# **Air Quality Progress Report**

# August 2008

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### **1.0 Executive Summary**

In line with Government guidance relating to Local Air Quality Management, Sheffield City Council has undertaken a Progress Report on the state of air quality in its area. The results are summarised in Table 1a below. In addition, as part of the new round of Review and Assessment, an Updating and Screening Assessment will be carried out by April 2009.

| Pollutant                                       | Findings   | Further Action  |
|---|--|---|
| Benzene   | No areas where<br>objectives are at risk of<br>being exceeded  | -   |
| 1,3-butadiene                                   | No areas where objective<br>is at risk of being<br>exceeded  | -   |
| Carbon monoxide                                 | No areas where objective<br>is at risk of being<br>exceeded  | -   |
| Lead  | No areas where<br>objectives are at risk of<br>being exceeded  | -   |
| Nitrogen dioxide                                | A new citywide Air<br>Quality Management<br>Area has been<br>designated as, there are<br>locations where there is a<br>risk of exceeding the<br>annual objective | Further Assessment<br>by October 2008   |
| Particles PM <sub>10</sub><br>(2004 objectives) | There are locations<br>where there is a risk of<br>exceeding the 24-hour<br>objective more than 35<br>times a year   | Designate AQMA by<br>Dec 08.<br>Air Quality Action<br>Plan by Dec 2009<br>Further Assessment<br>by Dec 2009 |
| Sulphur dioxide                                 | No areas where<br>objectives are at risk of<br>being exceeded  | -   |

#### Table 1a Result of Progress Report 2008

# 2.0 Introduction

Under the Environment Act 1995 and associated subsequent Regulations, local authorities are required to review and assess air quality in their area against Government air quality objectives. See table 1b below for the objectives.

# Table 1b Air Quality Objectives (England and Wales only - Separate objectives apply to Scotland and London)

| Dollutont                        | Air Quality  | Date to be                              |             |
|----------------------------------|--|---|-------------|
| Pollutant                        | Concentration  | Measured as                             | achieved by |
| Benzene                          | 16.25 μg/m <sup>3</sup>  | Running annual mean                     | 31.12.2003  |
|                                  | 5 μg/m³  | Annual mean                             | 31.12.2010  |
| 1,3-<br>butadiene                | 2.25 μg/m <sup>3</sup>   | Running annual<br>mean                  | 31.12.2003  |
| Carbon<br>monoxide               | 10 mg/m <sup>3</sup>   | Maximum daily<br>running 8-hour<br>mean | 31.12.2003  |
| Lood                             | 0.5 μg/m <sup>3</sup>  | Annual mean                             | 31.12.2004  |
| Leau                             | 0.25 μg/m <sup>3</sup>   | Annual mean                             | 31.12.2008  |
| Nitrogen<br>dioxide              | 200 μg/m <sup>3</sup> not to be<br>exceeded more than<br>18 times a year | 1-hour mean                             | 31.12.2005  |
|                                  | 40 μg/m <sup>3</sup>   | Annual mean                             | 31.12.2005  |
| Particles<br>(PM <sub>10</sub> ) | 50 μg/m <sup>3</sup> not to be<br>exceeded more than<br>35 times a year  | 24-hour mean                            | 31.12.2004  |
| (gravimetric)                    | 40 μg/m <sup>3</sup>   | Annual mean                             | 31.12.2004  |
|                                  | 350 μg/m <sup>3</sup> not to be<br>exceeded more than<br>25 times a year | 1-hour mean                             | 31.12.2004  |
| Sulphur<br>dioxide               | 125 μg/m <sup>3</sup> not to be<br>exceeded more than<br>3 times a year  | 24-hour mean                            | 31.12.2004  |
|                                  | 266 μg/m <sup>3</sup> not to be<br>exceeded more than<br>35 times a year | 15-minute mean                          | 31.12.2005  |

Sheffield City Council completed the stages 1, 2 & 3 air quality review and assessments in late 2001, concluding that two areas in the city were predicted to be above the annual objective for nitrogen dioxide. As a result, two air quality management areas were designated based on predicted exceedence of the nitrogen dioxide annual mean. An air quality action plan was produced in spring 2003 that describes in detail the actions to improve air quality in each of the air quality management areas.

A further review and assessment of air quality (stage 4) was completed in February 2003. This fourth stage of the first round of the review and assessment process was carried out to ensure that the conclusions in stage 3 were correct. Stage 4 concluded that whilst the air quality management areas should remain unchanged, other areas in the city needed further investigation.

The second round of the review and assessment process began with an Updating and Screening Assessment which was produced in July 2003, the results of which were that a Detailed Assessment (completed late 2004) should be undertaken for NO<sub>2</sub> and PM<sub>10</sub>.

The Detailed Assessment for nitrogen dioxide concluded:

- In addition to the existing AQMAs, there are many areas where there is a likelihood of exceeding the annual nitrogen dioxide 2005 objective.
- These areas are likely to be adjacent to all of the main arterial routes into the city and the outer ring road.
- In accordance with Government requirements, a consultation process will be needed to decide any amendments or additions to existing AQMAs.

This consultation was carried out, with the result being overwhelming support for a citywide AQMA that covers the whole of the urban area of Sheffield. This is shown in Figure 1.

# Figure 1 The Sheffield Air Quality Management Area designated for nitrogen dioxide



An Updating and Screening Assessment report was completed for the third round of the Review and Assessment process in 2006. The conclusions were;

- A Progress Report will be produced for nitrogen dioxide by April 2007;
- A Detailed Assessment will be carried out for PM<sub>10</sub> by April 2007.

The remaining 5 pollutants (benzene, 1,3-butadiene, carbon monoxide, lead and sulphur dioxide) currently pose no risk of exceeding their respective objectives, and therefore will not be the subject of Detailed Assessments.

The Detailed Assessment for PM10 was completed in April 2008. The conclusions of the report were;

- There was a significant risk that the PM10 objective (daily mean) could be exceeded.
- An Air Quality Management Area AQMA should be designated for PM10.

At the time of writing of this Progress Report, consultation on the designation of an AQMA for PM10 was ongoing.

The role of the Progress Report is to provide continuity in LAQM in years when Upgrading and Screening Assessments are not being carried out. The report should provide both a review and update on air quality issues, including information on developments that might affect air quality and the results of monitoring. It should ensure that changed circumstances which would require a Detailed Assessment are identified quickly. This report is the Progress Report.

# 3.0 Review and Assessment of Carbon Monoxide

3.1 Conclusion of Previous Rounds of Review and Assessment

The Upgrading and Screening Assessment (USA) undertaken for carbon monoxide (CO) in 2006 found that, based on measurements taken in the city and a checklist approach, there was no risk of public exposure in Sheffield to levels at or above the objective. As shown from monitoring, the maximum daily 8-hour running mean has never been exceeded and levels are well below the 10mg/m<sup>3</sup> objective. No further action is required.

## 3.2 Monitoring Data

The location of all the monitoring stations (for all pollutants) is shown in Fig 2.



# Figure 2 Automatic monitoring site locations

Map of air quality monitoring stations equipped with continuous analysers.

Carbon monoxide is monitored at Sheffield Centre and Tinsley sites.

| Maximum daily 8 hour running mean |                   |                                    |  |  |
|-----------------------------------|-------------------|------------------------------------|--|--|
| Year                              | Site              | Concentration (mg/m <sup>3</sup> ) |  |  |
|                                   | Sheffield Centre  | 4.9                                |  |  |
| 1996                              | Sheffield Tinsley | 4.5                                |  |  |
|                                   | Average           | 4.7                                |  |  |
|                                   | Sheffield Centre  | 4.7                                |  |  |
| 1997                              | Sheffield Tinsley | 4.1                                |  |  |
|                                   | Average           | 4.4                                |  |  |
|                                   | Sheffield Centre  | 3.5                                |  |  |
| 1998                              | Sheffield Tinsley | 3.5                                |  |  |
|                                   | Average           | 3.5                                |  |  |
|                                   | Sheffield Centre  | 2.7                                |  |  |
| 1999                              | Sheffield Tinsley | 3.4                                |  |  |
|                                   | Average           | 3.05                               |  |  |
|                                   | Sheffield Centre  | 3.6                                |  |  |
| 2000                              | Sheffield Tinsley | 2.8                                |  |  |
| 2000                              | Average           | 3.2                                |  |  |
|                                   | Sheffield Centre  | 4.9                                |  |  |
| 2001                              | Sheffield Tinsley | 3.6                                |  |  |
|                                   | Average           | 4.25                               |  |  |
|                                   | Sheffield Centre  | 2.7                                |  |  |
| 2002                              | Sheffield Tinsley | 3.6                                |  |  |
|                                   | Average           | 3.15                               |  |  |
|                                   | Sheffield Centre  | 2.9                                |  |  |
| 2003                              | Sheffield Tinsley | N/A                                |  |  |
|                                   | Average           | 2.9                                |  |  |
|                                   | Sheffield Centre  | 1.7                                |  |  |
| 2004                              | Sheffield Tinsley | 2.1                                |  |  |
|                                   | Average           | 1.9                                |  |  |
|                                   | Sheffield Centre  | 3.0                                |  |  |
| 2005                              | Sheffield Tinsley | 2.3                                |  |  |
|                                   | Average           | 2.65                               |  |  |
|                                   | Sheffield Centre  | 2.2                                |  |  |
| 2006                              | Sheffield Tinsley | 2.4                                |  |  |
|                                   | Average           | 2.3                                |  |  |
|                                   | Sheffield Centre  | 1.5                                |  |  |
| 2007                              | Sheffield Tinsley | 1.6                                |  |  |
|                                   | Average           | 1.6                                |  |  |

Table 2 Carbon monoxide monitoring results Sheffield 1996-2007

#### 3.3 Conclusions

It is very likely that there will be no exceedences of the carbon monoxide objective in the foreseeable future.

### 4.0 Review and Assessment of Benzene

4.1 Summary of Previous Rounds of Review and Assessment

The USA undertaken for benzene concluded that the risk of public exposure in Sheffield to levels at or above the objectives is extremely unlikely. As shown from the monitoring, it is extremely unlikely that there will be an exceedence of either the running annual mean objective of 16.25  $\mu$ g/m<sup>3</sup> or the 2010 annual mean objective of 5  $\mu$ g/m<sup>3</sup>.

#### 4.2 Monitoring data

Benzene measurement is undertaken at the Sheffield Centre AURN site. See Figure 2 for a map showing its location.

| Site name      | Location         | Site description   | Owner |
|----------------|------------------|--------------------|-------|
| Sheffield City | Charter Row      | Urban              | DEFRA |
| Council        | (inside the City | background with    |       |
|                | Centre AQMA)     | pumped diffusion   |       |
|                |                  | tubes <sup>1</sup> |       |

#### Table 3a Benzene Monitoring Site Details

Results for benzene are shown in Table 3b below;

# Table 3b Annual Average Benzene Monitoring Results

| Annual averages at Sheffield Centre site |   |  |  |  |
|--|---|--|--|--|
| Year                                     | Annual Average Concentration (μg/m <sup>3</sup> ) |  |  |  |
| 2002                                     | 1.41  |  |  |  |
| 2003                                     | 1.56  |  |  |  |
| 2004                                     | 1.46  |  |  |  |
| 2005                                     | 1.57  |  |  |  |
| 2006                                     | n/a (<75% data capture)                           |  |  |  |
| 2007                                     | 1.04  |  |  |  |

#### 4.3 Conclusions

No exceedences of the benzene objective are likely in the foreseeable future.

# 5.0 Review and Assessment of 1,3 butadiene

## 5.1 Summary of Previous Rounds of Review and Assessment

Previous rounds of Review and Assessment, undertaken for 1,3-butadiene conclude that, as there are no significant industrial sources of 1,3-butadiene in or close to the city, and based on measurements taken at such "worst case" sites in other parts of the country, the risk of public exposure in Sheffield to levels at or above the objective was highly unlikely. It remains extremely unlikely that in Sheffield there will be an exceedence of the running annual mean objective of 2.25  $\mu$ g/m<sup>3</sup>.

5.2 Monitoring data

No monitoring of 1,3-butadiene is carried out in Sheffield.

5.3 Conclusions

There are no new sources of 1,3-butadiene in the city and no exceedences of the objective is likely in the city.

#### 6.0 Review and Assessment of Lead

6.1 Summary of Previous Rounds of Review and Assessment

Previous rounds of Review and Assessment concluded that it is highly unlikely that there will be any areas of Sheffield where the lead objectives are exceeded. There are no new industrial sources for lead, or any industrial sources with substantial increases of emissions in the city.

6.2. Monitoring data

There are currently no monitoring sites in Sheffield where lead is measured.

6.3 Conclusion

This Assessment has found that there are unlikely to be any locations in Sheffield where the lead objective will be exceeded.

#### 7.0 Review and Assessment of Nitrogen Dioxide

7.1 Summary of Previous Rounds of Review and Assessment

The first round of review and assessment for nitrogen dioxide by Sheffield City Council concluded that two air quality management areas were required for Sheffield based on predicted exceedences of the annual objective 40  $\mu$ g/m<sup>3</sup> by 2005. The major source of nitrogen dioxide in the two Air Quality Management Areas in Sheffield is road traffic.

The second round of the review and assessment process for nitrogen dioxide began with an Updating and Screening Assessment which was produced in July 2003, the results of which were that a Detailed Assessment (completed late 2004) should be undertaken for  $NO_2$  and  $PM_{10}$ .

The subsequent Detailed Assessment concluded:

- In addition to the existing AQMAs, there are many areas where there is a likelihood of exceeding the annual nitrogen dioxide 2005 objective.
- These areas are likely to be adjacent to all of the main arterial routes into the city and the outer ring road.
- In accordance with Government requirements, a consultation process would be needed to decide any amendments or additions to existing AQMAs.

This consultation was carried out with the result being overwhelming support for a citywide AQMA that covers the whole of the urban area of Sheffield. (See Figure 1 for map.)

7.2. Monitoring data from Automatic Monitoring Stations

See Figure 2 showing the location of the continuous automatic nitrogen dioxide monitoring sites in Sheffield. All of these sites now fall within the citywide AQMA

Results of nitrogen dioxide from automatic monitoring stations are shown in Table 4.

Table 4 Nitrogen dioxide monitoring results from continuous analysers (figures in bold are at or above the annual objective)

| Sito                         | Annual mean |                | No of hours above | Data      |
|------------------------------|-------------|----------------|-------------------|-----------|
| Sile                         | Annual III  |                | 200 µg/m° 1-hour  | Capture % |
|                              | Year        | μ <b>g/m</b> ° | Objective         |           |
| GH1 St John<br>Fisher School | 1999        | 23             | 0                 | 49        |
| GH1 Endcliffe<br>Park        | 2000        | 35             | 0                 | 85        |
| GH1                          | 2001        | 35             | 0                 | 79        |
| Brightside<br>School         | 2002        | 40             | 5                 | 49        |
|                              | 2003        | 31             | 0                 | 68        |
| GH1 Firshill                 | 2004        | 25             | 0                 | 94        |
| School                       | 2005        | 26             | 1                 | 65        |
|                              | 2006        | 27             | 0                 | 991       |
|                              | 2007        |                | Station moved     |           |
| GH2 Tinsley                  | 2000        | 47             | 0                 | 84        |
| Infant School                | 2001        | 47             | 1                 | 91        |
|                              | 2002        | 46             | 0                 | 82        |
|                              | 2003        | 44             | 0                 | 72        |
|                              | 2004        | 49             | 0                 | 91        |
|                              | 2005        | 42             | 3                 | 83        |
|                              | 2006        | 47             | 0                 | 96        |
|                              | 2007        | 46             | 0                 | 92        |
| GH3                          | 2000        | 44             | 0                 | 96        |
| Lowfield                     | 2001        | 44             | 2                 | 98        |
| School                       | 2002        | 42             | 1                 | 82        |
|                              | 2003        | 54             | 1                 | 55        |
|                              | 2004        | 37             | 1                 | 98        |
|                              | 2005        | 35             | 0                 | 98        |
|                              | 2006        | 39             | 0                 | 97        |
|                              | 2007        | 31             | 0                 | 89        |
| GH4 Wicker                   | 2001        | 40             | 0                 | 34        |
|                              | 2002        | 40             | 0                 | 93        |
|                              | 2003        | 40             | 0                 | 75        |
|                              | 2004        | 42             | 1                 | 92        |
|                              | 2005        | 32             | 0                 | 91        |
|                              | 2006        | 34             | 2                 | 91        |
|                              | 2007        | 38             | 0                 | 77* flood |
| GH5 HSE<br>building          | 2001        | 26             | 1                 | 44        |
| GH5 Hallam                   | 2002        | 50             | 0                 | 38        |
| University                   | 2003        | 45             | 0                 | 86        |
|                              | 2004        | 40             | 0                 | 92        |
|                              | 2005        | 38             | 0                 | 91        |

| Site                            | Annual me | ean            | No of hours above<br>200 μg/m³ 1-hour | Data<br>Capture % |
|---------------------------------|-----------|----------------|---------------------------------------|-------------------|
|                                 | Year      | μ <b>g/m</b> ³ | objective                             |                   |
|                                 | 2006      | 41             | 0                                     | 99                |
|                                 | 2007      | 40             | 0                                     | 83                |
| Defra<br>Sheffield<br>Tinsley   | 1999      | 46             | 0                                     | 98                |
|                                 | 2000      | 44             | 0                                     | 97                |
|                                 | 2001      | 45             | 0                                     | 99                |
|                                 | 2002      | 42             | 0                                     | 97                |
|                                 | 2003      | 46             | 0                                     | 97                |
|                                 | 2004      | 41             | 0                                     | 96                |
|                                 | 2005      | 32             | 0                                     | 97                |
|                                 | 2006      | 40             | 1                                     | 99                |
|                                 | 2007      | N/A            | -                                     | 68                |
| Defra<br>Sheffield<br>Centre    | 1999      | 37             | 0                                     | 98                |
|                                 | 2000      | 35             | 0                                     | 97                |
|                                 | 2001      | 37             | 0                                     | 97                |
|                                 | 2002      | 34             | 0                                     | 98                |
|                                 | 2003      | 39             | 0                                     | 95                |
|                                 | 2004      | 31             | 0                                     | 97                |
|                                 | 2005      | N/A            |                                       | 66                |
|                                 | 2006      | N/A            |                                       | 52                |
|                                 | 2007      | 34             | 0                                     | 94                |
| Romon<br>Waingate<br>(roadside) | 2005      | 53             | 7                                     | 77                |
|                                 | 2006      | 54             | 25                                    | 87                |
|                                 | 2007      | 50             | 10                                    | 84                |

7.3 Monitoring Results from Diffusion Tubes.

Passive Diffusion Tube Monitoring

In addition to the 6 City Council and 2 DEFRA owned automatic monitoring sites in Sheffield, a network of passive diffusion tubes have been located across the city.

There are 3 schemes operating in the city where diffusion tubes are being used to measure nitrogen dioxide.

The city council currently runs 2 schemes:

- 1) The citywide scheme, which is being used to look at roadside receptor locations (areas where members of the public could be exposed to higher than normal pollution levels). Shown in Table 5 below.
- 2) The LTP related scheme. This scheme is looking at levels of nitrogen dioxide associated with the PLAN4 S10 Transport Corridor and the Chesterfield Road Scheme. Shown in Table 6.
- 3) The third scheme is the community diffusion tube project coordinated by Sheffield City Council and the East End Quality of Life Project. This involves local community groups or individuals choosing the tube locations in their area and being responsible for changing the tubes every month. The majority of the tubes in this scheme are located on houses where the individuals that change the tubes live. Results are shown in Table 7.

All the results of these diffusion tubes are shown on the website www.sheffieldairmap.org

The Highways Agency is also carrying out diffusion tube monitoring in Sheffield immediately adjacent to the M1 motorway. At present there is less than a full calendar year of data. The results of this survey will be reported in future reports.

# Table 5 City-Wide Diffusion Tube Results

| Site                         | Annual<br>Mean<br>NO2<br>µg/m3<br>2003 | Annual<br>Mean<br>NO2<br>µg/m3<br>2004 | Annual<br>Mean<br>NO2<br>µg/m3<br>2005 | Annual<br>Mean<br>NO2<br>μg/m3<br>2006 | Annual<br>Mean<br>NO2<br>μg/m3<br>2007 |
|------------------------------|--|--|--|--|--|
| Warren Lane                  | 37                                     | 31                                     | 34                                     | 35                                     | 34                                     |
| 7 Bawtry Gate                |  | 49                                     | 55                                     | 57                                     | 50                                     |
| 47 Bawtry Road               |  | 54                                     | 60                                     | 62                                     | 59                                     |
| 109 Bawtry Road              |  | 46                                     | 51                                     | 53                                     | 47                                     |
| Ecclesfield Road Low         |  |  |  |  |  |
| Wincobank                    | 46                                     | 52                                     | 58                                     | 60                                     | 52                                     |
| Attercliffe Road Duplicate   | 46                                     | 51                                     | 57                                     | 59                                     | 53                                     |
| Attercline Road Duplicate    | 56                                     | 49                                     | 55                                     | 57                                     | 50                                     |
| Bamsley Rd Fir Vale          | 55                                     | 49                                     | 55                                     | 57                                     | 49                                     |
| Opweil Street                | 47                                     | 45                                     | 50                                     | 52                                     | 48                                     |
| Burngreave Road/Minna Road   | 49                                     | 41                                     | 46                                     | 48                                     | 42                                     |
| Loxley New Road              | 52                                     | 45                                     | 50                                     | 52                                     | 47                                     |
| Loxley New Road- Duplicate   | 47                                     | 44                                     | 49                                     | 51                                     | 48                                     |
| Bowden Wood Close            | 42                                     | 48                                     | 53                                     | 56                                     | 42                                     |
| Parkway Broad Lane           | 44                                     | 46                                     | 51                                     | 53                                     | 52                                     |
| Parkway Broad Lane Duplicate | 52                                     | 45                                     | 49                                     | 51                                     | 52                                     |
| Exchange Street              | 45                                     | 41                                     | 45                                     | 47                                     | 48                                     |
| Duke Street                  | 48                                     | 49                                     | 55                                     | 57                                     | 56                                     |
| Waingate                     | 61                                     | 49                                     | 54                                     | 56                                     | 55                                     |
| Fitzalan Square              | 60                                     | 56                                     | 62                                     | 64                                     | 62                                     |
| Barkers Pool                 | 36                                     | 31                                     | 35                                     | 36                                     | 35                                     |
| Scotland Street              | 32                                     | 28                                     | 31                                     | 32                                     | 30                                     |
| Eldon St/ Wellington St      | 34                                     | 28                                     | 31                                     | 32                                     | 27                                     |
| Broomspring Close            | 32                                     | 27                                     | 30                                     | 31                                     | 27                                     |
| University Roundabout        | 45                                     | 51                                     | 56                                     | 58                                     | 52                                     |
| Netherthorpe School          | 42                                     | 34                                     | 38                                     | 40                                     | 39                                     |
| Upper Hanover Street         | 46                                     | 44                                     | 48                                     | 50                                     | 45                                     |
| Shoreham St                  | 57                                     | 47                                     | 52                                     | 54                                     | 52                                     |
| St Marys Road                | 41                                     | 36                                     | 40                                     | 41                                     | 39                                     |
| Chesterfield Road/Woodseats  | 49                                     | 45                                     | 49                                     | 51                                     | 45                                     |
| Queens Road/Edmund Rd        | 48                                     | 42                                     | 47                                     | 49                                     | 41                                     |
| Abbeydale Road/Carter Knowle | 47                                     | 44                                     | 48                                     | 50                                     | 43                                     |
| Ecclesall Road               | 54                                     | 49                                     | 54                                     | 57                                     | 41                                     |
| Aun                          | 41                                     | 34                                     | 38                                     | 39                                     | 34                                     |
| Aun                          | 40                                     | 33                                     | 37                                     | 38                                     | 34                                     |
| Aun                          | 44                                     | 31                                     | 34                                     | 36                                     | 34                                     |
| Ace                          | 30                                     | 31                                     | 34                                     | 36                                     | 33                                     |
| Ace                          | 36                                     | 32                                     | 36                                     | 37                                     | 33                                     |
| Hillbrough Corner            | 46                                     | 41                                     | 46                                     | 47                                     | 38                                     |
| 82 Bawtry Road               |  | 51                                     | 57                                     | 59                                     | 52                                     |
| 98 Bawtry Road               |  | 51                                     | 57                                     | 59                                     | 51                                     |

| Table 6 S10 Corridor and<br>Chesterfield Road Diffusion Tube<br>ResultsSite | Annual<br>Mean<br>NO2<br>µg/m3<br>2004 | Annual<br>Mean<br>NO2<br>µg/m3<br>2005 | Annual<br>Mean<br>NO2<br>µg/m3<br>2006 | Annual<br>Mean<br>NO2<br>µg/m3<br>2007 |
|---|--|--|--|--|
| Redmires Road/Crimicar Lane   | 20                                     | 20                                     | 21                                     | 21                                     |
| Coldwell Lane/Sandygate Road  | 26                                     | 27                                     | 26                                     | 25                                     |
| Manchester Road/Sandygate Road  | 29                                     | 29                                     | 31                                     | 27                                     |
| Manchester Road/Sale Road   | 48                                     | 46                                     | 47                                     | 47                                     |
| Witham Road/Crookes   | 57                                     | 54                                     | 57                                     | 61                                     |
| Witham Road/Moor Oaks   | 48                                     | 50                                     | 52                                     | 52                                     |
| Western Bank/Northumberland   |  |  |  |  |
| Road  | 42                                     | 45                                     | 46                                     | 44                                     |
| Western Bank/Clarkson Road  | 53                                     | 50                                     | 45                                     | 51                                     |
| Brook Hill/Favell Road  | 46                                     | 52                                     | 51                                     | 45                                     |
| Upper Hanover Street/Hounsfield<br>Road                                     | 34                                     | 34                                     | 37                                     | 35                                     |
| Crimicar Road/Hallamshire Road  | 20                                     | 19                                     | 19                                     | 21                                     |
| Crimicar Road/Brookhouse Hill   | 23                                     | 24                                     | 25                                     | 25                                     |
| Fulwood Road/Tom Lane   | 27                                     | 28                                     | 24                                     | 26                                     |
| Fulwood Road/Gladstone Road   | 32                                     | 30                                     | 32                                     | 29                                     |
| Fulwood Road/Ashdell Road   | 32                                     | 33                                     | 32                                     | 33                                     |
| Glossop Road/Peel Road  | 37                                     | 34                                     | 35                                     | 35                                     |
| Glossop Road/Westbourne Road  | 38                                     | 37                                     | 39                                     | 37                                     |
| Glossop Road/Clarkehouse Road   | 41                                     | 39                                     | 41                                     | 40                                     |
| West Street/Regent Street   | 45                                     | 47                                     | 43                                     | 48                                     |
| West Street/Leopold Street.   | 52                                     | 48                                     | 49                                     | 55                                     |
| Queens road Mecca   |  |  | 52                                     | 59                                     |
| Queens road Netto   |  |  | 45                                     | 48                                     |
| 463 Queens road   |  |  | 61                                     | 64                                     |
| London road -Sark Road  |  |  | 56                                     | 57                                     |
| London road -Ponsfords  |  |  | 59                                     | 62                                     |
| Chesterfield road - Meersbrook park   |  |  | 56                                     | 60                                     |
| 513 Chesterfield road   |  |  | 34                                     | 39                                     |
| Chesterfield road - Olivet road   |  |  | 51                                     | 53                                     |
| Chesterfield road -Charles Ashmore  |  |  | 37                                     | 38                                     |
| Meadowhead road   |  |  | 30                                     | 31                                     |
| Lowfield School GH3   |  |  |  | 40                                     |
| Lowfield School GH3 duplicate   |  |  |  | 39                                     |
| Lowfield School GH3 duplicate   |  |  |  | 38                                     |

# Table 6 – S10 Corridor and Chesterfield Road Diffusion Tube Results

Table 7 Community Diffusion Tube Results (highlighted figures are those which breach the annual mean objective

|                           | Annu  |        |          |            |
|---------------------------|-------|--------|----------|------------|
|                           | al    | Annual |          |            |
|                           | Mean  | Mean   | Annual   |            |
|                           | NO2   | NO2    | Mean NO2 | Annual     |
| <b></b>                   | µg/m3 | µg/m3  | µg/m3    | Mean NO2   |
| Site                      | 2004  | 2005   | 2006     | µg/m3 2007 |
| Brinsworth and Catcliffe  |       |        |          |            |
| Pringle Road Brinsworth   | 32    | 27     | 28       |            |
| Broadway Brinsworth       | 36    | 27     | 28       |            |
| Grange Farm Close         | 42    | 39     | 39       |            |
| Catcliffe Junior School   | 37    | 26     | 24       |            |
| Highfield View Catcliffe  | 32    | 27     | 28       |            |
| Main Street Catcliffe     | 34    | 31     | 27       |            |
| Sheffield Lane            | 30    | 29     | 26       |            |
| Brinsworth Road           | 40    | 35     | 38       |            |
| Derwent Crescent          |       | 47     | 52       |            |
| St. David's Drive         |       | 27     | 26       |            |
|                           |       |        |          |            |
| Handsworth and Darnall    |       |        |          |            |
| Highfields Highfield Lane | 35    | 35     | 28       | 35         |
| St Mary's Church          | 38    | 36     | 32       | 40         |
| Fitzallan Road Handsworth | 29    | 30     | 25       | 28         |
| Rosy's Richmond Park Road | 29    | 28     | 23       | 30         |
| Handsworth Road           | 42    | 39     | 35       | 42         |
| Handsworth Road           | 40    | 38     | 35       | 43         |
| Shop Front Parkway R/A    | 43    | 43     | 38       | 44         |
| Greenwood Crescent        | 31    | 27     | 25       | n/a        |
| Prince of Wales Road      | 27    | 27     | 23       | 28         |
| Greenland Junior School   | 29    | 29     | 26       | 31         |
| Greenland Junior School   | 30    | 30     | 26       | 29         |
| Greenland Court           | 25    | 30     | 21       | 26         |
| Darnall Medical Centre    | 34    | 34     | 27       | 33         |
| Nursery Handsworth Road   | 33    | 32     | 28       | 34         |
| Norfolk Arms              | 33    | 31     | 26       | 32         |
| Athelstone School         |       | 29     | 23       | 27         |
| Ballifield School         |       | 30     | 32       | 39         |
| 62 Rotherham Road         |       | 32     | 35       | 38         |

|                              | Annual<br>Mean | Annual<br>Mean | Annual | Appual     |
|------------------------------|----------------|----------------|--------|------------|
|                              |                |                |        | Mean NO2   |
| Site                         | 2004           | 2005           | 2006   | ua/m3 2007 |
| Heeley                       |                |                |        |            |
| Ann's Grove School           | 25             | 23             |        |            |
| Chesterfield Road            | 50             | 43             | 52     |            |
| Heeley Green                 | 33             | 29             |        |            |
| Myrtle Road                  | 24             | 20             | 22     | 26         |
| Heeley Bank Road             | 39             | 33             | 36     | 42         |
| London Road                  | 53             | 50             | 52     | 53         |
| Daresbury Road               |                |                |        | 28         |
| East Bank Road               |                |                |        | 30         |
|                              |                |                |        |            |
| Foxhill Forum                |                |                |        |            |
| Wolfe Road                   | 17             | 20             | 18     | 20         |
| Keats Road                   | 18             | 16             | 18     | 18         |
| Foxhill Medical Centre       | 19             | 22             | 23     | 23         |
| Birley Carr Church           | 19             | 19             | 18     | 20         |
| Chaucer School               | 19             | 19             | 23     | 23         |
|                              |                |                |        |            |
| Nether Edge                  |                |                |        |            |
| 25/27 Junction Road          |                |                |        | 31         |
| 13 Osbourne Road             |                |                |        | 32         |
| 35 Montgomery Road           |                |                |        | 29         |
| Zeds Nether Edge Road        |                |                |        | 26         |
| Clifford School Psalter Lane |                |                |        | 27         |
|                              |                |                |        |            |
| Greenhill                    |                |                |        |            |
| Westwick Crescent            | 17             | 16             | 18     | 18         |
| Key Homecare                 | 24             | 21             | 22     | 24         |
| St Peter's Church            | 19             | 18             | 17     | 21         |
| Greenhill Library            | 20             | 19             | 21     | 23         |
| Bocking Lane                 | 25             | 24             | 23     | 28         |

|                                | Annual<br>Mean<br>NO2 | Annual<br>Mean<br>NO2 | Annual<br>Mean NO2 | Annual     |
|--------------------------------|-----------------------|-----------------------|--------------------|------------|
| <b>0</b> 14                    | µg/m3                 | µg/m3                 | µg/m3              | Mean NO2   |
| Site                           | 2004                  | 2005                  | 2006               | µg/m3 2007 |
| Burngreave                     |                       |                       |                    |            |
| Abbeyfield Park House          | 25                    | 25                    | 24                 | 25         |
| Burngreave Road                | 34                    | 34                    | 30                 | 41         |
| Scott Road                     | 29                    | 28                    | 28                 | 30         |
| Firshill School, Barnsley Road | 29                    | 28                    | 30                 | 31         |
| Barnsley Road                  | 34                    | 35                    | 33                 | 39         |
|                                |                       |                       |                    |            |
| Tinsley                        |                       |                       |                    |            |
| Town Street                    | 53                    | 43                    | 51                 | 53         |
| Seimens Close                  | 46                    | 43                    | 48                 | 47         |
| Greasebro Road                 | 40                    | 42                    | 41                 | 44         |
| Ferrars Road                   | 37                    | 38                    | 33                 | 37         |
| Ingfield Avenue                | 44                    | 39                    | 40                 | 37         |
| Sheffield Road                 |                       |                       | 38                 | 38         |
| Ferrars Road                   |                       |                       | 31                 | 33         |
| Ferrars Road                   |                       |                       | 32                 | 32         |
| Kelham Island                  |                       |                       |                    |            |
| Wicker                         |                       |                       | 43                 | 41         |
| Ladys Bridge                   |                       |                       | 82                 | 77         |
| Gibraltar Street               |                       |                       | 37                 | 41         |
| Penistone Road                 |                       |                       | 46                 | 55         |
|                                |                       |                       |                    |            |
| King Ecgbert School            |                       |                       |                    |            |
| Back of School                 |                       |                       | 13                 | 14         |
| Car park                       |                       |                       | 15                 | 18         |
| Top of drive                   |                       |                       | 16                 | 17         |
| Tesco Express Abbeydale Rd     |                       |                       | 29                 | 31         |
| Ashfurlong Road                |                       |                       | 14                 | 15         |

|                             | Annual<br>Mean<br>NO2 | Annual<br>Mean<br>NO2 | Annual<br>Mean NO2 | Annual     |
|-----------------------------|-----------------------|-----------------------|--------------------|------------|
| Cito                        | µg/m3                 | µg/m3                 | µg/m3              | Mean NO2   |
| Sile                        | 2004                  | 2005                  | 2006               | µg/m3 2007 |
| Farl Marshall Youth Control | 26                    | 27                    | 30                 | 28         |
| Firth Park Road             | 20                    | 21                    | 28                 | 20         |
|                             | 40                    | 12                    | 20                 | 37         |
| Owler Lane 2                | 34                    | 34                    | 36                 | 31         |
| Barnsley Road               | 42                    | <u> </u>              | 36                 | 38         |
|                             | 72                    |                       |                    |            |
| Broomhall                   |                       |                       |                    |            |
| Ruth Square                 |                       | 21                    | 21                 | 24         |
| Broomhall Road              |                       | 21                    | 27                 | 26         |
| Hanover Methodist church    |                       | 26                    | 28                 | 30         |
| Springfield Street          |                       | 22                    | 25                 | 25         |
| 56 Exeter Drive             |                       | 26                    | 29                 | 27         |
| 126 Exeter Drive            |                       | 36                    | 36                 | 30         |
| 103 Exeter Drive            |                       | 26                    | 25                 | n/a        |
|                             |                       |                       |                    |            |
| Burngreave/Melrose          |                       |                       |                    |            |
| 120 Burngreave Road         |                       |                       | 34                 | 40         |
| 104 Burngreave Road         |                       |                       | 35                 | 40         |
| 86 Burngreave Road          |                       |                       | 35                 | 41         |
| Burngreave street junction  |                       |                       | 33                 | 33         |
| 73 Burngreave Road          |                       |                       | 43                 | 53         |
|                             |                       |                       |                    |            |
| Crookes                     |                       |                       |                    |            |
| Wesleyan Chapel             |                       |                       |                    | 24         |
| 14 Arran Road               |                       |                       |                    | 17         |
| 132 Cross Lane              |                       |                       |                    | 19         |

7.4 Trends in Monitored Nitrogen Dioxide Levels.

Monitoring of nitrogen dioxide using automatic analyzers is a relatively recent innovation. The first station in Sheffield was the DEFRA AURN station at Tinsley, which began operation in 1990. It is quite difficult then to make definitive statements about long-term trends when the time period monitored is still relatively short. The following graphs show trends at several stations. There are missing data points, in recent years, at the DEFRA sites at the city centre and Tinsley. Analyser problems resulted in less than 75% data for the year. In these circumstances, and as part of their quality assurance process, DEFRA did not declare a value for these years. These trends are shown below in Figure 3 for the AURN site at Tinsley, Figure 4 for GH2 at Tinsley Infant School and Figure 5 for AURN site at Sheffield Centre. (These site locations are shown in Figure 2.)



Figure 3 Annual Mean Nitrogen Dioxide concentrations at Tinsley AURN site

# Figure 4 Annual Mean Nitrogen Dioxide concentrations at GH2 Tinsley Infant School



Fig 5 Annual Mean Nitrogen Dioxide concentrations at Sheffield Centre



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### 7.5 Conclusions;

- 1. Tinsley AURN trend seems downward.
- 2. Tinsley infant school data looks stable.
- 3. Although the two stations above are both in Tinsley they are about 200m apart. The infant school station is nearer to both the M1 and Bawtry Road, which is also a busy road. This may partially explain the differences in concentration levels between the two sites.
- 4. For the city centre there is some missing data but little evidence of a downward trend since 1998. A city centre traffic scheme has also reduced the amount of traffic in the city centre adjacent to the site.
- 5. Generally there may be some reduction in nitrogen dioxide concentrations, however this is not apparent at all stations.
- 6. A Further Assessment of nitrogen dioxide will be required by October 2008.

## 8.0 Review and Assessment of Sulphur Dioxide

8.1 Summary of Previous Rounds of Assessment

Previous rounds of the Review and Assessment process, found that no areas of Sheffield were predicted to be at risk of exceeding the sulphur dioxide objectives.

8.2 Monitoring for Sulphur Dioxide

Monitoring for sulphur dioxide is carried out at the Sheffield Centre AURN and at GH1-GH3 which currently are at Firshill School, Tinsley Infant School and Lowfield School. All results are shown in Table 8 below.

The 15 minute average has exceeded the specified level of 266  $\mu$ g/m<sup>3</sup> a maximum of 6 times per year since monitoring began in 1999 (35 times per year are allowed). Therefore the objective has not been exceeded.

| Site           | Year       | Max<br>hour | Max<br>24-<br>hour | No of hours<br>above<br>15-min objective | Max<br>15-minute | Data capture % |
|----------------|------------|-------------|--------------------|--|------------------|----------------|
|                | '99        | 78          | 41                 | 3  | 311              |                |
|                |            |             |                    |  |                  |                |
|                | '00        | 67          | 44                 | 0  | 202              |                |
| Defra          | '01        | 84          | 76                 | 1  | 290              |                |
| Sheff          | '02        | 57          | 46                 | 0  | 167              |                |
| Centre         | '03        | 149         | 37                 | 0  | 106              |                |
|                | '04        | 82          | 24                 | 0  | 42               |                |
|                | '05        | 37          | 17                 | 0  | 43               |                |
|                | 06         | 61          | n/a                | 0  | n/a              | 95             |
|                | 07         | 117         | n/a                | 0  | n/a              | 93             |
| Sheff CC       | '01        | 185         | 64                 | 3  | 287              | 92             |
| Brightside     | '02        | 146         | 40                 | 0  | 231              | 74             |
| Brightslac     | '03        | 194         | 52                 | 1  | 273              | 75             |
| GH1 Eirchill   | '04        | 105         | 38                 | 0  | 138              | 98             |
| GHTFIISIIII    | '05        | 77          | 35                 | 0  | 130              | 68             |
|                | 06         | 132         | 55                 | 0  | 138              | 98             |
|                | 07         | 52          | 106                | 0  | 86               | 30             |
|                | '99        | 144         | 40                 | 0  | 209              | 78             |
|                | '00        | 212         | 72                 | 2  | 915              | 78             |
| Sheff CC       | '01        | 205         | 51                 | 0  | 262              | 95             |
| GHZ<br>Tinclov | '02        | 154         | 37                 | 0  | 223              | 84             |
| Thisley        | '03        | 178         | 35                 | 1  | 361              | 73             |
|                | '04        | 130         | 38                 | 0  | 191              | 89             |
|                | '05        | 80          | 16                 | 0  | 108              | 82             |
|                | 06         | 126         | 55                 | 0  | 130              | 94             |
|                | 07         | 55          | 17                 | 0  | 67               | 94             |
|                | '99        | 252         | 45                 | 6  | 968              | 83             |
| Sheff CC       | '00        | 160         | 56                 | 0  | 160              | 96             |
| GH3            | '01        | 165         | 56                 | 0  | 205              | 96             |
| Lowfield       | '02        | 141         | 29                 | 0  | 207              | 88             |
|                | <u>'03</u> | 154         | 27                 | 5  | 486              | 59             |
|                | <u>'04</u> | 93          | 24                 | 0  | 178              | 97             |
|                | <u>'05</u> | 56          | 17                 | 0  | 133              | 98             |
|                | 06         | 96          | 36                 | 0  | 150              | 98             |
|                | 07         | 102         | 16                 | 0  | 109              | 95             |

Table 8 Sulphur Dioxide levels (all units are  $\mu$ g/m<sup>3</sup>)

#### 8.3 Conclusion

No objectives for sulphur dioxide have been exceeded since monitoring began.

This Assessment has found that there are unlikely to be any locations in Sheffield where the sulphur dioxide objective will be exceeded.

#### 9.0 Review and Assessment of Particulate Matter PM10.

9.1 Summary of Previous Rounds of Assessment

This Progress Report has been carried out in order to identify any changes since the Upgrading and Screening Assessment (USA 2006). The initial rounds of Review and Assessment undertaken for  $PM_{10}$  (fine particles less than 10 microns) by Sheffield City Council concluded that the risk of exceeding the  $PM_{10}$  objectives was small. However, the USA process found that locations were overlooked in the first round of Review and Assessment and there may have been a risk of exceeding the 24 hour objective.

The USA concluded that a detailed assessment would be required to determine whether or not any Air Quality Management Areas might need to be designated. In addition, an extra  $PM_{10}$  monitor was purchased and sited on Waingate in the city centre, a busy bus and taxi only street. Location shown in Fig 2.

The Detailed Assessment for PM10, completed in April 2008, concluded that monitoring showed that several of the monitoring stations were very close to exceedence of the objective. Modelling indicated that the monitoring stations were not in areas of the highest concentrations on PM10. The conclusion was therefore made that large areas of the city were likely to exceed the PM10 objective (24 hour mean objective). The recommendation of the Detailed Assessment was that an AQMA be designated. At the time of writing of this report the consultation process for the Detailed Assessment had not been completed and no AQMA had been declared.

# 9.2 Monitoring data

The results of PM10 monitoring in Sheffield are shown below.

# Table 9 PM<sub>10</sub> monitoring data (all units are gravimetric equivalents)

| Site                         | Year  | Annual<br>mean<br>μg/m <sup>3</sup> | No of days above 50<br>μg/m³ 24-hour<br>objective (35 allowed) | Data<br>Capture<br>% |
|------------------------------|-------|-------------------------------------|--|----------------------|
| GH1 St John<br>Fisher School | 99/00 | 20                                  | 1  | 93                   |
| GH1 Endcliffe<br>park        | 2000  | 21                                  | 5  | 85                   |
| GH1 Brightside<br>School     | 2001  | 25                                  | 8  | 89                   |
|                              | 2002  | 25                                  | 9  | 79                   |
|                              | 2003  | 24                                  | 16   | 77                   |
| GH1 Firshill<br>School       | 2004  | 20                                  | 2  | 94                   |
|                              | 2005  | 21                                  | 2  | 68                   |
|                              | 2006  | 24                                  | 11   | 97                   |
|                              | 2007  | 17                                  | n/a  | 33                   |
| GH2 Tinsley<br>Infant School | 2000  | 31                                  | 16   | 46                   |
|                              | 2001  | 28                                  | 16   | 34                   |
|                              | 2002  | 28                                  | 16   | 85                   |
|                              | 2003  | 31                                  | 30   | 72                   |
|                              | 2004  | 26                                  | 7  | 86                   |
|                              | 2005  | 27                                  | 8  | 85                   |
|                              | 2006  | 28                                  | 21   | 91                   |
|                              | 2007  | 27                                  | 15   | 96                   |

| Site  | Year                  | Annual<br>mean<br>μg/m <sup>3</sup> | No of days above 50<br>μg/m <sup>3</sup> 24-hour<br>objective (35 allowed) | Data<br>Capture<br>% |
|---|-----------------------|-------------------------------------|--|----------------------|
| GH3<br>Hillsborough<br>School                   | 99                    | 23                                  | 4  | 88                   |
| GH3<br>Lowfield School                          | 2000                  | 28                                  | 10   | 76                   |
|   | 2001                  | 29                                  | 22   | 84                   |
|   | 2002                  | 28                                  | 13   | 73                   |
|   | 2003                  | 34                                  | 29   | 51                   |
|   | 2004                  | 26                                  | 10   | 85                   |
|   | 2005                  | 27                                  | 9  | 87                   |
|   | 2006                  | 30                                  | 29   | 94                   |
|   | 2007                  | 27                                  | 16   | 92                   |
| GH4 Wicker                                      | 2001                  | 23                                  | 9  | 35                   |
|   | 2002                  | 24                                  | 9  | 96                   |
|   | 2003                  | 29                                  | 25   | 77                   |
|   | 2004                  | 21                                  | 2  | 74                   |
|   | 2005                  | 22                                  | 4  | 92                   |
|   | 2006                  | 25                                  | 14   | 92                   |
|   | 2007                  | 26                                  | 9  | 73                   |
| GH5 H5E<br>building<br>GH5 Hallam<br>University | 2001/2                | 20                                  | 5  | 45                   |
|   | 2003                  | 29                                  | 34   | 88                   |
|   | 2004                  | 26                                  | 13   | 87                   |
|   | 2005                  | 25                                  | 5  | 91                   |
|   | 2006                  | 26                                  | 13   | 91                   |
|   | 2007                  | 26                                  | 19   | 90                   |
| Defra<br>Sheffield Centre                       | 1999                  | 26                                  | 9  | 98                   |
|   | 2000                  | 25                                  | 4  | 97                   |
|   | 2001                  | 24                                  | 11   | 96                   |
|   | 2002                  | 25                                  | 13   | 98                   |
|   | 2003                  | 27                                  | 32   | 98                   |
|   | 2004                  | 22                                  | 4  | 98                   |
|   | 2005                  | 22                                  | 6  | 95                   |
|   | 2006                  | 25                                  | 17   | 97                   |
|   | 2007                  | n/a                                 | 13   | n/a                  |
|   |                       |                                     |  |                      |
| Romon   | 2005 from<br>April 05 | 31                                  | 26   | 73                   |
|   | 2006                  | 32                                  | 24   | 87                   |
|   | 2007                  | 29                                  | 30   | 98                   |

#### 9.3 Conclusion

- a. Monitoring of PM10 showed that several of the monitoring stations were very close to exceedence of the objective.
- b. Modelling indicated that the monitoring stations were not in areas of the highest concentrations on PM10.
- c. The conclusion was therefore made that large areas of the city were likely to exceed the PM10 objective (24 hour mean objective).
- d. The recommendation of the 2008 Detailed Assessment was that an AQMA be designated for PM10.
- e. At the time of writing of this Progress Report, consultation on the AQMA designation was ongoing.

#### **10.0 Review and Assessment of Particulate matter PM2.5**

#### 10.1 Summary

PM2.5 has been measured at the monitoring station GH2 at Tinsley Infant School since 2000 using a TEOM with PM2.5 head. The station also has a colocated PM10 TEOM. Data has not previously been reported as part of LAQM.

The UK Government and the devolved administrations have set new national air quality objectives for PM2.5 which are set out in Table 10 below. These objectives have not been incorporated into LAQM Regulations and authorities have no statutory obligation to review and assess air quality against them.

# Table10 Proposed new PM2.5 objectives (not included in the Regulations)

| Region                            | Air Quality Objective   |             | Date to be               |
|-----------------------------------|---|-------------|--------------------------|
|                                   | Concentration   | Measured as | achieved by              |
| UK (except Scotland) <sup>a</sup> | 25 µg/m <sup>3</sup>  | annual mean | 2020                     |
| Scotland <sup>a</sup>             | 12 µg/m <sup>3</sup>  | annual mean | 2020                     |
| UK urban areas                    | Target of 15% reduction in<br>concentrations at urban<br>background locations | 3-year mean | Between 2010<br>and 2020 |

### 10.2 Monitoring Data

The results of monitoring for PM2.5 in Sheffield are shown in Table 11.

| Annual averages GH2 Tinsley<br>Infant School |  |                |
|--|--|----------------|
| Year   | Annual Average<br>Concentration (μg/m <sup>3</sup> ) | Data Capture % |
| 2000   | 14   | 42             |
| 2001   | 15   | 63             |
| 2002   | 13   | 78             |
| 2003   | 16   | 74             |
| 2004   | 13   | 92             |
| 2005   | 14   | 85             |
| 2006   | 15   | 97             |
| 2007   | 14   | 99             |

## Table 11 PM<sub>2.5</sub> monitoring data

#### 10.3 Conclusion

The monitoring data for PM2.5 shows that the annual target of 25  $\mu$ g/m<sup>3</sup> has not been exceeded during the monitoring period. There is no evidence of a reduction in levels during the period, (the target is for a 15% reduction between 2010 and 2020).

#### **11.0 New Local developments**

#### a. New Part A Processes (since 1 Jan 2006)

| Part A2                    |                                   |
|----------------------------|-----------------------------------|
|                            |                                   |
| Allvac Limited             | non-ferrous foundry>20 tonnes/day |
| Dyson Thermal Technologies | Ceramic products kiln>300kg/m3    |
| F E Mottram Ltd            | ferrous foundry>20 tonnes/day     |
|                            |                                   |
| Castmaster Limited         | Iron/steel<7t or cpla,rtry,ind    |

Castmaster Limited will be varied to a Part B Process

b. New Part B processes

| Part B                     |                                |
|----------------------------|--------------------------------|
| Alloy Steel Melting Ltd    | Iron/steel<7t or cpla,rtry,ind |
| Atomising Systems Ltd      | Non-ferrous<20 tonnes/day      |
| Corus                      | Solvent surface cleaning       |
| Dytech Corporation Dysons  | Ceramic products kiln<300kg/m3 |
| Galebest Ltd               | Crushing bricks tiles concrete |
| Neill Tools Ltd            | Solvent surface cleaning       |
| Outokumpu Stainless Ltd    | Solvent surface cleaning       |
| P & B Metal Components Ltd | Solvent surface cleaning       |
| Right Mix Ltd              | Storing load unloading cement  |
| Rutland Cutlery Co         | Solvent surface cleaning       |
| Swann Morton               | Solvent surface cleaning       |
| Symmetry Medical Thornton  | Surface treatment of metals    |
| Precision Components Ltd   |                                |
| Tarmac Limited             | Storing load unloading cement  |
| Pentagon Vauxhall          | Coating processes-road vehicle |

| Dry Cleaners Part B                  |                  |
|--------------------------------------|------------------|
|                                      | 703 Staniforth   |
| Johnson Cleaners Uk Ltd              | Road             |
|                                      | 36 Pinstone      |
| Johnson Cleaners Uk Ltd              | Street           |
| Johnson Cleaners Uk Ltd              | 30 Market Street |
|                                      | 926 Ecclesall    |
| Johnson Cleaners Uk Ltd              | Road             |
|                                      | 22 Middlewood    |
| Johnson Cleaners Uk Ltd              | Road             |
|                                      | 23 Crystal Peaks |
| Johnson Cleaners Uk Ltd              | Centre           |
|                                      | 699 Penistone    |
| Wm Morrisons Dry Cleaners            | Road             |
|                                      | 84-116           |
| Wm Morrisons Dry Cleaners            | Meadowhead       |
|                                      | 7 Netheredge     |
| Netheredge Laundrette & Dry Cleaners | Road             |
|                                      | 180 Middlewood   |
| Speedclean                           | Road             |
|                                      | 855 Ecclesall    |
| Goodman Sparks Ltd                   | Road             |
|                                      | 645 Ecclesall    |
| Pennywise Cleaners                   | Road             |
|                                      | Huntingtower     |
| Mortons Dry Cleaners                 | Road             |
| Northern General Hospital Laundry    | Herries Road     |
| Foxhill Laundry & Dry Cleaners       | 273 Foxhill Road |

| Dry Cleaners Part B                   |                  |
|---------------------------------------|------------------|
|                                       | 672 Abbeydale    |
| Persil Service Ltd                    | Road             |
| Elite Dry Cleaners                    | 11a Station Road |
|                                       | 54 St Michaels   |
| St Michaels Dry Cleaners              | Road             |
|                                       | 107 Devonshire   |
| Betty Boo Ltd                         | Street           |
| Churchills Dry Clearners              | 227 Crookes      |
|                                       | 116-120 Onslow   |
| W E Franklin Ltd.                     | Road             |
| The Caretaker Specialist Dry Cleaners | 16a Dixon Road   |

#### c. New Road Schemes

In 2007 the Sheffield Northern Inner Relief Road opened. The air quality assessment for the road, done by consultants Scott Wilson Fitzpatrick, had concluded that the air quality effects of this completion of the Ring Road would be beneficial. This was largely due to the location of the new road taking traffic further from receptors. This could not take account of any building which may take place near to the new road in future.

The North Sheffield Better Buses project aims to improve the standard of buses on the Quality Bus Corridor from Ecclesfield to the city centre. This is further described in the Air Quality Action Plan progress which follows later in this report

d. New Mineral Developments.

There are no new mineral developments

e. New Landfill Developments.

There are no new landfill developments.

# 12.0 Local Air Quality Strategy

Sheffield has no Local Air Quality Strategy.

# **13.0 Planning and Policies**

Planning applications for new developments since 2004 for which air quality assessment was provided are listed below.

| Planning<br>Application Ref  | PROPOSAL   | ADDRESS  |
|--|--|--|
| 04/036213OUT   | Site of Arnold Laver   | Chesterfield Road, Heeley,<br>Sheffield S2   |
| 05/04833/OUT –<br>Vantage Riverside<br>Development,<br>Tinsley, Sheffield,<br>S9 | Mixed Use Development,<br>Tinsley, Sheffield   | Wharf Road / Sheffield Road,<br>Sheffield S9   |
| 05/03438/FUL   | Multi-Storey Car Park<br>Development   | Sheffield Teaching Hospital<br>Foundation Trust, Whitham<br>Road, Sheffield S10 2SJ  |
| Upwell Street<br>Development,<br>Grimesthorpe,<br>Sheffield, S4.                 | Transport Distribution Depot   | Holywell Road, Sheffield, S4   |
| 05/0363/OUT  | Development of Land at Site<br>A   | Corus Works, Manchester<br>Road, Stocksbridge, Sheffield<br>S36 2JA, South Yorkshire.  |
| 06/00268/FUL   | Erection of 1 x 10 storey<br>block, 2 x 9 storey blocks and<br>1 x 7 storey block providing<br>140 student flats and 39 flats,<br>with office and retail units with<br>associated landscaping and<br>car parking accommodation<br>(As amended) | Land At Blast Lane And Broad<br>Street, Sheffield S2 (Numbered<br>Apts 1-39 The Gateway, 1<br>Blast Lane, 73-81 Broad Street<br>And Flats 1-146 The Pinnacles,<br>83 Broad Street) |
| 06/00601/FUL   | Demolition of 41 Blonk Street,<br>retention of crucible stack and<br>development of mixed-use<br>scheme with A1, A3 and B1<br>units, 121 apartments and a<br>townhouse, including<br>refurbishment of Hancock &<br>Lant Buildings              | Hancock And Lant Building,<br>Ladys Bridge And Land<br>Adjoining Blonk Street<br>Sheffield<br>(Numbered 2-12 Blonk Street<br>Including Apts I Quarter (4 And<br>10 Blonk Street))  |
| 06/00840/FUL   | Erection of 11 storey building<br>for office and hotel use with<br>associated car parking  | Young Street And St Marys<br>Gate Sheffield (Tulip Inn Hotel<br>Numbered 7 Young Street)   |
| 06/00846/OUT   | Erection of retail units and<br>redesign and refurbishment of<br>existing bowl building<br>(Amended scheme to<br>02/00051/FUL)   | Site At Retail Park, Kilner Way,<br>Sheffield  |

| Planning        | PROPOSAL   | ADDRESS   |
|-----------------|--|---|
| Application Ref |  |   |
| 06/02183/FUL    | Erection of 6<br>industrial/warehouse units<br>(classes B1(c) - Light<br>Industry, B2 - General<br>Industry and B8 - Storage and<br>Distribution) and associated<br>parking and landscaping (as<br>amended by plans dated<br>12.7.06 and 11.9.06)  | Land To The Rear Of 80 - 104<br>Holywell Road, Colliery Road,<br>Sheffield S4 8AQ   |
| 06/02783/FUL    | Erection of 48 student flats in<br>a 6/10 storey building with<br>Class A1 (Shops) and Class<br>B1 (Business) at ground<br>floor/mezzanine level   | Rockingham House, Broad<br>Lane, Sheffield S1 3PP.<br>(Numbered Flats 1-48<br>Rockingham House, 1<br>Newcastle Street And 75 Broad<br>Lane)   |
| 06/02863/FUL    | Erection of 148<br>dwellinghouses and 40 flats<br>and provision of associated<br>landscaping and roads   | Land At Harding Street Darnall<br>Road and Eleanor Street,<br>Sheffield, S9 5AX. (Clay Pit<br>Way, Tudor Close, Rustic<br>Court, Brindle Mews,<br>Quarryfield Rd, Old Brick<br>PI,Darnall Rd, Eleanor St,<br>Phillimore Road, Clement St) |
| 06/04910/FUL    | Demolition of existing<br>buildings and erection of:<br>- 8/14/27 storey residential<br>blocks fronting Charter Row<br>- Enclosed 4 storey entrance<br>stairwell fronting Charter<br>Square<br>- 5/6/7 storey stepped block<br>fronting The Moor with two<br>further recessed storeys resp | Land Between Charter Row,<br>Rockingham Gate And Site Of<br>16-54 The Moor, Sheffield   |
| 07/02074/FUL    | Erection of 4 units for use as<br>car dealerships, provision of<br>car parking accommodation<br>and associated enabling<br>works   | Land Adjoining Sheffield Road<br>Vulcan Road<br>Meadowhall Way And Site Of<br>Former Staybrite Works<br>Sheffield   |
| 07/02577/FUL    | Erection of three-storey office<br>block (Use Class B1) with<br>associated car parking<br>accommodation and<br>landscaping works (amended<br>plans received)   | Land South Of Tinsley Park<br>Works Between Rotherham<br>Boundary and Shepcote Lane,<br>Sheffield   |
| 07/01733/OUT    | Proposed Tesco Store<br>Development  | Savile Street, Sheffield S3   |

| Planning<br>Application Ref                   | PROPOSAL   | ADDRESS  |
|---|--|--|
| Scoping Report –<br>West Bar<br>Redevelopment | Proposed Mixed Use<br>Redevelopment  | West Bar Development,<br>Sheffield S1  |
| 07/03031/FUL                                  | Erection of 85 flats with<br>commercial use (Class B1<br>Business) on ground floor in 1<br>x 4/5 storey building with<br>basement car parking (In<br>accordance with additional<br>information received<br>10/04/2008) | Site Of Dun Street, Dun Lane<br>And Dunfields, Adjacent To<br>The Old Bull's Head, Dun<br>Street, Sheffield 3                                  |
| 07/03198/FUL                                  | Erection of 5 blocks to<br>accommodate 18 industrial<br>units (B1c, B2 and B8 Use)<br>and associated landscaping<br>works (as amended plans<br>dated 1.10.2007)  | Land Between Rother Valley<br>Way New Street and Longacre<br>Way, Holbrook Industrial<br>Estate, Sheffield. (Numbered 1-<br>18 Enterprise Way) |
| 07/03545/FUL                                  | Erection of 2 x 3-storey office<br>blocks (Use Class B1) and<br>associated car parking and<br>landscaping (Amended plans<br>received)  | Land South Of Tinsley Park<br>Works Between Rotherham<br>Boundary and Shepcote Lane,<br>Sheffield  |
| 07/04821/Ful                                  | Parkway Edge Site  |  |
| 08/01587/FUL                                  | Erection of multi-storey car<br>park (529 spaces) and part of<br>ground floor area for A1/A3<br>use  | Site Of The Assay Office, 137<br>Portobello Street, and<br>Substation, 22 Holland Street<br>And 80 Rockingham Street,<br>Sheffield             |
| 08/01225/OUT                                  | Environmental Impact<br>Assessment – Scoping<br>Statement  | Proposed New Renewal<br>Energy Plant, Blackburn<br>Meadows, Sheffield S9   |

#### 14.0 Local Transport Plan

The Second Local Transport Plan (LTP2) is the South Yorkshire Transport Strategy and Action Plan for the next 5 year period (2006/07 – 2010/11). It explains how South Yorkshire will address the Transport Shared Priorities which are:

- Tackling congestion
- Addressing accessibility
- Better road safety
- Improving air quality and respecting other quality of life issues

It also sets out the longer term vision of what local transport will look like in the future and identifies how local transport plays a key role in supporting the transformation of South Yorkshire.

The plan covers the whole of South Yorkshire which has an area of 1,552 km<sup>2</sup> and is home to over 1.2 million residents.

It has been prepared as a joint plan by the four Councils in South Yorkshire (Barnsley, Doncaster and Rotherham Metropolitan Borough Councils and Sheffield City Council) and the Passenger Transport Executive.

It provides the evidence that supports analysis of the problems and challenges and identifies best value for money solutions to transport problems.

In addition, LTP2:

- Sets out why local transport policy is important to other aspects of life including education, health, leisure, jobs, economic development, environmental issues and land use
- Explains how transport supports the long term vision to transform the local economy
- Sets out a strategy that defines how it will improve the local transport network over the next 5 years
- Explains the targets and indicators against which it will measure progress up to 2011

The LTP will tackle air quality and other quality of life issues by:

- Benefiting from the measures outlined by strategies to improve congestion
- Encouraging the usage of more environmentally friendly ways to travel

- Addressing transport emissions in areas with the worst air quality (Air Quality Management Areas)
- Promoting cleaner vehicle technology and awareness raising initiatives
- Enhancing the role of Travel Planning in encouraging smarter choices in travel behaviour
- Minimising the environmental impacts and effects on communities of new infrastructure and facilities through better initial design which takes more account of environmental issues.
- Undertaking a 'strategic environmental assessment' of the plans to ensure they include a range of environmental factors

The South Yorkshire LTP partners have established Shared Priority Groups including one for air quality. The Group comprises representatives from each of the five LTP partners covering both transportation and environmental strategy disciplines and is responsible for:

- Production of the LTP air quality chapter
- Establishing an air quality indicator (LTP8)
- Production of a 5 year air quality programme
- Appraisal of other LTP shared priority measures
- Reporting on air quality issues for the LTP
- Ensuring that air quality considerations are integrated into the LTP schemes
- Liaison with other shared priority groups, particularly the Congestion Working Group

The air quality group has produced a Business Plan. The group will work towards improving air quality in South Yorkshire, with particular focus on minimizing the impact of traffic on air quality. The group will develop and promote LTP measures which tackle air pollution and the causes of climate change.

For the period 2008-2010 there are 4 air quality projects funded by LTP. These are:

- Care4air. This is a promotional campaign to raise the awareness of air quality issues throughout South Yorkshire. Care4air promotes good practice and gives awards to those doing their bit to protect and improve air quality.
- Monitoring Scheme. This is an ongoing project to measure traffic related pollutants at roadside sites.
- Efficient and Cleaner Operations (EcoStar) Recognition Scheme. A scheme to promote the use of new technology in engines of goods vehicles in the region.

• South Yorkshire Air Pollution Modelling System. A project to develop a South Yorkshire wide computer air quality modelling system and to include a regional Emission Database of traffic sources.

## 15.0 Air Quality Action Plan update

An update of work being carried out relating to the Air Quality Action Plan is listed below.

#### Sheffield City Council - Progress in Implementing Action Plan Measures (2008)

#### Package 1 - Public Transport

| a) Quality Bus Corridor                          | S10 Corridor QBC  | Finished and operational - bus priority traffic signals and 24hr bus lane on A57 Western Bank  |
|--|---|--|
|  | Sheaf Valley  | Finished and operational - substantial scheme in Woodseats<br>Bus priority signals and 24hr bus lane on A61. Now part of marketing and<br>promotional campaign to raise awareness of improved routes   |
|  | North Sheffield Better Buses  | Spital Hill traffic management for bus priority. First Statutory Quality<br>Partnership Scheme in England. Provision of high quality Euro 3 buses<br>required. Now part of marketing and promotional campaign to raise<br>awareness of improved routes   |
| b) Bus Strategy/<br>South Yorkshire Bus Strategy | Part of LTP that aims to underpin and<br>sustain regeneration without contributing to<br>congestion best achieved through public<br>transport lead strategy | Three 'Options for Delivery'<br>1)Continuation of the existing voluntary partnership arrangements with the<br>bus industry<br>2)Statutory Quality Bus Partnership Schemes: legally binding agreements<br>in which operators agree to maintain certain higher quality standards<br>3)Statutory Quality Bus Contracts: all aspects of the bus network in a given<br>area are specified by the Local Authority and then operated under tendered<br>contract by a bus operator |

| c) Media and Publicity Campaigns/<br>Marketing Techniques | South Yorkshire Travelwise/<br>Care4Air   | Campaigns collaborated to change attitudes to public transport<br>use. Care4Air campaign has highlighted the fact that through<br>walking, cycling or using public transport we can all do our bit<br>to help improve air quality. Currently working on revised and updated website<br>Highly successful 'Carbon Quids' promotional campaign, held as part of<br>European Mobility Week. Promoting sustainable and alternative modes<br>of transport  |
|---|---|---|
| d) Supertram extension                                    | Extension of successful network   | The current Sheffield Supertram network is highly successful, carrying well<br>over 12 million passengers a year and still growing. Surveys have shown that<br>about 25% of users would have a car available for their journey but choose<br>not to use it. The tram is an attractive alternative to car use and is making a<br>useful contribution to modal shift where it runs. Unfortunately due to the cost<br>of LRT Schemes the DfT refused a joint bid by SYPTE and SCC to extend<br>the Supertram system.                 |
| e) Major Scheme Submissions                               | Scheme to increase use of public transport  | In partnership with SYPTE and RMBC, Sheffield City Council are working on 2 Bus Rapid Transport (BRT) routes to link Rotherham and Sheffield.<br>Endorsed by the Regional Transport Board, these routes will be presented to the DfT for funding approval late 2008/early 2009. Providing a high quality public transport alternative on a key commuter corridor, the scheme will utilise efficient hybrid vehicles. SCC are also working on a major scheme bid for bus priority measures on a key commuter route within the city |
| f) Park & Ride Strategy                                   | P&R infrastructure to help reduce<br>amount of traffic approaching the<br>city centre | Since the last update a new tram based Park & Ride site has been<br>developed at Malin Bridge and the existing Middlewood Park & Ride<br>facility has been extended to double it's capacity. SCC, SYPTE and the<br>other 3 South Yorkshire Districts have an approved South Yorkshire Park<br>and Ride Strategy, which was developed to grow provision within the County<br>in an organised and co-ordinated way. The Strategy was adopted by the<br>Passenger Transport Authority and partnership work is continuing to put      |

|  | together a work programme of new sites in the County, including a number<br>of possible sites in Sheffield. The route of the bus service from the existing<br>site at the Tesco store on Abbeydale Road has been changed to now serve<br>the University and Hospital areas where there is increasing pressure on<br>parking. The Major Scheme Business cases which are being developed<br>for submission to the DfT are inclusive of Park & Ride sites and so will<br>contribute to the P&R Strategy |
|--|--|
|--|--|

#### Package 2 - Traffic Infrastructure

| a) Northern Relief Road | Closes major gap in Sheffield's<br>partial inner ring road   | New 1.5 km dual carriageway between the Wicker and Penistone Road<br>now open. Unnecessary through traffic can now pass around<br>the city centre, which should improve air quality.<br>Reduced likelihood of congestion should improve access to the city<br>centre however you choose to travel. The Inner Relief Road has supported<br>sustainable transport use by constructing 4,625m of cycle lane, 680m of<br>pedestrian/cycle path and 11 toucan crossings.   |
|-------------------------|--|---|
| b) Promoting Walking    | Continually improving and expanding<br>walking routes throughout the<br>city to encourage more people to<br>walk | To encourage walking a number of initiatives have been promoted<br>1)Reducing traffic speeds and volume on city centre roads to encourage<br>more pedestrian movement<br>2)Creation of high quality public spaces such as the pedestrian link<br>from the station to the city centre<br>3)Increasing number of 'at grade' pedestrian crossings<br>4)Developing a Walking Strategy<br>5)Ensure walking routes are included in new residential developments<br>eg. Cut throughs to public transport routes<br>6)Introduction of audit to cover needs for disabled people, walking and<br>cycling for transport and highway schemes<br>7)Development of Upper Don Valley Walking and Cycling Route |

|                      |   | <ul> <li>8)Sheffield Healthy Walks - continuing programme of walks of varying lengths across the city</li> <li>9)Round health walks (2km) being developed in the city centre, targeting city centre employees.</li> <li>10)Festival 'Walk Sheffield' (30th May - 8th June 2008) supported by SCC with a week of events to encourage more walking</li> <li>11)SCC has adopted the Public Rights of Way Improvement Plan to which funding has been allotted</li> </ul>  |
|----------------------|---|---|
| c) Promoting cycling | Continually promoting cycling<br>as a transport option which can have<br>health as well as air quality benefits | <ul> <li>Promotion &amp; Education</li> <li>1)Continuing provision of free cycle training-increasing confidence in cyclists so increasing the amount of cycling</li> <li>3)Sport, Community &amp; Recreation rangers have undergone cycle leader training giving a new resource for training &amp; promotion</li> <li>4)Cycling information has been collated into a 'Sheffield Travel Pack' and a mailing list of interested members of the public has been created.</li> <li>5)One-stop-shop for cycling information created on Council website</li> </ul>  |
|                      |   | Cycling Infrastructure<br>1)Experiment in improving conspicuity of signing and lining of existing routes<br>aimed at University students new to the area<br>2)Numerous toucan crossings around the city<br>3)Segregated pedestrian/cycle route along Riverside Exchange and new<br>puffin crossing linking new residential development with the north of the city.<br>4)SCC developed 2.5km of cycle route on disused railway between<br>Meadowhall and Ecclesfield<br>5)Remodelling of Eyre St. dual carriageways to include on and off road<br>cycle facilities leading to 790% increase in cyclists per day<br>6)Inclusion of cycle routes through the new housing developments on the<br>sites of Middlewood and Lodgemoor Hospitals<br>7)Cycle lanes implemented as part of resurfacing schemes e.g. Bramall La.<br>8) Northern Inner Relief Road has comprehensive cycle facilities included<br>such as 5km cycle lanes and advanced stop lines |

|  | 9)On-going program of improved cycle parking funded by LTP has seen 100% increase in cycle parking in the City Centre   |
|--|---|
|  | Developments<br>1)Continue to work towards a joined up network of cycle routes<br>2)Upper Don Valley walking and cycling route<br>3)Off road cycle route on Penistone Road<br>4)Improve working with companies with travel plans to encourage cycling<br>5)Area wide improvements to cycle routes in Housing Market Renewal Areas<br>6)Increase and formalise cycle audit |

#### Package 3 - Traffic Control

| a) South Yorkshire Intelligent<br>Transport System (ITS) | Allows best use to be made of networks<br>for public and private transport, facilitate<br>links between transport modes and<br>mitigate adverse impacts | SCC is the lead partner in InnovITS project-working towards improving<br>control of road traffic and providing better travel information to allow travellers<br>to make intelligent choices about mode, route and time of travel. This will<br>lead to better air quality and less noise pollution through modal shift to public<br>transport and reduced congestion. This project will also provide the<br>information base from which to develop and demonstrate specific tools<br>that can be deployed in the traffic environment to allow closed loop control<br>of the traffic against specific quality of environment parameters |
|--|---|--|
| b) North Sheffield Better<br>Buses Project               | Improve journeys from Ecclesfield to the<br>City centre   | Encourage modal shift by:-<br>1)Quicker journey times<br>2)More reliable bus services<br>3)Better bus stops<br>4)Improved information for bus passengers<br>The North Sheffield Better Buses project is already delivering increased use<br>of public transport along this route, particularly in Ecclesfield, Fir Vale and<br>Sheffield Lane Top. Bus priority measures have now been installed along the   |

|                     |                           | whole route and are now being tuned to maximise their effectiveness. This will benefit local residents as well as the 260,000 passengers that travel through the area every week   |
|---------------------|---------------------------|--|
| c) Improved signage | Improved driver direction | The use of Variable Message Signing and other improved signage should<br>provide tangible benefits in air quality and congestion terms. Improved<br>techniques to manage traffic signal timings will also reduce congestion and<br>stop/start flow and so achieve air quality improvements |

#### Package 4 - Cleaner Vehicles

| a) SCC Direct Service<br>Fleet | Majority of council fleet now under<br>Kier Sheffield LLP | <ul> <li>1)Kier committed to improving the environment and reducing the amount of pollution from vehicle emissions</li> <li>2)Kier have demonstrated their commitment by upgrading the existing fleet; currently 100% of their 500 vehicles are to Euro 3 standard or above</li> <li>3)Future vehicle purchases will also meet with current government guidelines on vehicle emissions or be to a minimum Euro 4 level.</li> <li>4)Kier is also seeking a commitment from their suppliers and contractors.</li> </ul> |
|--------------------------------|---|---|
| b) SCC Transport<br>Services   | Environmentally friendly<br>vehicles                      | SCC has invested in alternative fuelled vehicles such as LPG and hybrid<br>electric powered vehicles. Transport Services are constantly researching the<br>market with regards to environmentally friendly vehicles<br>All new vehicles to be Euro4; Euro5 when available<br>Work towards reducing the age profile of the SCC<br>fleet<br>Take part in Smart EV Project - battery powered Zero emission vehicles<br>Take part in Sustainable Procurement task group   |

|                                  |                                     | Investigate programme of driver training in fuel efficient driving techniques   |
|----------------------------------|-------------------------------------|---|
| c) Green Fleet<br>Management     | Raise awareness of 'Green' vehicles | SCC and Cenex have organised and hosted a Green Fleet Event - a seminar where fleet managers and professionals met and exchanged latest developments in environmentally friendly vehicles.  |
| d) Low Emission Strategy         | AEA Technology produced report      | Recommendations for the implementation of a Bus based low emission<br>strategy relying on the modernisation or retro-fitting of the local fleet with an<br>agreement between SCC and the bus operating companies. Potential<br>reduction in emissions is predicted to produce an improvement in air quality<br>and a reduction in health impacts particularly in urban areas and along routes<br>with heavy bus usage |
| e) Green Parking Scheme          | Free parking for approved vehicles  | A scheme which allows the owners of environmentally friendly cars (not<br>powered solely by petrol or diesel) to park for free after the payment of a<br>£10 registration fee. The scheme is due for a major re-working in 2008<br>to, perhaps, being based on DVLA CO2 Emissions Banding   |
| f) Sheffield Community Transport | Bio-diesel blend                    | SCT have installed a bio-diesel tank to enable refuelling of their mini-bus fleet with a 10% ethically sourced blend of bio-diesel, helping reduce emissions and cutting greenhouse gases   |

### Package 5 - M1 Motorway

| a) Actions specific to M1 Motorway | Measures and actions delivering a reduction<br>of emissions from the M1 will directly<br>contribute to a better quality of life for local | a)HA has engaged consultants to investigate their intention to create an AQAP for the M1 between Jc 33 and 35, working to achieve EU targets   |
|------------------------------------|---|--|
|                                    | residents.  | b)The section of the M1 that runs through South Yorkshire is being<br>considered for hard shoulder running to increase capacity to take into account<br>increased traffic growth. This may also be linked with High Occupancy<br>Toll (HOT) proposals to charge single occupancy vehicles for use. |
|                                    |   | c)A Health Impact Assessment has been terminated as the proposed changes to the motorway (construction of a fourth lane) have been dropped   |

#### Package 6 - Industry Emissions

| a) Actions to reduce emissions | SCC continues to regulate emissions to | SCC working within the LAPPC regime, and working closely with the          |
|--------------------------------|--|--|
| from Industry                  | atmosphere                             | Environment Agency to ensure industrial air pollution is minimised. Action |
|                                |  | being taken to increase inspection rates around 'part B' processes.        |
|                                |  |  |

#### Package 7 - Eco Efficiency and Planning

| a) Travel Plans    | Package of practical measures to<br>encourage staff to choose alternatives to<br>single occupancy car use, to reduce the<br>environmental impact of travel and to reduce<br>the need to undertake business travel.<br>Modal shift and reduced business travel<br>should contribute to the desired<br>improvements in air quality | <ul> <li>a)SCC producing a range of Area Travel Plans (ATP) to cover organisations based within Permit Parking Zones (PPZ). To secure additional Parking Permits businesses will have to sign up to a travel plan within 6 months and implement 7 travel related measures within 2 years. Sharrow Vale PPZ ATP has been issued, to be followed by Broomhill, Highfield and Upper Don.</li> <li>b)Travel plan monitoring now included within the standard travel plan condition. Monitoring will soon convert mileage savings to reduction in CO2</li> <li>c)Teaching hospital has implemented a car share scheme, with 50+ members. They are also appointing a travel plan co-ordinator who will progress improvements to the free staff buses, and implement salary sacrifice scheme for the purchase of bus tickets and bikes. Car usage to Northern General reduced from 78% to 69% of workforce (542 less cars)</li> <li>d)University have set up a car share scheme, are increasing cycle parking and have a regular bike doctor service. Car usage has dropped from 39% to 28% of all staff (550 less cars)</li> <li>e)Sheffield Hallam have implemented permit parking along with a reduction in parking spaces</li> <li>f)Sheffield Business Park have revamped their Travel Plan and implemented a car share scheme which has reduced car usage by 6.5% (72 cars)</li> <li>g)SYPTE have signed up on the Car Share website and are about to join the car club. Only 24% of staff drive to work and they are looking for further</li> </ul> |
|--------------------|--|---|
|                    |  | car club. Only 24% of staff drive to work and they are looking for further reductions   |
| b) SCC Travel Plan | The Council Travel Plan is about how   | a)Dedicated SCC travel plan officer employed to develop and implement the   |
|                    | for the impact its own travel has and looks  |   |

|                       | at how it can change it for the better  | b)The Travel Plan outlines a package of measures and incentives to manage<br>and reduce the impact of council related travel on the environment<br>and congestion          |
|-----------------------|---|--|
|                       | c)Measures include reducing the number and distance of journeys through<br>home working; reducing car journeys through the Car Club; increasing<br>sustainable travel (walking, cycling, public transport and car sharing) by<br>incentives such as employee discount schemes and car share website<br>Measures to reduce the impact of travel on the environment include<br>managing the efficiency of the council fleet. Potential benefits to employee<br>health and cost savings are also a key part of the Travel Plan. The focus of<br>the Travel Plan is not only on corporate schemes, but is increasingly on<br>bringing about change in individual services and sites. The Carbrook Travel<br>Plan for the Carbrook offices was developed in 2007. Three annual travel<br>surveys have shown that many of the targets relating to the above objectives<br>are being achieved, for example driven car journeys to work by employees<br>have reduced from 49.2% in 2005 to 44.2% in 2007. |  |
| c) School Travel Pans | Package of practical measures to<br>encourage parents and children to choose<br>alternatives to using cars for transporting   | a)3 school travel advisers in Sheffield supporting the development of School<br>Travel Plans (STPs)<br>b)153 schools adopted STPs, leaving 42 to implement before the 2010 |
|                       | children to school, to reduce the   | deadline.  |
|                       | environmental impact of travel  | c) The WOW (Walk Once a Week) scheme is running successfully in 72   |
|                       |   | schools - increasing physical activity as well as reducing car usage   |
|                       |   | d)Park & Stride schemes encouraging people who do drive their children to  |
|                       |   | school to ease congestion around the schools by parking further away and   |
|                       |   | walking the last part of their journey   |
|                       |   | e)Schools with STPs have accessed government funding for secure cycle  |
|                       |   | storage, parent waiting shelters, footpath and security improvements   |
|                       |   | f)Sheffield is now an accredited Bikeability city and is on course to deliver  |
|                       |   | level 2 cycle training to over 1500 pupils in the next financial year  |

| d) Sheffield Development<br>Framework<br>(SDF)  | A Local Development Framework has been<br>created, which is a portfolio of local<br>development documents. These documents<br>collectively deliver the spatial planning<br>strategy for the local planning authority's<br>area, which will cover the whole of<br>Sheffield, apart from the area within the<br>jurisdiction of the Peak District National<br>Park. Once adopted the SDF will replace<br>the Unitary Development Plan (UDP) | <ul> <li>g)1692 pupils in Sheffield participated in pedestrian training in 2007</li> <li>h)27 schools now have walking buses, with 14 schools planning to launch<br/>in the next 6 months.</li> <li>i)School staff are being encouraged to car share, with reserved parking<br/>spaces for those that do. Schools encouraged to provide changing facilities<br/>for staff who walk or cycle</li> <li>a)The City Strategy's aim of an 'Excellent Environment' includes reducing<br/>the city's dependence on non-renewable resources. Attention to this aim<br/>will have local benefits, for example the effect on health of better air quality<br/>b)Ensuring the pedestrian environment is convenient, pleasant and<br/>accessible to all will help encourage people to make more trips as<br/>pedestrians, and to build walking into their everyday activities<br/>c)It is council policy to promote choice in transport and sustainable travel<br/>patterns, this means making the best use of the existing network, maximising<br/>opportunities for travel by walking, cycling and public transport, reducing<br/>dependence on the car, and locating developments so as to reduce the need<br/>to travel</li> <li>d)Use of measures such as trip demand management, improved public<br/>transport, additional road links where appropriate, and management of the mix<br/>and density of new development should improve air quality and concestion</li> </ul> |
|---|---|--|
| e) Transport Brokerage -<br>Mobility Management | Aim to create an agency to act as a broker<br>between operators, agencies and individuals<br>to create new travel opportunities for those<br>most disadvantaged in society, to reduce   | a)Maximise vehicle scheduling efficiency to reduce wasted mileage<br>b)Provide accessible services within a clearly defined area to reduce the<br>need for short distance car journeys<br>c)Investigate the use of alternative fuels and drive trains, including recycled  |
| f) Car Club                                     | social exclusion and meet the growing<br>demand for transport not currently provided<br>by mainstream public transport.   | biodiesel and hybrid/electric mini buses   |
|   | to reduce resident and workplace<br>dependency on private car ownership   | for the past year with a higher than anticipated uptake by 179 members<br>b)17% of members have reduced their car ownership, with 40% of those cars  |

|                         |   | being 8-9 years old $\Lambda$ further 24% of members have deforred huving a new  |
|-------------------------|---|--|
|                         |   | being 8-9 years old. A further 24 % of members have deterred buying a new        |
|                         |   |  |
|                         |   | c)Customer's gave positive feedback, with 91% rating the Car Club as good        |
|                         |   | or excellent, 97% gave positive feedback about the availability of cars          |
|                         |   | and 96% about the ease of use. The positive results ensured WhizzGo              |
|                         |   | maintained Carplus accreditation   |
|                         |   | d)Developments for the second year will focus on planned and specific            |
|                         |   | marketing, with the increased visibility of the WhizzGo brand throughout         |
|                         |   | Sheffield and a stronger presence in the heart of the City                       |
|                         |   | e)WhizzGo is committed to providing low emission vehicles, and their current     |
|                         |   | fleet endeavours to utilise a 30% blend of recycled biodiesel                    |
|                         |   | f)Work with estate agents and letting agents to encourage new residents to       |
|                         |   | consider joining the Car Club  |
| g) Sheffield Air Map    | A web based resource where air quality    | SAM has been re-launched using the popular 'Google Maps' format.                 |
| 3,                      | data can be stored and accessed           | Diffusion tube and monitoring station data is available interactively            |
| www.sheffieldairmap.org |   | The site also includes links to companies with Travel Plans, and a page with     |
|                         |   | links to companies and organisations that have worked with the council           |
|                         |   | in environmental fields  |
| h) Green Roofs          | Green roof forum was set up in Sheffield  | At May 2008 we are now seeing significant progress in the use of green           |
|                         | to promote their benefits with regards to | roofs. Several are now complete in the city and approximately 40 have            |
|                         | climate change and air quality            | planning permission granted, including developments in the New Retail            |
|                         | cimate change and an quality              | Quarter and the redevelopment of the Moor shopping area. These figures           |
|                         |   | guarter and the redevelopment of the woor shopping area. These lightes           |
| i) Lond Lloo Dianning   |   | Reaction 100 agreements and Supplementary Diagning Desuments are                 |
| i) Land Use Planning    | use of planning policy to improve all     | Section 106 agreements and Supplementary Planning Documents are                  |
|                         | quaity                                    | being used to control or onset air pollution prior to developments taking place. |
|                         |   | Every planning application that reaches set trigger points is now required to    |
|                         |   | undertake an air quality assessment and must produce a travel plan. A recent     |
|                         |   | example being a new supermarket that is providing Electric vehicle recharging    |
|                         |   | points, subsidising bus passes, fitting particulate traps to delivery vehicles,  |
|                         |   | introducing a car share scheme and producing an Employee Travel Plan.            |
|                         |   |  |

| J) District Heating<br>Use of heat collected from burning waste<br>National Grid, and is turned into hot water to provide heat and hot water for<br>130 buildings connected to the district heating network. Connection to the<br>system reduces air pollution and CO2 emissions by removing the need for<br>individual boilers. The Housing Market Renewal Programme for Sheffield will<br>promote energy efficiency and alternative energy use and smaller scale<br>district heating schemes, including micro CHP. | j) District Heating | Use of heat collected from burning waste | The heat created by the combustion process in the Energy Recovery Facility<br>is used to create steam which is used in power generation for sale to the<br>National Grid, and is turned into hot water to provide heat and hot water for<br>130 buildings connected to the district heating network. Connection to the<br>system reduces air pollution and CO2 emissions by removing the need for<br>individual boilers. The Housing Market Renewal Programme for Sheffield will<br>promote energy efficiency and alternative energy use and smaller scale<br>district heating schemes, including micro CHP. |  |
|--|---------------------|--|--|--|
|--|---------------------|--|--|--|

#### Package 8 - Government

| 8) Actions for consideration by the<br>Government SCC is working with DEFRA, Highways<br>Agency DfT and DVLA | a)DEFRA funding has supported the continued progress of the Low Emission<br>Strategy Forum - a meeting of LAs and other agencies considering LESs or<br>similar actions to enable sharing of ideas, which Sheffield<br>chairs  |
|--|--|
|  | b)The DEFRA air quality grant has enabled the continued working with community groups with regard to air quality monitoring with the Community Diffusion Tube scheme.  |
|  | c)The modelling and monitoring work with the HA has ended as the Health<br>Impact Assessment has been terminated (See Package 5)   |
|  | d)A bid for a project using communication technology for disseminating air quality information to vulnerable sections of the community, and to evaluate the health impact of air quality at local level has been made to DEFRA |

#### 16.0 Conclusions

- There are few changes in air quality in Sheffield since the Upgrading and Screening Assessment (USA) 2006.
- There are widespread exceedances of the Objectives across the city for nitrogen dioxide and fine particles PM10.
- The remaining 5 pollutants assessed (benzene, 1,3-butadiene, carbon monoxide, lead and sulphur dioxide) all currently pose no risk of exceeding their respective objectives.
- Traffic emissions are the major source of air pollution in the city.
- It has previously been estimated, by computer modelling, that if traffic levels in the city were reduced to 1991 levels (with 2008 engine technology) the nitrogen dioxide Objective could be met in most places.
- The commitment to air quality monitoring has remained the same since 2006. The number of monitoring stations is the same. The number of diffusion tubes, monitoring for nitrogen dioxide, has increased slightly since 2006.
- As part of the ongoing Review and Assessment process, further reviews of air quality will be required in the near future. These will be:
  - A Further Assessment of nitrogen dioxide by October 2008.
  - Public consultation on the Detailed Assessment for PM10 report and designation of an Air Quality Management Area for PM10, scheduled for completion by December 2008.
  - A Further Assessment of PM10 by December 2009.
  - An Air Quality Action Plan for PM10 by December 2009.