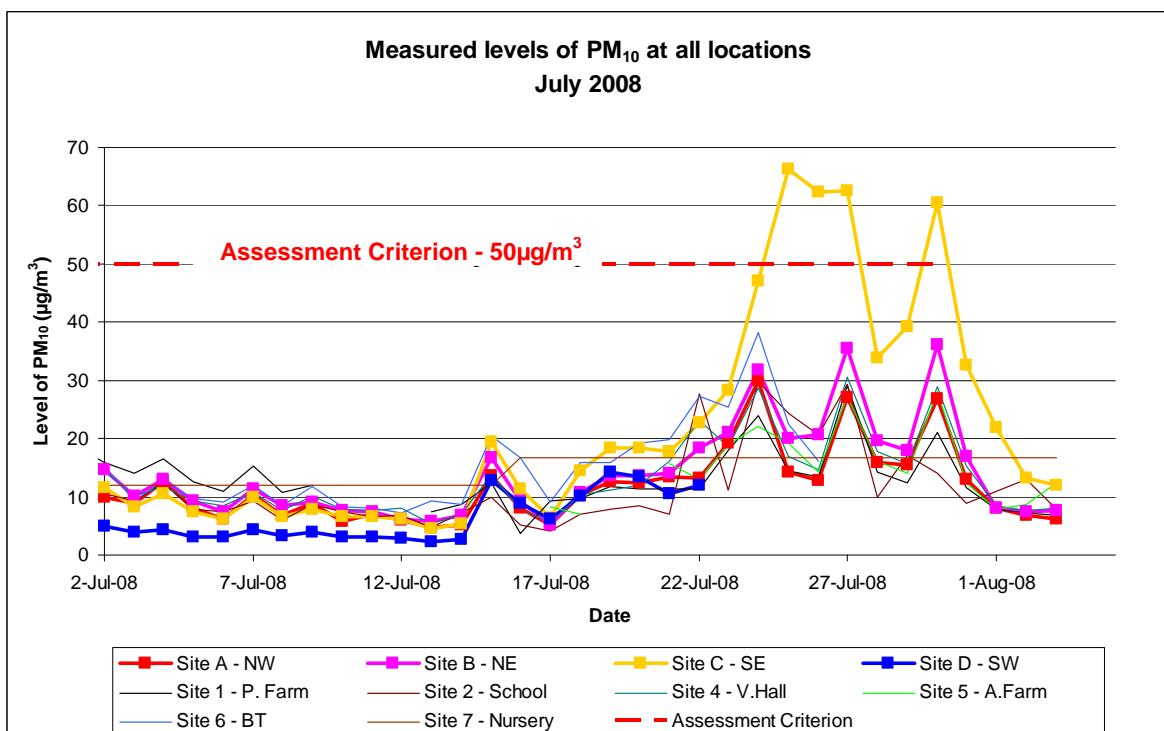
- Power failure at station 5 resulted in loss of APM data for the entire period.
- Technical problems with the APM at station 1 resulted in low data capture between 10 and 16 July.
- Power failure at station 5 resulted in low data capture from 16 to 22 July.
- Power failure at station 1 resulted in downtime from 24 to 26 July.
- Power failure at station 6 resulted in downtime from 27 July to 5 August.
- A technical fault with the APM at station D resulted in a loss of PM<sub>10</sub> data for the period 24 July to 5 August

#### 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.

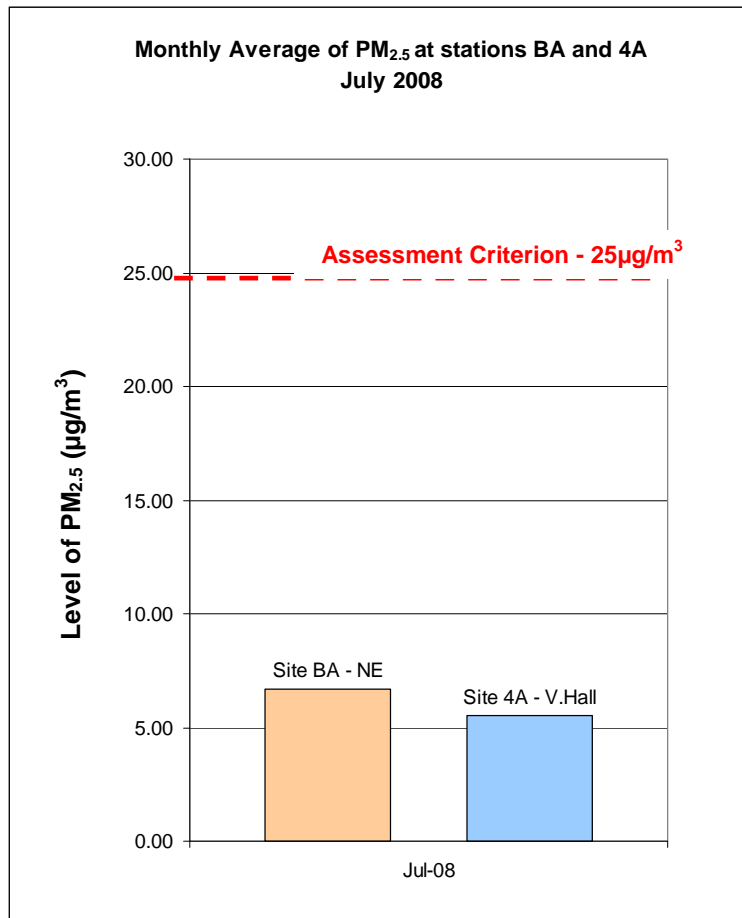
##### 1.2.1 PM<sub>10</sub> Levels

PM<sub>10</sub> assessment levels of 50µg/m<sup>3</sup> was exceeded four times during the month at station C; levels of 66.28µg/m<sup>3</sup>, 62.41µg/m<sup>3</sup>, 62.47µg/m<sup>3</sup> and 60.46 were recorded on the 26, 27, 28 and 31 July respectively. It is considered that this was due to problems with the monitoring equipment and not activities or conditions at the Avenue site.



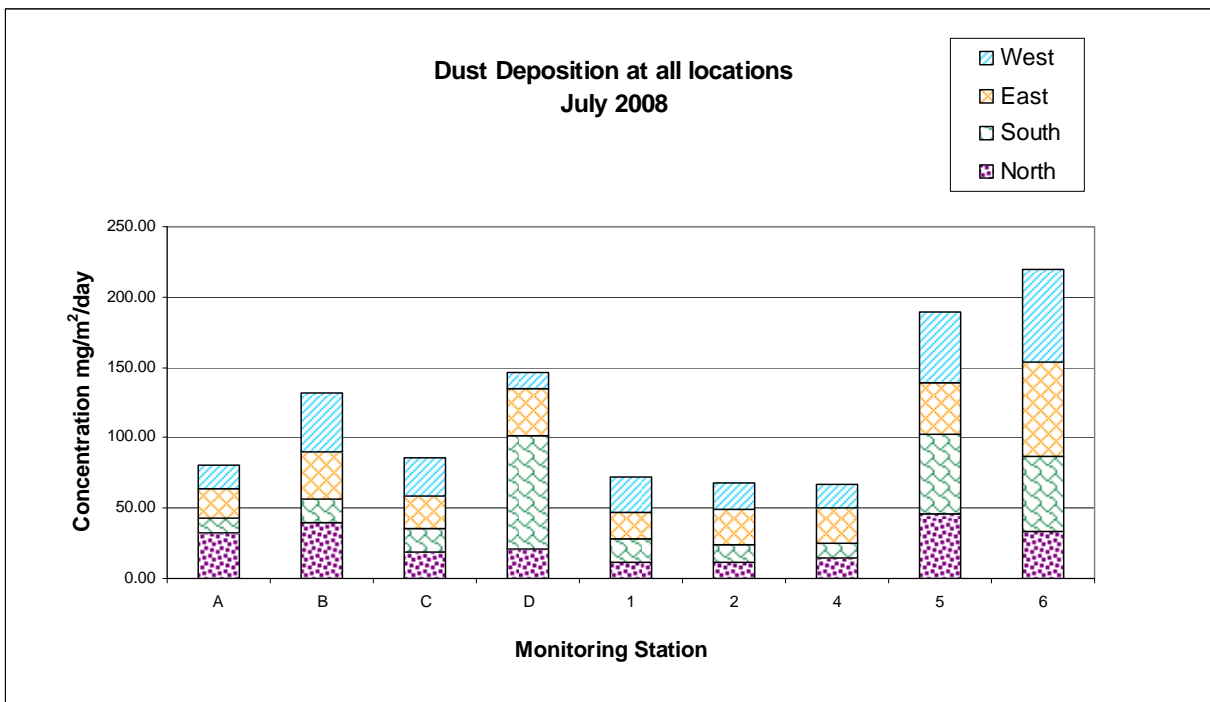
### 1.2.2 PM<sub>2.5</sub> Levels

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 6.69µg/m<sup>3</sup> for station B, and 5.50µg/m<sup>3</sup> for station 4.



### 1.2.3 Deposited Dust

The assessment criterion level of 200mg/m<sup>2</sup>/day was exceeded at stations 6 during the month with the result being 220mg/m<sup>2</sup>/day.

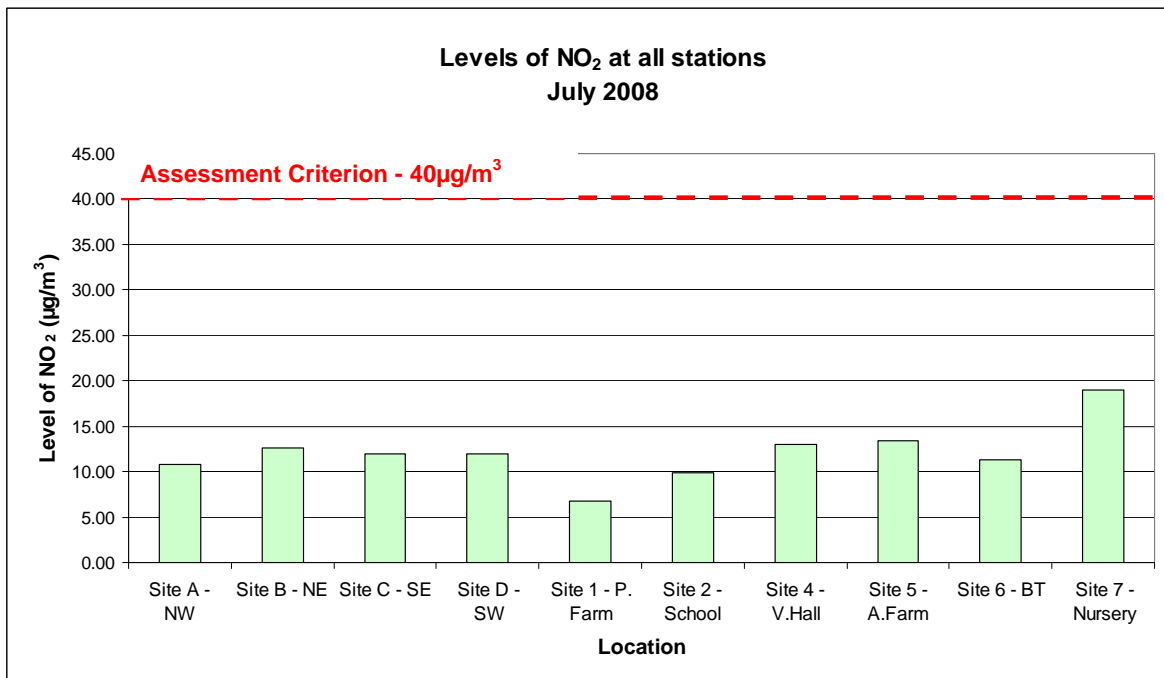


Analysis of dust at station 6 indicates that that collected from the north comprised 60% silicon rich material, 25% amorphous dirt, 10% calcium rich material and 5% plant and animal fragments; from the south the dust comprised 63% silicon rich material, 23% amorphous dirt, 10% plant and animal fragments, 2% calcium rich material, and 2% unburnt coal material.

The similarity in the composition of dust from the different directions suggests that the source is probably very close to the monitoring station. It is known that extensive refurbishing works were taking place on the BT Pensions Office during the period, on top of which station 6 is mounted, and it is considered that this is the origin of the high dust levels

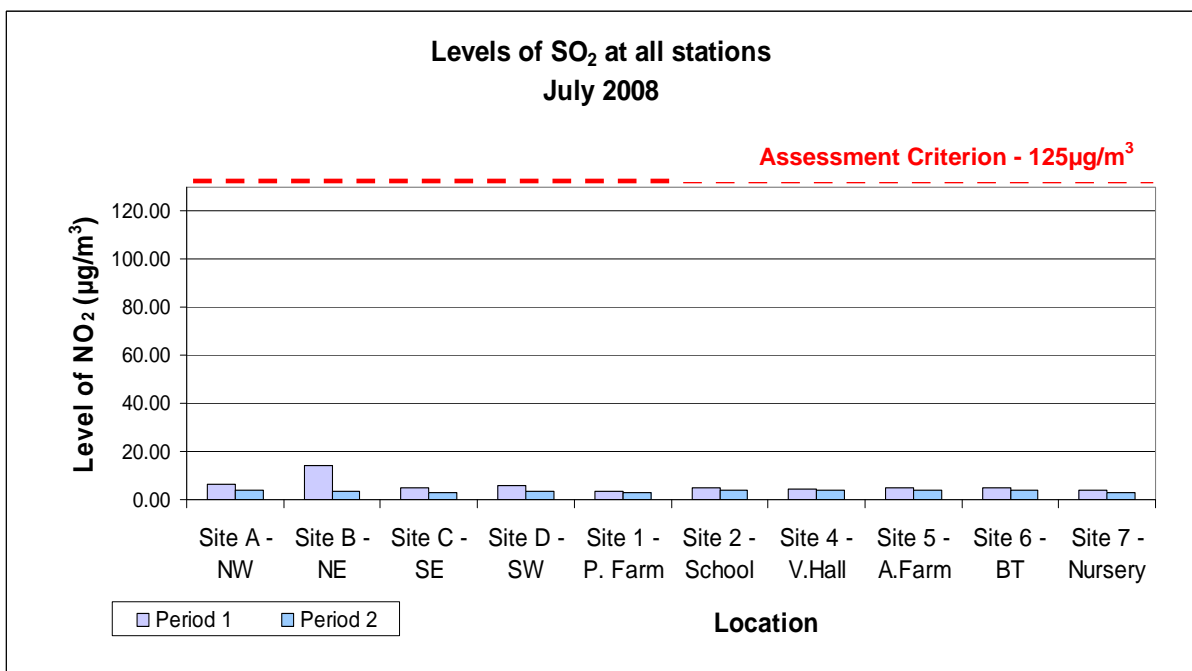
### 1.2.4 Nitrogen Dioxide

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 18.98µg/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 14.24µg/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  $5\mu\text{g}/\text{m}^3$  and  $1.9\text{mg}/\text{m}^3$  per fortnight, respectively. No stations recorded levels of benzene or toluene above the LOD during the 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  $0.5\mu\text{g}/\text{m}^3$  (annual mean). The highest level of lead recorded at any on-site station was  $0.009\mu\text{g}/\text{m}^3$ , recorded at stations A and B 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. No results were reported above the LOD during the month.

### 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 July 2008. The highest naphthalene result was  $0.00842\mu\text{g}/\text{m}^3$  at station B during the first period. The highest concentration of total coal tar pitch volatiles was  $0.00313\mu\text{g}/\text{m}^3$ , recorded at station 6 during the second monitoring 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 2008 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 2008.

#### Duplicates

Duplicate  $\text{PM}_{10}$  samples taken at station A correlated well with original data during the month, with duplicate results ranging between 85.9% and 111% of original results.

Duplicate PAH results from station 1 in the first period correlated poorly with the original data. During the first period, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene and chrysene duplicate results were 339%, 253%, 49%, 33% and 34% of original respectively. Results in the second period correlated moderately well with original data.

Duplicate phenol samples were taken at station 1. No results were reported above the limit of detection (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 results from station A correlated well with original data for monitoring period 2; however for period 1 the duplicate result was 200% of the original result.

Duplicate metals results from station A correlated well with original data during the second monitoring period, but less well during the first period; the duplicate result for copper was 50% of the original result during the first period.

Duplicate BTEX results recorded at station 6 correlated well with original results during both monitoring periods.

The duplicate  $\text{NO}_2$  result from station B correlated well with the original result. However the duplicate  $\text{SO}_2$  result from the first period was 26% of the original result. The period 2 duplicate result correlated well with the original result.

### **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**

There was one record of odour of intensity 4 detected during the month:

- one record of 'manure' odour was recorded on 5 July, approximately 0.5km east of the Avenue site.

No odours of intensity 5 or 6 were reported during the month.

The 'manure' odour on 5 July was recorded when the wind was not from the direction of the Avenue site, and it therefore will not be assessed further (as it is not considered to be attributable to the Avenue site).

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

During the month, there were no records of 'medium' or 'high' odour annoyance impacts.

#### **1.4.3 Complaints**

No odour-related complaints were received during July 2008.