AVENUE COKING WORKS
AIR QUALITY AND ODOUR MONITORING PROGRAMME
Summary of Results: August 2008

1.0 Introduction

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

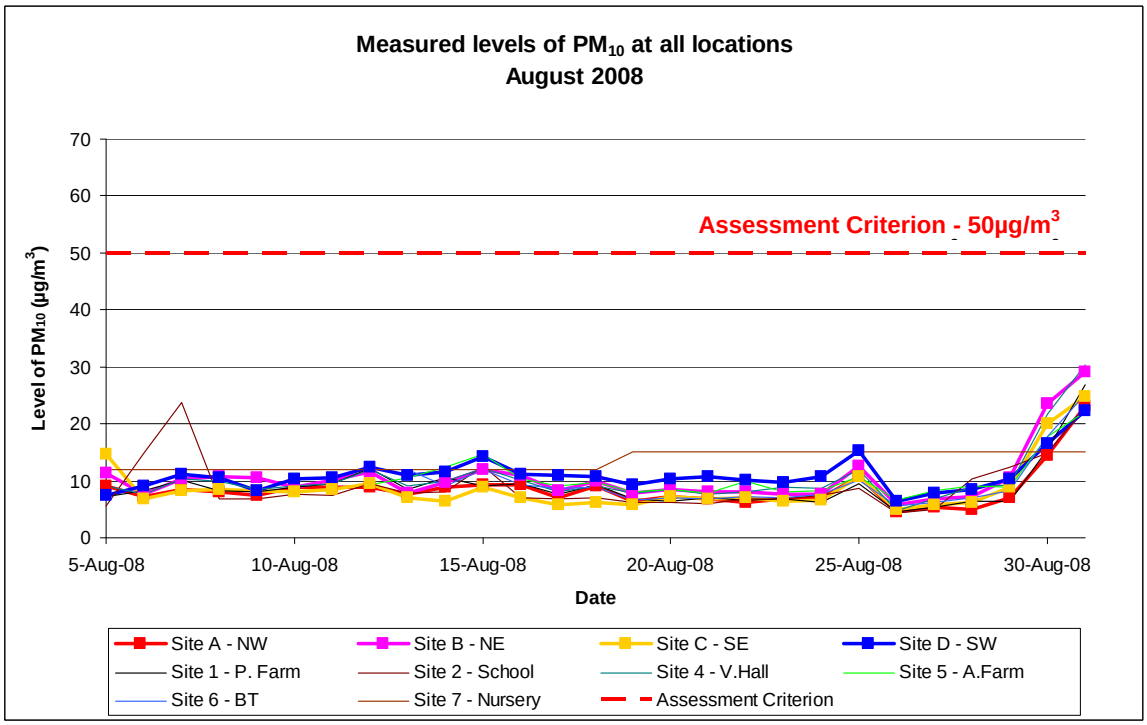
- Power failure at station 5 resulted in the loss of APM data from 5 to 12 August
- Power failure at station 6 resulted in the loss of APM data from 5 to 13 August.

1.2 Results from Routine Air Monitoring

Of the substances monitored as part of the Avenue programme, statutory limits exist for benzene, PM_{10}, $PM_{2.5}$, NO_2 and SO_2. 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.

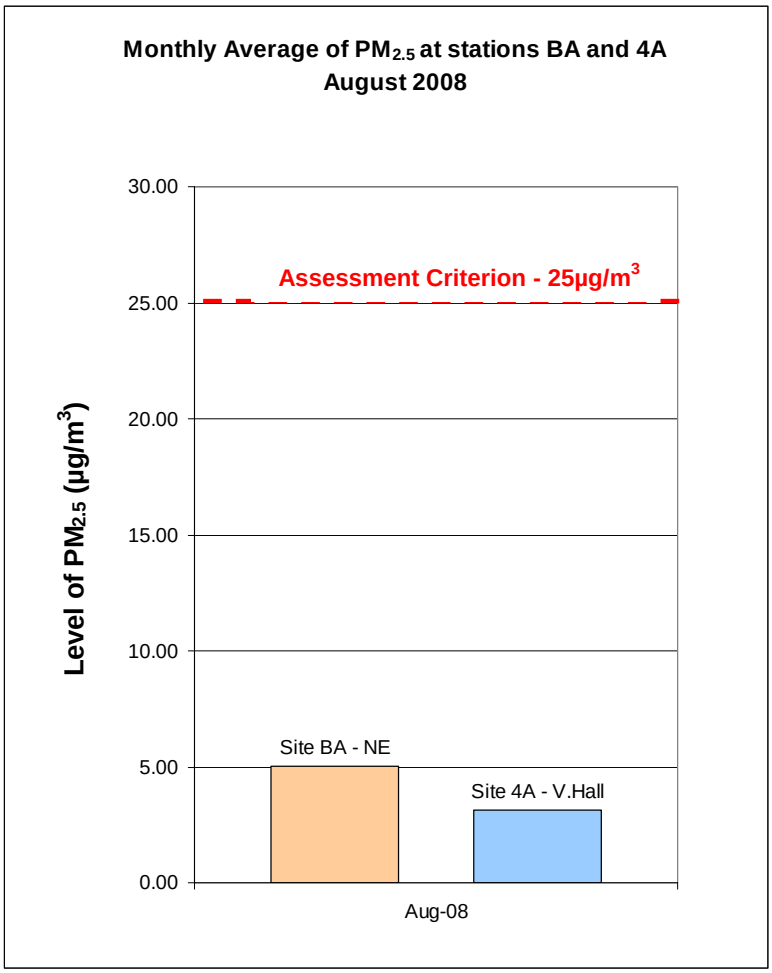
1.2.1 PM_{10} Levels

The assessment level of 50µg/m^3 was not exceeded during the month, with the highest result being 30.40µg/m^3 at station 4 on 31 August.



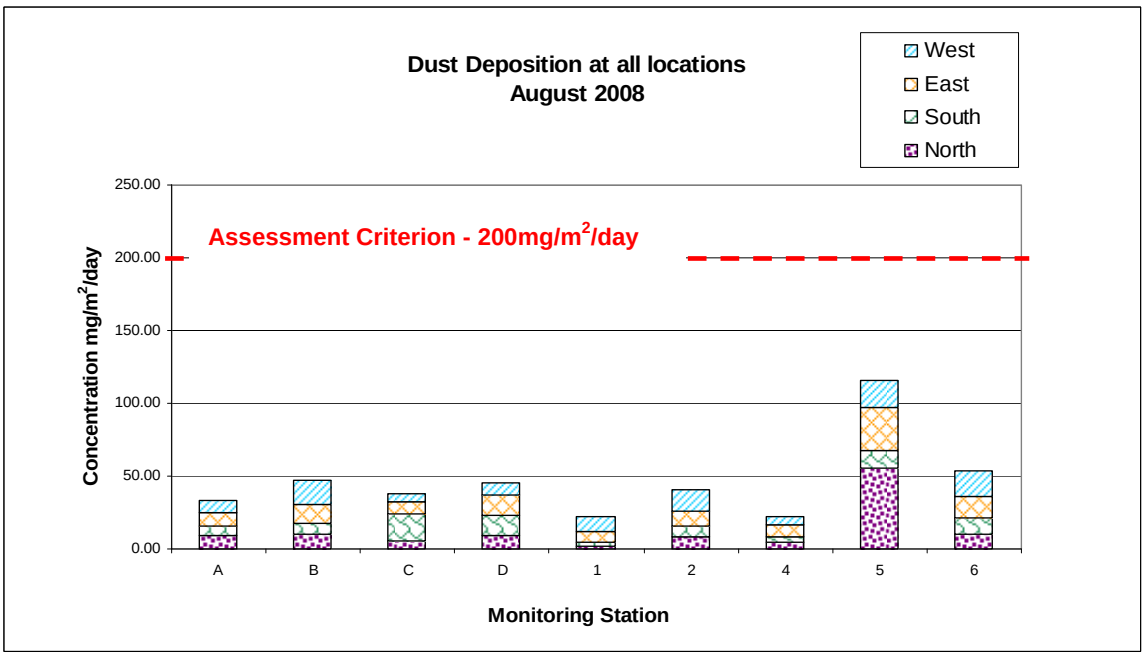
1.2.2 $PM_{2.5}$ Levels

The assessment level of 25µg/m^3 was not exceeded at on-site station B or off-site station 4 during the month, with the monthly mean result being 5.02µg/m^3 for station B, and 3.13µg/m^3 for station 4.



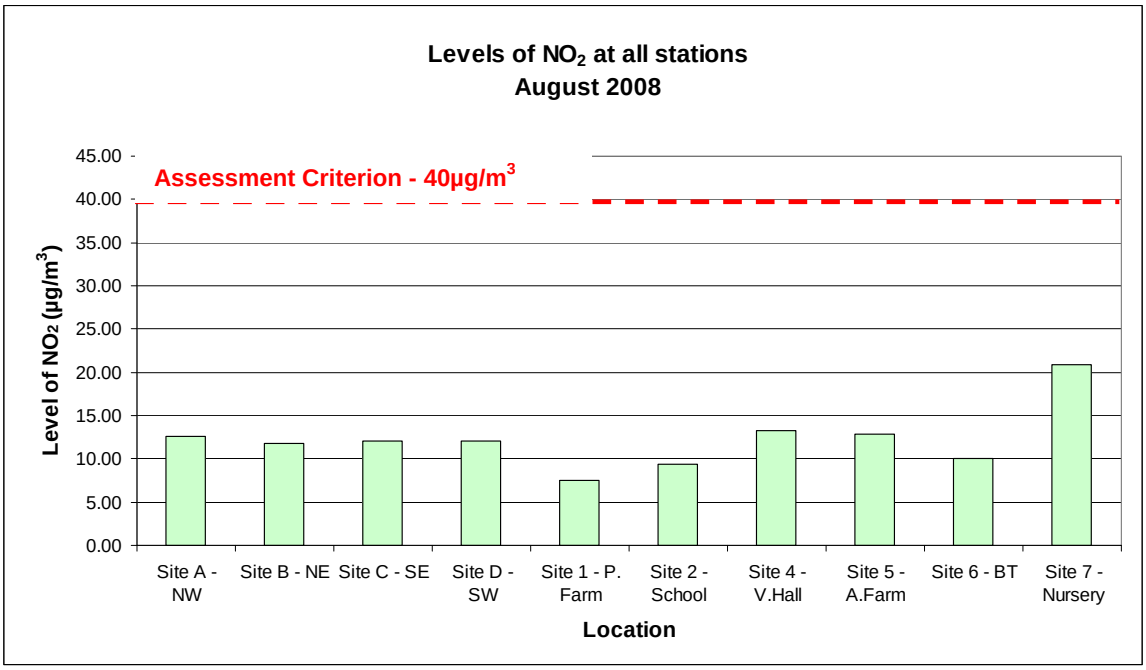
1.2.3 Deposited Dust

The assessment criterion level of 200mg/m^2/day was not exceeded during the month, with the highest result being 116mg/m^2/day recorded at station 5.



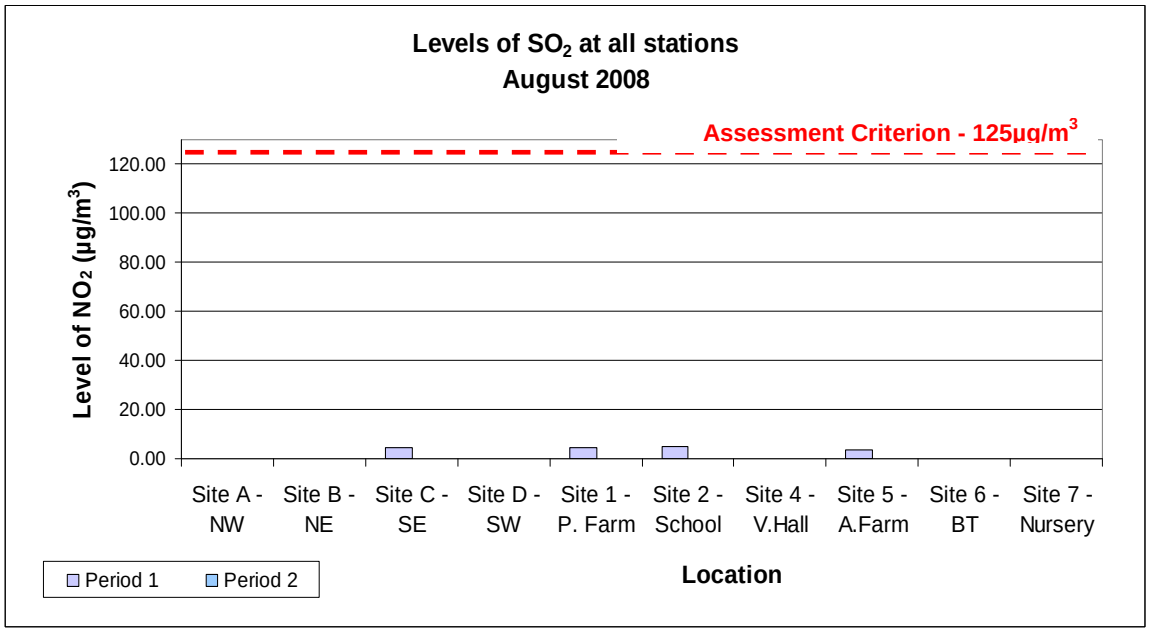
1.2.4 Nitrogen Dioxide

The assessment criteria level developed for NO_2 is 40µg/m^3. No stations recorded NO_2 in exceedance of this level, with the highest NO_2 result being 20.87µg/m^3, recorded at station 7



1.2.5 Sulphur Dioxide

The assessment criteria levels developed for SO_2 is 125µg/m^3. No stations recorded SO_2 in exceedance of this level, with the highest SO_2 level being 4.50µg/m^3 at station 1 in the first monitoring period. Results were reported below the LOD during the first period in many cases, and below the LOD during the second period for all monitoring stations.



1.2.6 BTEX Compounds

The assessment criteria limits for benzene and toluene are 5µg/m^3 and 1.9mg/m^3 per fortnight, respectively. No stations recorded levels of benzene above the LOD during the month. The highest level of toluene was 0.022mg/m^3, recorded at station 1 during the second period.

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^3 (annual mean). The highest level of lead recorded at any on-site station was 0.01µg/m^3, recorded at stations A, B and C in the first monitoring period and stations 1, 2, 4, 5 and 6 in the second monitoring period.

Cadmium was recorded at levels around the applicable LOD (0.005µg/m^3) at stations 5 and 6 due to smaller sample volumes as a result of downtime experienced at those stations.

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^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 48µg/m^3 and 220µg/m^3 per fortnight, respectively. The reporting of phenols is subject to a LOD of 0.2µg/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 0.48µg/m^3, whilst for naphthalene the figure is 126µg/m^3. None of the on or off-site stations recorded concentrations in exceedance of these criteria during August 2008. The highest naphthalene result was 0.01125µg/m^3 at station B during the second monitoring period. The highest concentration of total coal tar pitch volatiles was 0.00008µg/m^3, also recorded at station B during the second 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 August 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 August 2008.

Duplicates

Duplicate PM_{10} samples taken at station A correlated well with original data during the month, with duplicate results ranging between 93% and 125% of original results.

Duplicate PAH results from station 1 correlated poorly with original data during the first period, with the naphthalene, benzo(a)anthracene, chrysene, benzo(b)/(k)fluoranthene and benzo(a)pyrine duplicate results being 33%, 25%, 16%, 34% and 30% of the original respectively. Duplicate results correlated moderately well with original data during the second period, with the benzo(a)anthracene and benzo(a)pyrine duplicate results both being 49% of the original.

Duplicate phenol samples were taken at station 1. No results were reported above the limit of detection (LOD) of 0.2µg/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 exactly with original results during both monitoring periods; no results were reported above the LOD.

Duplicate metals results from station A correlated exactly with original data during the first monitoring period, but less well during the second period, with the duplicate result for chromium being 43% of the original.

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

The duplicate NO_2 and SO_2 results from station B correlated well with original results. SO_2 results were not reported above the LOD at station B 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

There were two records of odour at intensity 6 detected during the month:

- Two records of 'tar, asphalt, bitumen' odour were recorded on 7 and 8 August, both at approximately 0.5km west of the Avenue site.

The two 'tar, asphalt, bitumen' odours were recorded when the wind was not from the direction of the Avenue site, and will therefore not be assessed further (as it is not considered to be attributable to the Avenue site).

1.4.2 Sensory Field Odour Surveys

Two records of 'high' odour annoyance impact were recorded during the month:

- Two records of 'oil' odour, described as 'unpleasant', were recorded at off-site station 1 on 15 and 29 August.

The wind was not from the direction of the Avenue at the time of these records and therefore they will not be assessed further.

1.4.3 Complaints

No odour-related complaints were received during August 2008.