

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.

Table 1a Result of Progress Report 2008

Pollutant	Findings	Further Action
Benzene	No areas where objectives are at risk of being exceeded	-
1,3-butadiene	No areas where objective is at risk of being exceeded	-
Carbon monoxide	No areas where objective is at risk of being exceeded	-
Lead	No areas where objectives are at risk of being exceeded	-
Nitrogen dioxide	A new citywide Air Quality Management Area has been designated as, there are locations where there is a risk of exceeding the annual objective	Further Assessment by October 2008
Particles PM₁₀ (2004 objectives)	There are locations where there is a risk of exceeding the 24-hour objective more than 35 times a year	Designate AQMA by Dec 08. Air Quality Action Plan by Dec 2009 Further Assessment by Dec 2009
Sulphur dioxide	No areas where objectives are at risk of being exceeded	-

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)

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

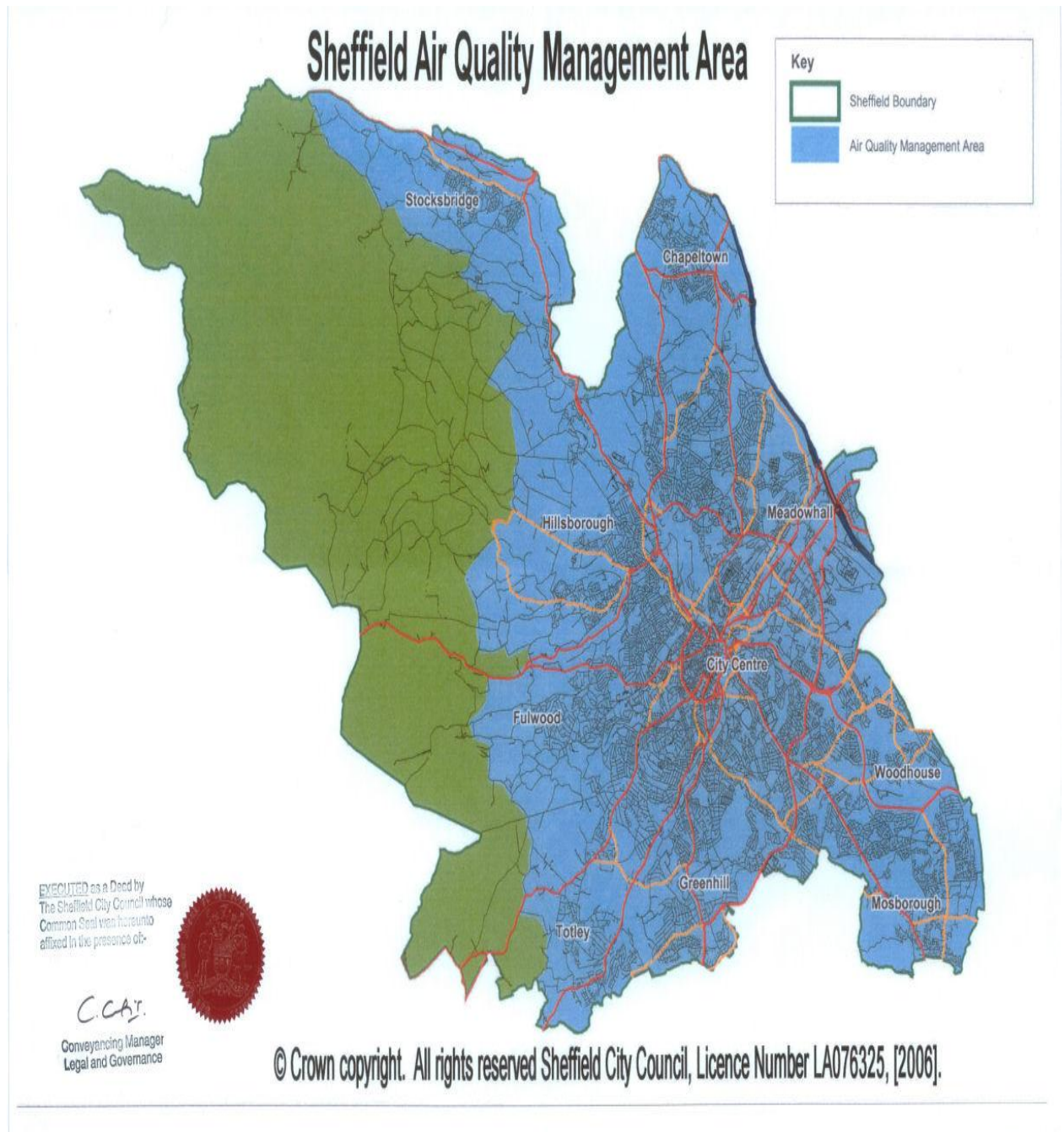
The second round of the review and assessment process began with an Updating and Screening Assessment which was produced in July 2003, the results of which were that a Detailed Assessment (completed late 2004) should be undertaken for NO₂ and PM₁₀.

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 PM₁₀ 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/m³ 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.

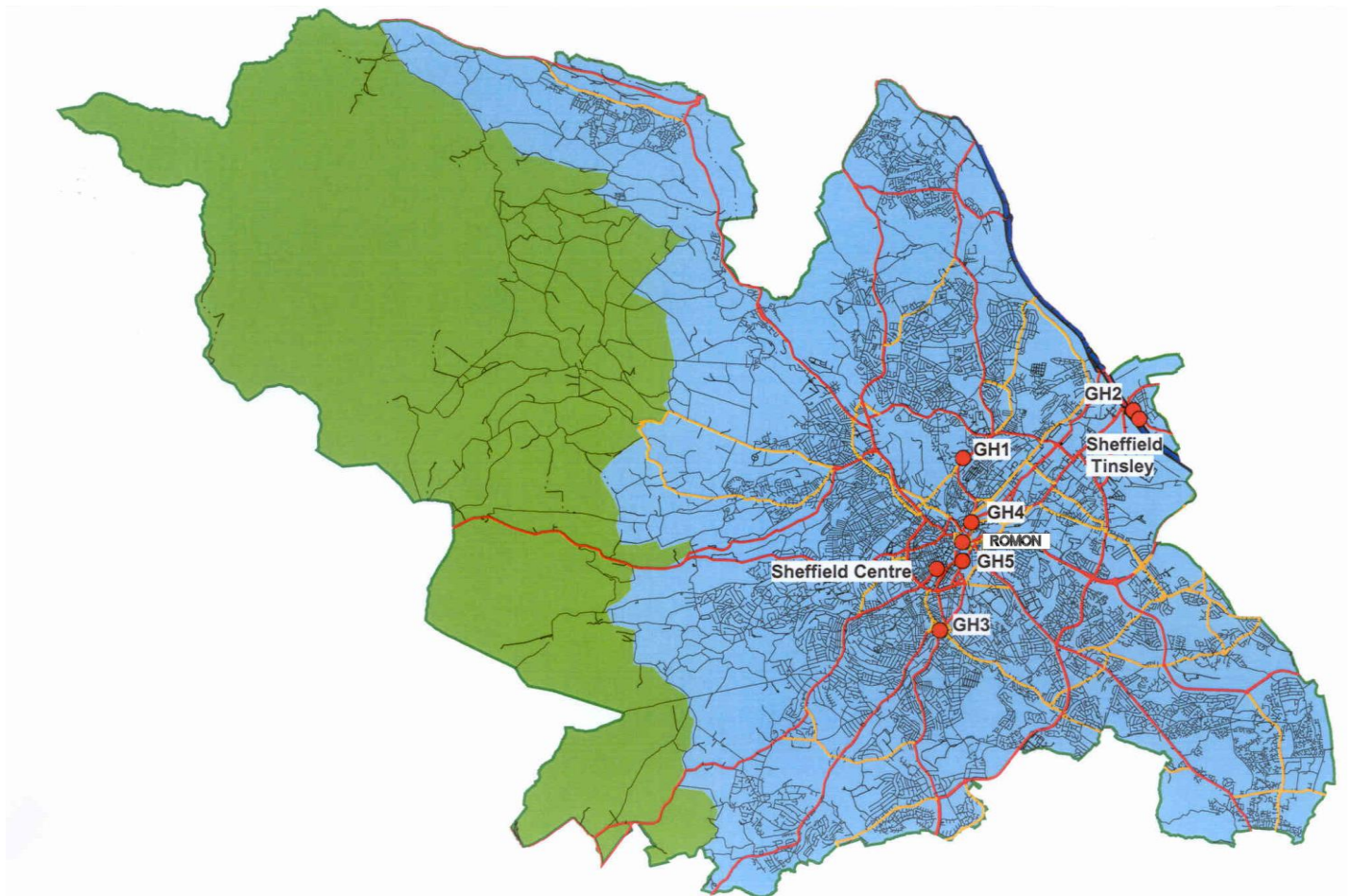


Figure 2 Automatic monitoring site locations

Map of air quality monitoring stations equipped with continuous analysers.

Carbon monoxide is monitored at Sheffield Centre and Tinsley sites.

Table 2 Carbon monoxide monitoring results Sheffield 1996-2007

Maximum daily 8 hour running mean		
Year	Site	Concentration (mg/m³)
1996	Sheffield Centre	4.9
	Sheffield Tinsley	4.5
	Average	4.7
1997	Sheffield Centre	4.7
	Sheffield Tinsley	4.1
	Average	4.4
1998	Sheffield Centre	3.5
	Sheffield Tinsley	3.5
	Average	3.5
1999	Sheffield Centre	2.7
	Sheffield Tinsley	3.4
	Average	3.05
2000	Sheffield Centre	3.6
	Sheffield Tinsley	2.8
	Average	3.2
2001	Sheffield Centre	4.9
	Sheffield Tinsley	3.6
	Average	4.25
2002	Sheffield Centre	2.7
	Sheffield Tinsley	3.6
	Average	3.15
2003	Sheffield Centre	2.9
	Sheffield Tinsley	N/A
	Average	2.9
2004	Sheffield Centre	1.7
	Sheffield Tinsley	2.1
	Average	1.9
2005	Sheffield Centre	3.0
	Sheffield Tinsley	2.3
	Average	2.65
2006	Sheffield Centre	2.2
	Sheffield Tinsley	2.4
	Average	2.3
2007	Sheffield Centre	1.5
	Sheffield Tinsley	1.6
	Average	1.6

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 $\mu\text{g}/\text{m}^3$ or the 2010 annual mean objective of 5 $\mu\text{g}/\text{m}^3$.

4.2 Monitoring data

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

Table 3a Benzene Monitoring Site Details

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

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 ($\mu\text{g}/\text{m}^3$)
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 µg/m³.

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 $40 \mu\text{g}/\text{m}^3$ 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)

Site	Annual mean		No of hours above 200 µg/m ³ 1-hour objective	Data Capture %
	Year	µg/m ³		
GH1 St John Fisher School	1999	23	0	49
GH1 Endcliffe Park	2000	35	0	85
GH1 Brightside School	2001	35	0	79
	2002	40	5	49
GH1 Firshill School	2003	31	0	68
	2004	25	0	94
	2005	26	1	65
	2006	27	0	991
	2007		Station moved	
GH2 Tinsley Infant School	2000	47	0	84
	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 Lowfield School	2000	44	0	96
	2001	44	2	98
	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 building	2001	26	1	44
GH5 Hallam University	2002	50	0	38
	2003	45	0	86
	2004	40	0	92
	2005	38	0	91

Site	Annual mean		No of hours above 200 µg/m ³ 1-hour objective	Data Capture %
	Year	µg/m ³		
	2006	41	0	99
	2007	40	0	83
Defra Sheffield 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 Sheffield 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 Waingate (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 Mean NO2 µg/m3 2003	Annual Mean NO2 µg/m3 2004	Annual Mean NO2 µg/m3 2005	Annual Mean NO2 µg/m3 2006	Annual Mean NO2 µg/m3 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	46	51	57	59	53
Attercliffe Road Duplicate	56	49	55	57	50
Barnsley Rd Fir Vale	55	49	55	57	49
Upwell 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 Chesterfield Road Diffusion Tube Results

Table 6 S10 Corridor and Chesterfield Road Diffusion Tube Results Site	Annual Mean NO2 µg/m3 2004	Annual Mean NO2 µg/m3 2005	Annual Mean NO2 µg/m3 2006	Annual Mean NO2 µg/m3 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 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 7 Community Diffusion Tube Results (highlighted figures are those which breach the annual mean objective)

Site	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2004	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2005	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2006	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 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

Site	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2004	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2005	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2006	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 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

Site	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2004	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2005	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2006	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 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

Site	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2004	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2005	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2006	Annual Mean NO2 $\mu\text{g}/\text{m}^3$ 2007
Firvale				
Earl Marshall Youth Centre	26	27	32	28
Firth Park Road	35		28	
Owler Lane 1	40	42	38	37
Owler Lane 2	34	34	36	31
Barnsley Road	42	41	36	38
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

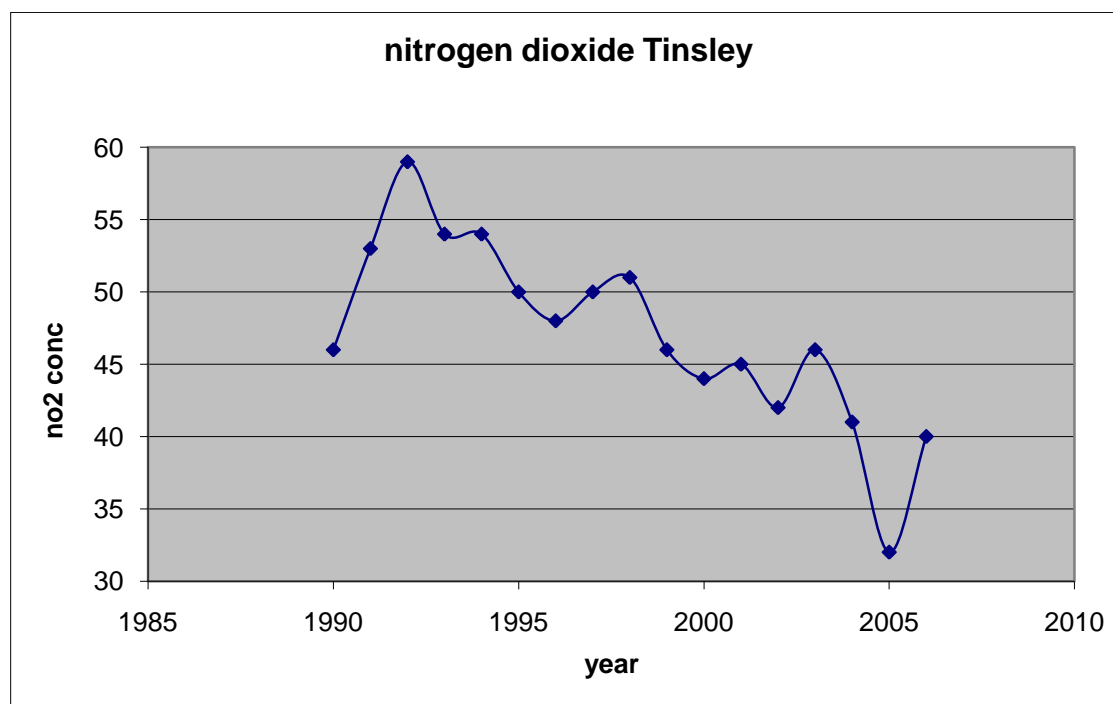


Figure 4 Annual Mean Nitrogen Dioxide concentrations at GH2 Tinsley Infant School

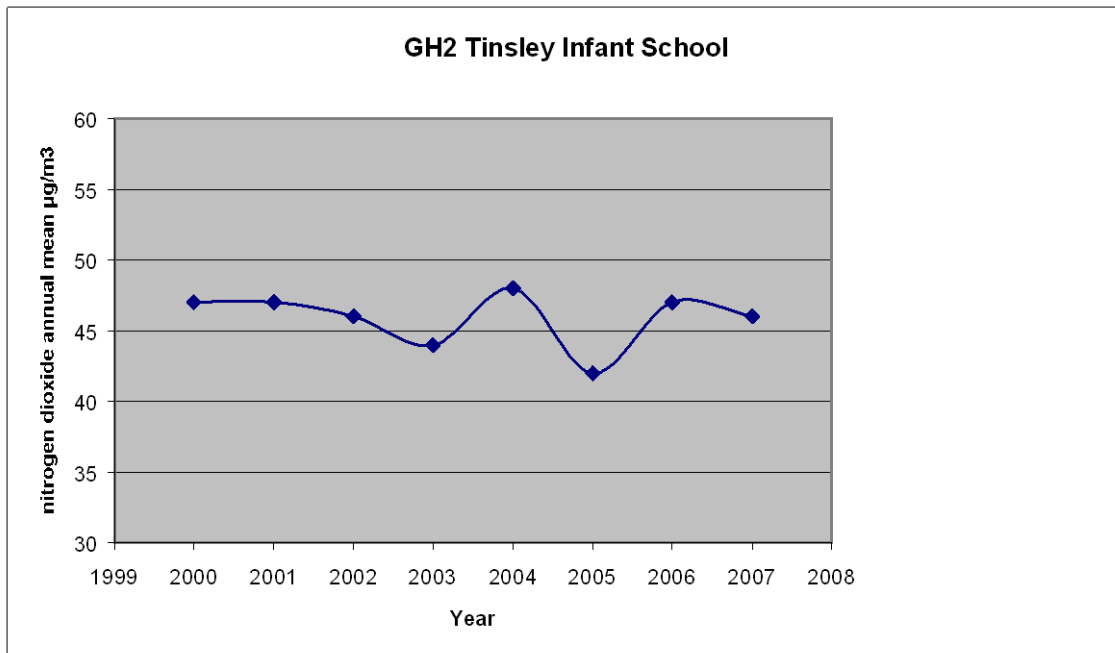
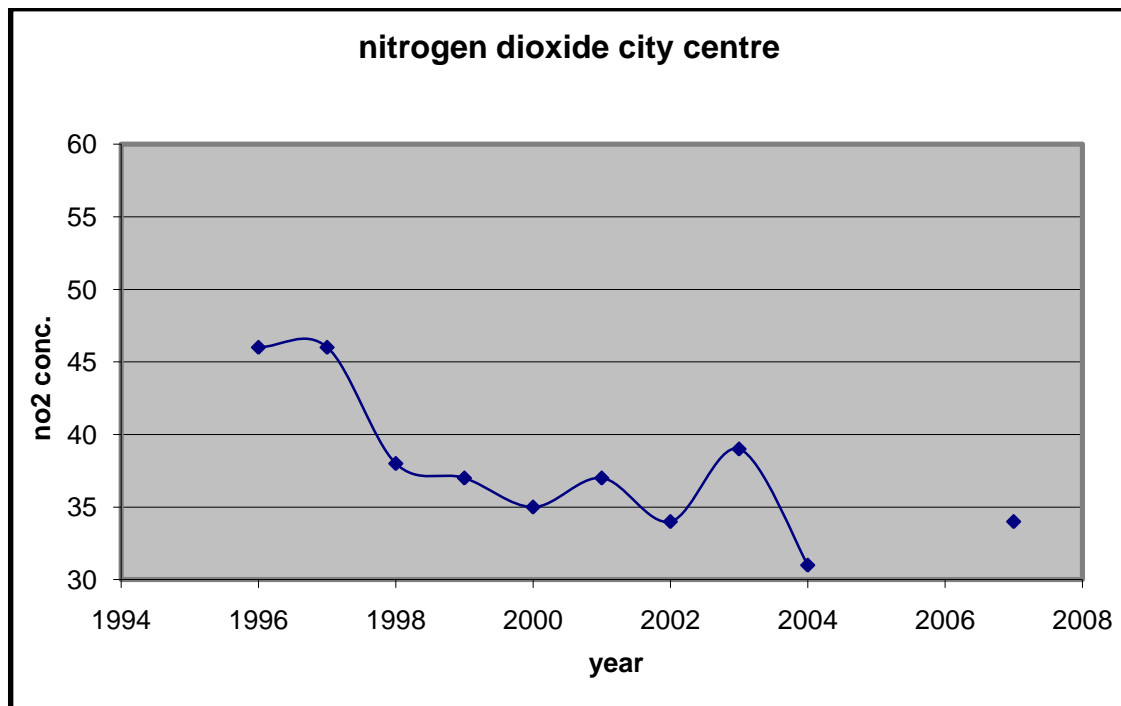


Fig 5 Annual Mean Nitrogen Dioxide concentrations at Sheffield Centre



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 $266 \mu\text{g}/\text{m}^3$ 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.

Table 8 Sulphur Dioxide levels (all units are $\mu\text{g}/\text{m}^3$)

Site	Year	Max hour	Max 24-hour	No of hours above 15-min objective	Max 15-minute	Data capture %
Defra Sheff Centre	'99	78	41	3	311	
	'00	67	44	0	202	
	'01	84	76	1	290	
	'02	57	46	0	167	
	'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 GH1 Brightside	'01	185	64	3	287	92
	'02	146	40	0	231	74
	'03	194	52	1	273	75
GH1 Firhill	'04	105	38	0	138	98
	'05	77	35	0	130	68
	06	132	55	0	138	98
	07	52	106	0	86	30
Sheff CC GH2 Tinsley	'99	144	40	0	209	78
	'00	212	72	2	915	78
	'01	205	51	0	262	95
	'02	154	37	0	223	84
	'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
Sheff CC GH3 Lowfield	'99	252	45	6	968	83
	'00	160	56	0	160	96
	'01	165	56	0	205	96
	'02	141	29	0	207	88
	'03	154	27	5	486	59
	'04	93	24	0	178	97
	'05	56	17	0	133	98
	06	96	36	0	150	98
	07	102	16	0	109	95

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 PM₁₀ (fine particles less than 10 microns) by Sheffield City Council concluded that the risk of exceeding the PM₁₀ 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 PM₁₀ 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 exceedance 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 PM₁₀ monitoring data (all units are gravimetric equivalents)

Site	Year	Annual mean µg/m ³	No of days above 50 µg/m ³ 24-hour objective (35 allowed)	Data Capture %
GH1 St John Fisher School	99/00	20	1	93
GH1 Endcliffe park	2000	21	5	85
GH1 Brightside School	2001	25	8	89
	2002	25	9	79
	2003	24	16	77
GH1 Firshill School	2004	20	2	94
	2005	21	2	68
	2006	24	11	97
	2007	17	n/a	33
GH2 Tinsley 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 mean $\mu\text{g}/\text{m}^3$	No of days above 50 $\mu\text{g}/\text{m}^3$ 24-hour objective (35 allowed)	Data Capture %
GH3 Hillsborough School	99	23	4	88
GH3 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 HSE building GH5 Hallam 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 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 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 co-located 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 achieved by
	Concentration	Measured as	
UK (except Scotland) ^a	25 µg/m ³	annual mean	2020
Scotland ^a	12 µg/m ³	annual mean	2020
UK urban areas	Target of 15% reduction in concentrations at urban background locations	3-year mean	Between 2010 and 2020

10.2 Monitoring Data

The results of monitoring for PM_{2.5} in Sheffield are shown in Table 11.

Table 11 PM_{2.5} monitoring data

Annual averages GH2 Tinsley Infant School		
Year	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	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

10.3 Conclusion

The monitoring data for PM_{2.5} shows that the annual target of 25 $\mu\text{g}/\text{m}^3$ 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/m ³
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 Precision Components Ltd	Surface treatment of metals
Tarmac Limited	Storing load unloading cement
Pentagon Vauxhall	Coating processes-road vehicle

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

Dry Cleaners Part B	
Persil Service Ltd	672 Abbeydale Road
Elite Dry Cleaners	11a Station Road
St Michaels Dry Cleaners	54 St Michaels Road
Betty Boo Ltd	107 Devonshire Street
Churchills Dry Cleaners	227 Crookes
W E Franklin Ltd.	116-120 Onslow 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 Application Ref	PROPOSAL	ADDRESS
04/036213OUT	Site of Arnold Laver	Chesterfield Road, Heeley, Sheffield S2
05/04833/OUT – Vantage Riverside Development, Tinsley, Sheffield, S9	Mixed Use Development, Tinsley, Sheffield	Wharf Road / Sheffield Road, Sheffield S9
05/03438/FUL	Multi-Storey Car Park Development	Sheffield Teaching Hospital Foundation Trust, Whitham Road, Sheffield S10 2SJ
Upwell Street Development, Grimesthorpe, Sheffield, S4.	Transport Distribution Depot	Holywell Road, Sheffield, S4
05/0363/OUT	Development of Land at Site A	Corus Works, Manchester Road, Stocksbridge, Sheffield S36 2JA, South Yorkshire.
06/00268/FUL	Erection of 1 x 10 storey block, 2 x 9 storey blocks and 1 x 7 storey block providing 140 student flats and 39 flats, with office and retail units with associated landscaping and car parking accommodation (As amended)	Land At Blast Lane And Broad Street, Sheffield S2 (Numbered Apts 1-39 The Gateway, 1 Blast Lane, 73-81 Broad Street And Flats 1-146 The Pinnacles, 83 Broad Street)
06/00601/FUL	Demolition of 41 Blonk Street, retention of crucible stack and development of mixed-use scheme with A1, A3 and B1 units, 121 apartments and a townhouse, including refurbishment of Hancock & Lant Buildings	Hancock And Lant Building, Ladys Bridge And Land Adjoining Blonk Street Sheffield (Numbered 2-12 Blonk Street Including Apts I Quarter (4 And 10 Blonk Street))
06/00840/FUL	Erection of 11 storey building for office and hotel use with associated car parking	Young Street And St Marys Gate Sheffield (Tulip Inn Hotel Numbered 7 Young Street)
06/00846/OUT	Erection of retail units and redesign and refurbishment of existing bowl building (Amended scheme to 02/00051/FUL)	Site At Retail Park, Kilner Way, Sheffield

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

Planning Application Ref	PROPOSAL	ADDRESS
Scoping Report – West Bar Redevelopment	Proposed Mixed Use Redevelopment	West Bar Development, Sheffield S1
07/03031/FUL	Erection of 85 flats with commercial use (Class B1 Business) on ground floor in 1 x 4/5 storey building with basement car parking (In accordance with additional information received 10/04/2008)	Site Of Dun Street, Dun Lane And Dunfields, Adjacent To The Old Bull's Head, Dun Street, Sheffield 3
07/03198/FUL	Erection of 5 blocks to accommodate 18 industrial units (B1c, B2 and B8 Use) and associated landscaping works (as amended plans dated 1.10.2007)	Land Between Rother Valley Way New Street and Longacre Way, Holbrook Industrial Estate, Sheffield. (Numbered 1-18 Enterprise Way)
07/03545/FUL	Erection of 2 x 3-storey office blocks (Use Class B1) and associated car parking and landscaping (Amended plans received)	Land South Of Tinsley Park Works Between Rotherham Boundary and Shepcote Lane, Sheffield
07/04821/Ful	Parkway Edge Site	
08/01587/FUL	Erection of multi-storey car park (529 spaces) and part of ground floor area for A1/A3 use	Site Of The Assay Office, 137 Portobello Street, and Substation, 22 Holland Street And 80 Rockingham Street, Sheffield
08/01225/OUT	Environmental Impact Assessment – Scoping Statement	Proposed New Renewal Energy Plant, Blackburn 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 km² 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 Bus priority signals and 24hr bus lane on A61. Now part of marketing and promotional campaign to raise awareness of improved routes
	North Sheffield Better Buses	Spital Hill traffic management for bus priority. First Statutory Quality Partnership Scheme in England. Provision of high quality Euro 3 buses required. Now part of marketing and promotional campaign to raise awareness of improved routes
b) Bus Strategy/ South Yorkshire Bus Strategy	Part of LTP that aims to underpin and sustain regeneration without contributing to congestion best achieved through public transport lead strategy	Three 'Options for Delivery' 1)Continuation of the existing voluntary partnership arrangements with the bus industry 2)Statutory Quality Bus Partnership Schemes: legally binding agreements in which operators agree to maintain certain higher quality standards 3)Statutory Quality Bus Contracts: all aspects of the bus network in a given area are specified by the Local Authority and then operated under tendered contract by a bus operator

c) Media and Publicity Campaigns/ Marketing Techniques	South Yorkshire Travelwise/ Care4Air	Campaigns collaborated to change attitudes to public transport use. Care4Air campaign has highlighted the fact that through walking, cycling or using public transport we can all do our bit to help improve air quality. Currently working on revised and updated website Highly successful 'Carbon Quids' promotional campaign, held as part of European Mobility Week. Promoting sustainable and alternative modes of transport
d) Supertram extension	Extension of successful network	The current Sheffield Supertram network is highly successful, carrying well over 12 million passengers a year and still growing. Surveys have shown that about 25% of users would have a car available for their journey but choose not to use it. The tram is an attractive alternative to car use and is making a useful contribution to modal shift where it runs. Unfortunately due to the cost of LRT Schemes the DfT refused a joint bid by SYPTE and SCC to extend 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. 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 amount of traffic approaching the city centre	Since the last update a new tram based Park & Ride site has been developed at Malin Bridge and the existing Middlewood Park & Ride facility has been extended to double it's capacity. SCC, SYPTE and the other 3 South Yorkshire Districts have an approved South Yorkshire Park and Ride Strategy, which was developed to grow provision within the County in an organised and co-ordinated way. The Strategy was adopted by the Passenger Transport Authority and partnership work is continuing to put

		together a work programme of new sites in the County, including a number of possible sites in Sheffield. The route of the bus service from the existing site at the Tesco store on Abbeydale Road has been changed to now serve the University and Hospital areas where there is increasing pressure on parking. The Major Scheme Business cases which are being developed for submission to the DfT are inclusive of Park & Ride sites and so will contribute to the P&R Strategy
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Package 2 - Traffic Infrastructure

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

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

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

Package 3 - Traffic Control

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

Package 4 - Cleaner Vehicles

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

		Investigate programme of driver training in fuel efficient driving techniques
c) Green Fleet 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 strategy relying on the modernisation or retro-fitting of the local fleet with an agreement between SCC and the bus operating companies. Potential reduction in emissions is predicted to produce an improvement in air quality and a reduction in health impacts particularly in urban areas and along routes with heavy bus usage
e) Green Parking Scheme	Free parking for approved vehicles	A scheme which allows the owners of environmentally friendly cars (not powered solely by petrol or diesel) to park for free after the payment of a £10 registration fee. The scheme is due for a major re-working in 2008 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 of emissions from the M1 will directly contribute to a better quality of life for local residents.	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
		b)The section of the M1 that runs through South Yorkshire is being considered for hard shoulder running to increase capacity to take into account increased traffic growth. This may also be linked with High Occupancy 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 from Industry	SCC continues to regulate emissions to atmosphere	SCC working within the LAPPC regime, and working closely with the Environment Agency to ensure industrial air pollution is minimised. Action being taken to increase inspection rates around 'part B' processes.
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Package 7 - Eco Efficiency and Planning

<p>a) Travel Plans</p>	<p>Package of practical measures to encourage staff to choose alternatives to single occupancy car use, to reduce the environmental impact of travel and to reduce the need to undertake business travel. Modal shift and reduced business travel should contribute to the desired improvements in air quality</p>	<p>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.</p> <p>b) Travel plan monitoring now included within the standard travel plan condition. Monitoring will soon convert mileage savings to reduction in CO2</p> <p>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)</p> <p>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)</p> <p>e) Sheffield Hallam have implemented permit parking along with a reduction in parking spaces</p> <p>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)</p> <p>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 reductions</p>
<p>b) SCC Travel Plan</p>	<p>The Council Travel Plan is about how Sheffield City Council takes responsibility</p>	<p>a) Dedicated SCC travel plan officer employed to develop and implement the council's own travel plan.</p>
	<p>for the impact its own travel has and looks</p>	

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

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

		<p>being 8-9 years old. A further 24% of members have deferred buying a new car. This accounts for a reduction of 70 cars on the roads of Sheffield</p> <p>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</p> <p>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</p> <p>e)WhizzGo is committed to providing low emission vehicles, and their current fleet endeavours to utilise a 30% blend of recycled biodiesel</p> <p>f)Work with estate agents and letting agents to encourage new residents to consider joining the Car Club</p>
<p>g) Sheffield Air Map</p> <p>www.sheffieldairmap.org</p>	<p>A web based resource where air quality data can be stored and accessed</p>	<p>SAM has been re-launched using the popular 'Google Maps' format. Diffusion tube and monitoring station data is available interactively. 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.</p>
<p>h) Green Roofs</p>	<p>Green roof forum was set up in Sheffield to promote their benefits with regards to climate change and air quality</p>	<p>At May 2008 we are now seeing significant progress in the use of green roofs. Several are now complete in the city and approximately 40 have planning permission granted, including developments in the New Retail Quarter and the redevelopment of the Moor shopping area. These figures make Sheffield the leading authority outside London</p>
<p>i) Land Use Planning</p>	<p>Use of planning policy to improve air quality</p>	<p>Section 106 agreements and Supplementary Planning Documents are being used to control or offset 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.</p>

j) District Heating	Use of heat collected from burning waste	The heat created by the combustion process in the Energy Recovery Facility is used to create steam which is used in power generation for sale to the National Grid, and is turned into hot water to provide heat and hot water for 130 buildings connected to the district heating network. Connection to the system reduces air pollution and CO2 emissions by removing the need for individual boilers. The Housing Market Renewal Programme for Sheffield will promote energy efficiency and alternative energy use and smaller scale district heating schemes, including micro CHP.
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Package 8 - Government

8) Actions for consideration by the Government	SCC is working with DEFRA, Highways Agency DfT and DVLA	a)DEFRA funding has supported the continued progress of the Low Emission Strategy Forum - a meeting of LAs and other agencies considering LESs or similar actions to enable sharing of ideas, which Sheffield 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 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.