

2011 Air Quality Progress Report for *Sheffield City Council*



In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

July, 2011



Local Authority Officer	Andrew Elleker
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Department	Carbon Reduction and Air Quality, Transport and Highways
Address	2 Carbrook Hall Rd Sheffield S9 2DB
Telephone	0114 2734655
e-mail	andrew.elleker@sheffield.gov.uk

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Executive Summary

This report is the Progress Report 2011, which is prepared as part of the ongoing Local Air Quality Management (LAQM) process.

Previous assessments have shown there to be a problem with the likelihood of exceedence of the DEFRA objectives for nitrogen dioxide and PM10 (fine particulate).

For this reason an Air Quality Management Area (AQMA), covering the whole of the urban area, has previously been designated for nitrogen dioxide (annual mean objective), for nitrogen dioxide (hourly mean objective) and PM10 (24 hour mean).

An Air Quality Action Plan (AQAP) was drawn up in 2003 to try to improve air quality (nitrogen dioxide) in the AQMA. This has proved ineffective and any successes of the AQAP, in improving air quality, have been negated by the general increase in traffic levels.

At present a new AQAP is being produced for nitrogen dioxide and PM10. More ambitious measures will be needed to improve air quality. The draft AQAP went out in May 2011 for consultation and will be reworked taking consideration of these comments before going to Cabinet for approval in late 2011.

There is a well established air quality monitoring network in the city, comprising both automatic stations and diffusion tubes. There were many problems with data collection from the automatic stations in the second half of the year (the hosting company for the data collection server went into receivership and this resulted in low data capture rates).

Monitoring shows that PM10 and nitrogen dioxide are still likely to be exceeding DEFRA air quality objectives. Traffic is the major source of these pollutants and Nitrogen dioxide levels do not appear to be reducing. It appears that the AQMA for nitrogen dioxide is unlikely to be revoked in the foreseeable future.

It has previously been predicted, by computer modelling, that if traffic levels in the city were reduced to 1991 levels (with 2011 engine technology) the nitrogen dioxide objective could be met in most places.

No other pollutants, apart from nitrogen dioxide and PM10, are thought to exceed DEFRA objectives.

As the whole of the Sheffield urban area is designated as an AQMA for nitrogen dioxide and PM10 no Detailed Assessment will be required.

The next reports as part of LAQM will be a Further Assessment for PM10 and an Upgrading and Screening Assessment in 2012.

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1 Introduction

1.1 Description of Local Authority Area

Sheffield is one of England's largest cities and a metropolitan borough in South Yorkshire, England. Sheffield is located fairly centrally in Britain and gained its city charter in 1893 and officially became titled the City of Sheffield.

Lying directly to the east of Sheffield is Rotherham, from which it is separated by the M1 motorway. On its northern border is Barnsley Metropolitan Borough and to the south and west is the county of Derbyshire. Sheffield is the only city to include part of a national park, the Peak District, within its borders.

Sheffield is geographically very diverse. The urban area nestles in a natural bowl created by seven hills and the confluence of five rivers: the Don, Sheaf, Rivelin, Loxley and Porter. Much of the city is built on these hillsides, with views into the city centre or out to open countryside. The city's lowest point is just 10 metres above sea level, whilst some parts of the city are at over 500 metres above sea level.

The city enjoys a wide variety of habitats, comparing favorably with any city in the United Kingdom: urban, sub-urban, parkland and woodland, agricultural and arable land, meadow and freshwater. Large parts of the city are designated as sites of special scientific interest. With an estimated total of over two million trees, Sheffield has more trees per person than any other city in Europe. It has over 170 woodlands, 78 public parks and 10 public gardens. Added to this are 135 km² of national park and almost 11 km² of water, resulting in 61 percent of the city comprising green space.

The present city boundary was largely set in 1974, when the former county borough of Sheffield merged with Stocksbridge Urban District and two civil parishes from Wortley Rural District. It covers a total area of 368 km².

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1 includes the number of permitted exceedences in any given year (where applicable).

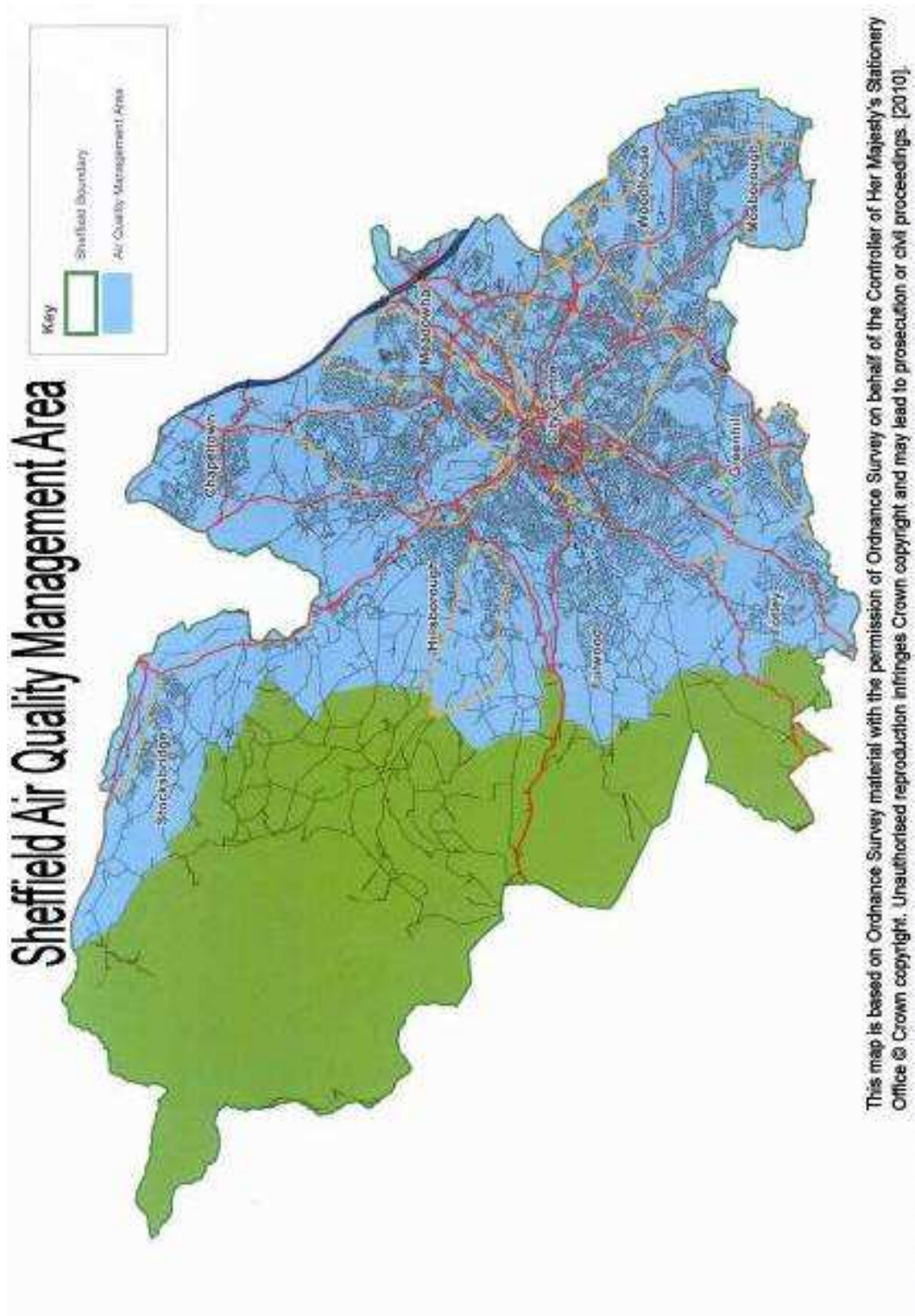
Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Report and year	Conclusion to report	Further work required.
2001 Stages 1, 2 and 3 Review and Assessment of Air Quality.	Two areas in the city were predicted to be above the annual objective for nitrogen dioxide.	Air Quality Action Plan, Further Assessment of NO ₂ and two Air Quality Management Areas were required.
2002 2xAQMAs Designated		
2003 Air Quality Action Plan		
2003 Stage4 Further Assessment of Air Quality		
2003 Upgrading and Screening Assessment		Detailed Assessment of NO ₂
2004 Detailed Assessment for NO ₂	Urban area AQMA for NO ₂	Designate
2006 urban area AQMA designated.		
2006 Upgrading and Screening Assessment		Detailed Assessment for PM ₁₀
2007 Progress report for NO ₂		
2008 Detailed Assessment of PM ₁₀	AQMA required for PM ₁₀	Consultation then designate AQMA
2008 Progress report inc AQAP progress report.		
2008 Further Assessment of NO ₂ .		
2009 Air Quality Updating and Screening Assessment	AQMA required for PM ₁₀	AQMA. Designated 2010
Progress Report 2010		<p>An update of the Air Quality Action Plan, for both nitrogen dioxide and PM₁₀, is currently in progress.</p> <p>A Progress Report will be carried out in 2011.</p>

Figure 1.1 Map of AQMA Boundaries



The present situation in the city is:-

The problem pollutants are thought to be nitrogen dioxide and fine particles (PM10).

The nitrogen dioxide objective is exceeded in many areas including adjacent to many of the arterial routes into the city. Traffic is seen as the major problem.

It has previously been predicted, 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.

An Air Quality Management Area was designated in 2006 for nitrogen dioxide annual mean objective for the whole of the urban area (the whole of Sheffield excepting the Peak National Park area). This area was also designated as an AQMA for nitrogen dioxide hourly objective in March 2010.

The 2008 Detailed Assessment of PM10 predicted that the 24 hour mean could be exceeded and that an AQMA should be designated. In March 2010 an Air Quality Management Area was designated for 24 hour mean objective for the whole of the urban area.

Currently the Air Quality Action Plan is being updated, to include more ambitious measures than were in the 2003 plan. The AQAP has been out for public consultation, will be reworked in the light of these comments, and will go to Cabinet in late 2011.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Figure 2.1 Map(s) of Automatic Monitoring Sites

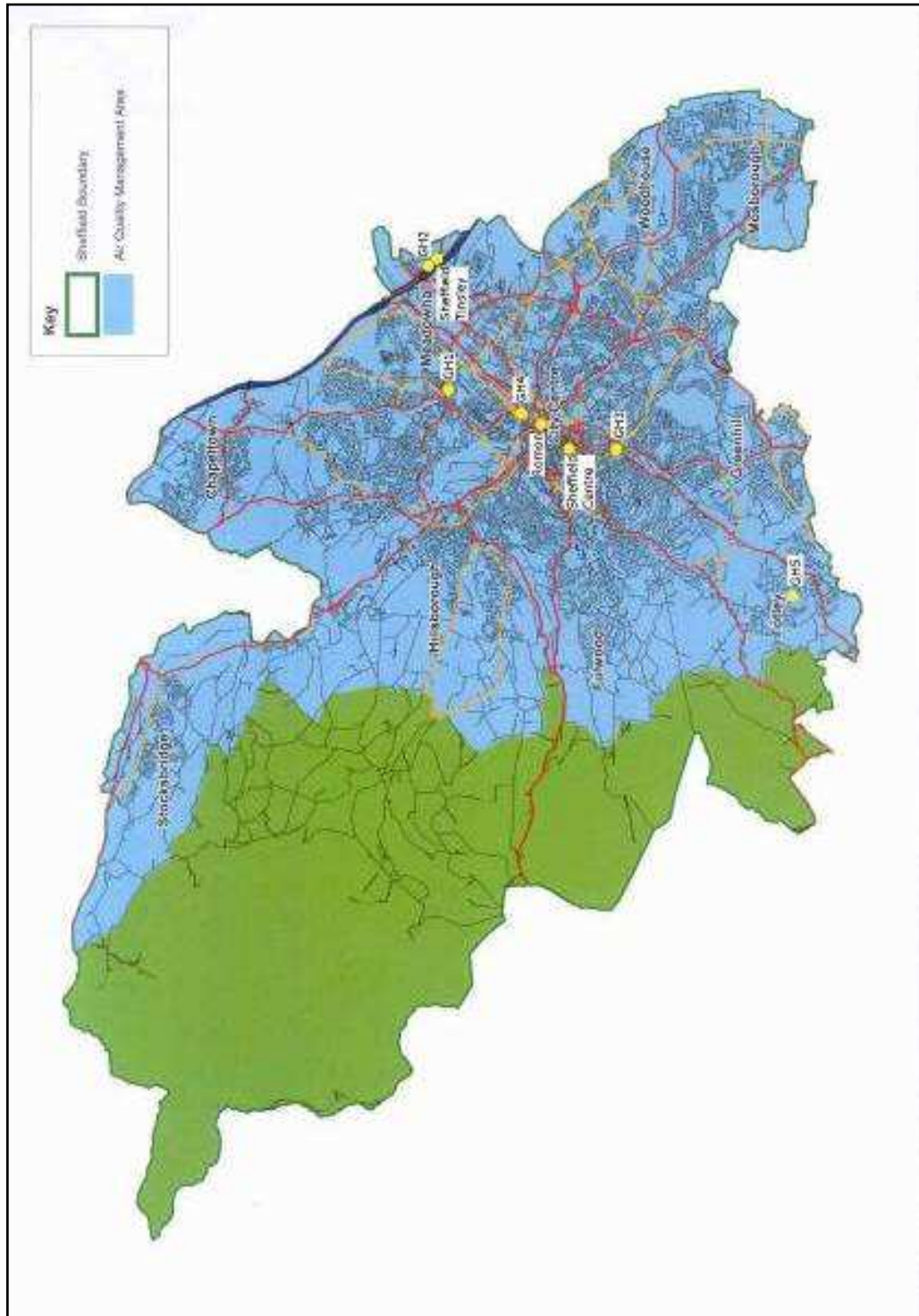


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
GH1 Firvale School	Urban Background	436990	390218	NO2, PM10,	Chemiluminescence, TEOM	Y	Y (1m)	10m	N
GH2 Tinsley Infant School	Urban Industrial	440077	390794	NO2, PM10, PM2.5,	Chemiluminescence, TEOM,	Y	Y (1m)	90m M1	N
GH3 Lowfield School	Urban Centre	435181	385366	NO2, PM10, SO2	Chemiluminescence, TEOM, UV Fluorescence	Y	Y (1m)	10m	N
GH4 Wicker	Urban Background	435959	388021	NO2, PM10,	Chemiluminescence, TEOM,	Y	Y (1m)	50m	N
GH5 King Ecgbert School	Urban Background	430977	380760	NO2, PM10,	Chemiluminescence, TEOM,	Y	N	100m	N
RM1 Waingate	Roadside	435750	387647	NO2, PM10	Chemiluminescence, TEOM	Y	Y (1m)	3m	N
Sheffield Centre (defra)	Urban Centre	435158	386885	NO2, PM10, PM2.5, SO2, , CO, Benzene	Chemiluminescence, TEOM, UV Fluorescence,, Gas filter correlation, pumped tube	Y	Y (1m)	20m	N
Sheffield Tinsley (defra)	Urban Industrial	440215	390598	NO2	Chemiluminescence	Y	Y (1m)	120m M1	N

2.1.2 Non-Automatic Monitoring Sites

Figure 2.2 Map of Non-Automatic Monitoring Sites

www.sheffieldairmap.org

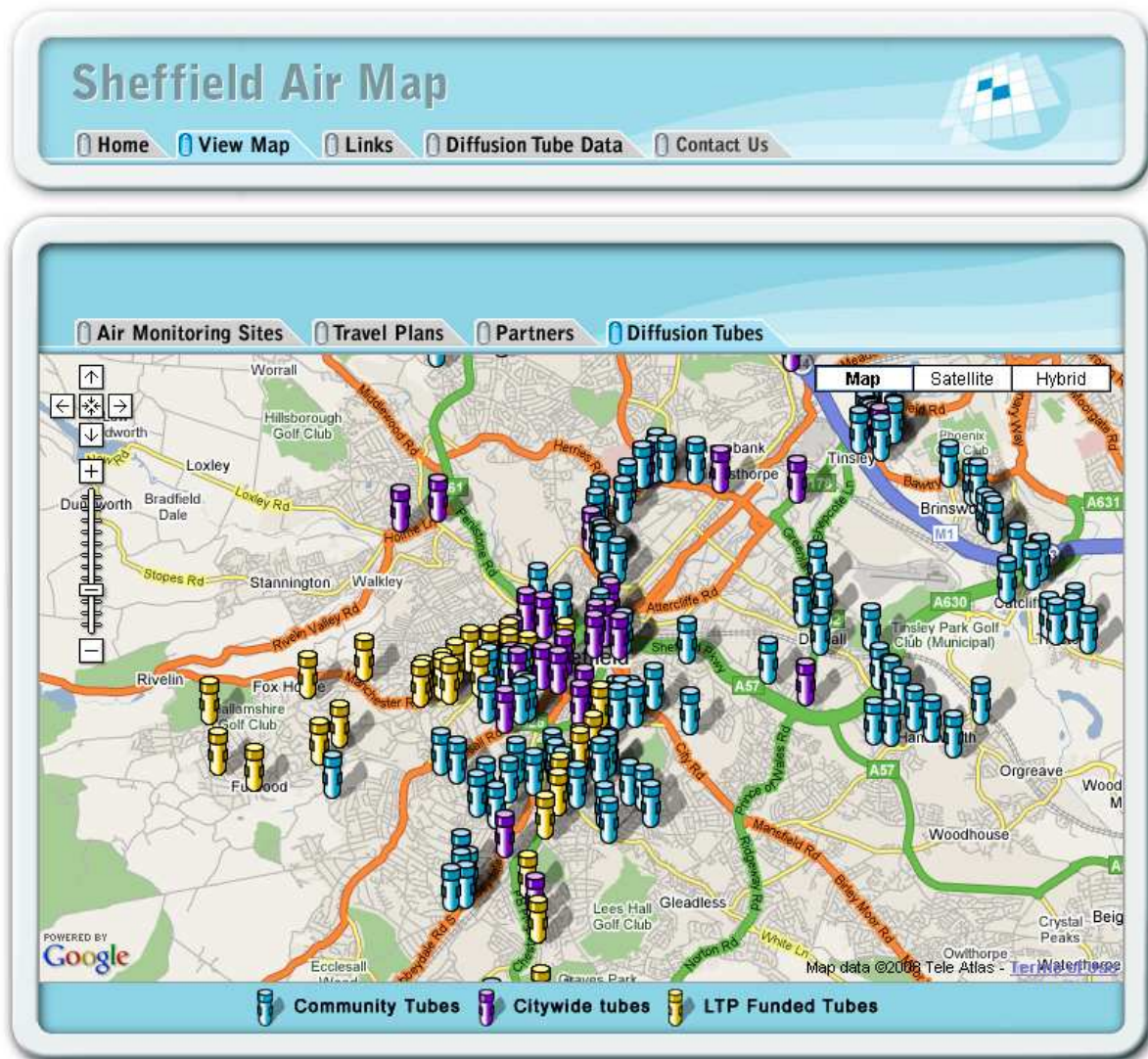


Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case Location?
		X	Y					
Warren Lane	Roadside	436063	397474	NO ₂	Y	Housing (10m)	5m	N
7 Bawtry Gate	Urban background	439995	390862	NO ₂	Y	Housing (5m),	20m	N
47 Bawtry Road	Roadside	440045	390884	NO ₂	Y	Housing (5m)	3m	N
109 Bawtry Road	Roadside	440177	390770	NO ₂	Y	Housing (5m)	3m	N
Ecclesfield Road Low Wincobank	Roadside	438778	392008	NO ₂	Y	Housing (1m)	2m	N
Attercliffe Road	Roadside	438880	389931	NO ₂	Y	Housing (5m)	3m	N
Attercliffe Road duplicate	Roadside	438880	389931	NO ₂	Y	Housing (5m)	3m	N
Barnsley Rd Fir Vale	Roadside	436492	390149	NO ₂	Y	Housing (5m)	5m	N
Upwell Street	Roadside	437683	390091	NO ₂	Y	Housing (2m)	2m	N
Burngreave Road/Minna Road	Roadside	435657	389110	NO ₂	Y	Housing (5m)	5m	N
Loxley New Road	Roadside	432647	389427	NO ₂	Y	Housing (1m)	3m	N
Loxley New Road- duplicate	Roadside	432647	389427	NO ₂	Y	Housing (1m)	3m	N
Bowden Wood Close	Roadside	439051	386743	NO ₂	Y	Housing (20m)	2m	N
Parkway Broad Lane	Roadside	436140	387527	NO ₂	Y	Housing (5m)	2m	N
Parkway Broad Lane duplicate	Roadside	436140	387527	NO ₂	Y	Housing (5m)	2m	N
Exchange Street	Urban centre	435899	387666	NO ₂	Y	Y (1m)	20m	N
Duke Street	Roadside	436104	387458	NO ₂	Y	Housing (5m)	3m	N

Waingate	Urban centre	435739	387653	NO ₂	Y	Y (1m)	5m	N
Fitzalan Square	Urban centre	435718	387470	NO ₂	Y	Y (1m)	10m	N
Barkers Pool	Urban centre	435238	387181	NO ₂	Y	Y (1m)	20m	N
Scotland Street	Urban background	434919	387768	NO ₂	Y	Y (1m)	3m	N
Eldon St/ Wellington St	Urban centre	434885	386963	NO ₂	Y	Y (1m)	3m	N
Broomspring Close	Roadside	434503	386893	NO ₂	Y	Housing (5m)	100m	N
University Roundabout	Roadside	434434	387393	NO ₂	Y	Housing (5m)	3m	N
Netherthorpe School	Roadside	434638	387828	NO ₂	Y	School (5m)	3m	N
Upper Hanover Street	Roadside	434405	386966	NO ₂	Y	Housing (5m)	3m	N
Shoreham St	Roadside	435554	386638	NO ₂	Y	Y (1m)	3m	N
St Marys Road	Roadside	435494	386389	NO ₂	Y	Housing (10m)	10m	N
Chesterfield Road/Woodseats Road	Roadside	434814	383335	NO ₂	Y	Housing (5m)	3m	N
Queens Road/Edmund Rd	Roadside	435499	385690	NO ₂	Y	Housing (5m)	3m	N
Abbeydale Road/Carter Knowle Road	Roadside	434324	384315	NO ₂	Y	Housing (5m)	3m	N
Ecclesall Road	Roadside	434312	386287	NO ₂	Y	Housing (10m)	3m	N
AUN	Urban centre	435135	386891	NO ₂	Y	Y (1m)	20m	N
AUN	Urban centre	435135	386891	NO ₂	Y	Y (1m)	20m	N
AUN	Urban centre	435135	386891	NO ₂	Y	Y (1m)	20m	N
ACE	Urban background	435959	388004	NO ₂	Y	Y (1m)	50m	N
ACE	Urban background	435959	388004	NO ₂	Y	Y (1m)	50m	N
Hillbro Corner	Roadside	433222	389608	NO ₂	Y	Housing (5m)	3m	N
82 Bawtry Road	Roadside	440059	390854	NO ₂	Y	Housing (5m)	3m	N
98 Bawtry Road	Roadside	440116	390800	NO ₂	Y	Housing (5m)	3m	N

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case Location?
		X	Y					
Redmires Road/Crimicar Lane	Suburban	429644	386391	NO ₂	Y	N	2m	N
Coldwell Lane/Sandygate Road	Suburban	431193	386798	NO ₂	Y	Housing (10m)	3m	N
Manchester Road/Sandygate Road	Roadside	432074	387081	NO ₂	Y	Housing (2m)	5m	N
Manchester Road/Sale Road	Roadside	433013	386752	NO ₂	Y	Housing (10m)	3m	N
Witham Road/Crookes	Roadside	433327	386863	NO ₂	Y	Housing (2m)	2m	N
Witham Road/Moor Oaks	Roadside	433513	387034	NO ₂	Y	Housing (2m)	3m	N
Western Bank/Northumb erland Road	Roadside	433752	387230	NO ₂	Y	Housing (10m)	3m	N
Western Bank/Clarkson Road	Roadside	434060	387228	NO ₂	Y	Children's Hospital (5m)	3m	N
Brook Hill/Favell Road	Roadside	434352	387349	NO ₂	Y	University (3m)	3m	N
Upper Hanover Street/Hounsfield Road	Roadside	434373	387181	NO ₂	Y	Housing (10m)	20m	N
Crimicar Road/Hallamshire Road	Roadside	429793	385594	NO ₂	Y	Housing (10m)	3m	N
Crimicar Road/Brookhouse Hill	Roadside	430355	385347	NO ₂	Y	Housing (5m)	3m	N
Fulwood Road/Tom Lane	Roadside	431374	385750	NO ₂	Y	Housing (10m)	3m	N
Fulwood Road/Gladstone Road	Roadside	431691	386027	NO ₂	Y	Housing (10m)	3m	N
Fulwood Road/Ashdell Road	Roadside	432970	386681	NO ₂	Y	School (5m)	5m	N
Glossop Road/Peel Road	Roadside	433319	386794	NO ₂	Y	Y (1m)	5m	N
Glossop Road/Westbourne Road	Roadside	433429	386729	NO ₂	Y	Y (1m)	3m	N
Glossop Road/Clarkehouse Road	Roadside	433904	386844	NO ₂	Y	Y (1m)	3m	N
West Street/Regent Street	Roadside	434664	387154	NO ₂	Y	Y (1m)	2m	N
West Street/Leopold Street.	Roadside	435248	387366	NO ₂	Y	Y (1m)	2m	N

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case Location?
		X	Y					
Queens road Mecca	Roadside	435807	386350	NO ₂	Y	Y (1m)	3m	N
Queens road Netto	Roadside	435695	385894	NO ₂	Y	Y (1m)	3m	N
463 Queens road	Roadside	435492	385659	NO ₂	Y	Housing (2m)	3m	N
London road - Sark Road	Roadside	435182	385241	NO ₂	Y	Y (1m)	3m	N
London road - Ponsfords	Roadside	435163	384990	NO ₂	Y	Y (1m)	3m	N
Chesterfield road - Meersbrook park road	Roadside	434965	384613	NO ₂	Y	Housing (2m)	3m	N
513 Chesterfield road	Roadside	434682	383688	NO ₂	Y	Housing (2m)	3m	N
Chesterfield road - Olivet road	Roadside	434860	382989	NO ₂	Y	Housing (2m)	3m	N
Chesterfield road -Charles Ashmore road	Roadside	434905	381873	NO ₂	Y	Housing (10m)	3m	N
Meadowhead road	Roadside	435137	381357	NO ₂	Y	Housing (10m)	3m	N
GH3	Urban centre	435181	385366	NO ₂	Y	Y (1m)	3m	N
GH3	Urban centre	435181	385366	NO ₂	Y	Y (1m)	3m	N
GH3	Urban centre	435181	385366	NO ₂	Y	Y (1m)	3m	N

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case Location?
		X	Y					
Community - Brinsworth & Catcliffe (Rotherham)								
Pringle Road Brinsworth	urban background	441638	389921	NO ₂	Y	Housing 2m	N/A	N
Broadway Brinsworth	urban background	441862	389460	NO ₂	Y	Housing 2m	N/A	N
Grange Farm Close	urban background	441992	389318	NO ₂	Y	Housing 2m	N/A	N
Catcliffe Junior School	urban background	442705	388748	NO ₂	Y	Housing 2m	N/A	N
Highfield View Catcliffe	urban background	442732	388747	NO ₂	Y	Housing 2m	N/A	N
Main Street Catcliffe	urban background	442372	388915	NO ₂	Y	Housing 2m	N/A	N
Sheffield Lane	urban background	442593	388591	NO ₂	Y	Housing 2m	N/A	N
Catcliffe JI School #2/Brinsworth Road	urban background	442217	388398	NO ₂	Y	Housing 2m	N/A	N
Derwent Crescent	urban background	441950	389404	NO ₂	Y	Housing 2m	N/A	N
St David's Drive	urban background	441278	390215	NO ₂	Y	Housing 2m	N/A	N
Community - Broomhall								
Ruth Square	urban background	434556	386419	NO ₂	Y	Housing 2m	N/A	N
Broomhall Road	urban background	434655	386465	NO ₂	Y	Housing 2m	N/A	N
Hanover Methodist Church	urban background	434600	386515	NO ₂	Y	Housing 2m	N/A	N
Springfield School	urban background	434040	386935	NO ₂	Y	Housing 2m	N/A	N
Exeter Drive 1	urban background	434026	386436	NO ₂	Y	Housing 2m	N/A	N
Exeter Drive 2	urban background	434373	386894	NO ₂	Y	Housing 2m	N/A	N

Community - Burngreave GCA								
Abbeyfield Park House	urban background	435729	389413	NO ₂	Y	Housing 2m	N/A	N
Burngreave Road	urban background	436065	388647	NO ₂	Y	Housing 2m	N/A	N
Scott Road	urban background	436143	389604	NO ₂	Y	Housing 2m	N/A	N
Firshill School Barnsley Road	urban background	435792	389616	NO ₂	Y	Housing 2m	N/A	N
Barnsley Road	urban background	436225	389872	NO ₂	Y	Housing 2m	N/A	N
Community - Crookes								
Wesleyan Chapel	urban background	432900	387301	NO ₂	Y	Housing 2m	N/A	N
Arran Road	urban background	432602	387261	NO ₂	Y	Housing 2m	N/A	N
Cross Lane	urban background	432551	387502	NO ₂	Y	Housing 2m	N/A	N
Community - Firvale GCA								
Earl Marshal Youth Centre	urban background	436642	390237	NO ₂	Y	Housing 2m	N/A	N
Firth Park Road	urban background	436830	390522	NO ₂	Y	Housing 2m	N/A	N
Owler Lane 1	urban background	436805	390266	NO ₂	Y	Housing 2m	N/A	N
Owler Lane 2	urban background	437273	390223	NO ₂	Y	Housing 2m	N/A	N
Barnsley Road	urban background	436459	390144	NO ₂	Y	Housing 2m	N/A	N
Community - Foxhill								
Wolfe Road	urban background	433636	392357	NO ₂	Y	Housing 2m	N/A	N
Keats Road	urban background	433529	392517	NO ₂	Y	Housing 2m	N/A	N
Foxhill medical centre	urban background	433801	392479	NO ₂	Y	Housing 2m	N/A	N
Birley Carr Church	urban background	433190	392029	NO ₂	Y	Housing 2m	N/A	N
Chaucer School	urban background	434211	392211	NO ₂	Y	Housing 2m	N/A	N

Housing office	urban background	434264	392297	NO ₂	Y	Housing 2m	N/A	N
484 Deerlands Avenue	urban background	434213	392544	NO ₂	Y	Housing 2m	N/A	N
Community - Greenhill								
Westwick Crescent	urban background	434132	381671	NO ₂	Y	Housing 2m	N/A	N
Bocking Lane 1	urban background	434161	381060	NO ₂	Y	Housing 2m	N/A	N
St Peter's Church	urban background	434152	381186	NO ₂	Y	Housing 2m	N/A	N
Greenhill Library	urban background	434171	381275	NO ₂	Y	Housing 2m	N/A	N
Bocking Lane 2	urban background	433611	381070	NO ₂	Y	Housing 2m	N/A	N
Community - Handsworth & Darnall								
Highfields Highfield Lane	urban background	441765	386872	NO ₂	Y	Housing 2m	N/A	N
St Mary's Church	urban background	441045	386207	NO ₂	Y	Housing 2m	N/A	N
Fitzallan Road Handsworth	urban background	440761	386352	NO ₂	Y	Housing 2m	N/A	N
Anglers Rest	urban background	441812	386466	NO ₂	Y	Housing 2m	N/A	N
Handsworth Road 1	urban background	441393	385946	NO ₂	Y	Housing 2m	N/A	N
Handsworth Road 2	urban background	440139	386141	NO ₂	Y	Housing 2m	N/A	N
Shop Front Parkway R/A	urban background	438450	387088	NO ₂	Y	Housing 2m	N/A	N
Retford Road	urban background	440550	386631	NO ₂	Y	Housing 2m	N/A	N
Prince of Wales Road	urban background	440402	386805	NO ₂	Y	Housing 2m	N/A	N
Greenland Junior School 1	urban background	440380	386828	NO ₂	Y	Housing 2m	N/A	N
Greenland Junior School 2	urban background	440203	387013	NO ₂	Y	Housing 2m	N/A	N
Greenland Court	urban background	440410	386130	NO ₂	Y	Housing 2m	N/A	N
Darnall Medical Centre	urban background	439276	387550	NO ₂	Y	Housing 2m	N/A	N
Nursery Handsworth Road	urban background	438995	388004	NO ₂	Y	Housing 2m	N/A	N
Norfolk Arms Finchwell Road	urban background	439000	388019	NO ₂	Y	Housing 2m	N/A	N

Handsworth nursery	urban background	439211	388591	NO ₂	Y	Housing 2m	N/A	N
Retford Road	urban background	439324	388092	NO ₂	Y	Housing 2m	N/A	N
BT Pole 62 Rotherham Road	urban background	440062	387623	NO ₂	Y	Housing 2m	N/A	N
Community - Heeley Dev. Trust								
Myrtle Road	urban background	436283	385163	NO ₂	Y	Housing 2m	N/A	N
Heeley Bank Road	urban background	435822	385503	NO ₂	Y	Housing 2m	N/A	N
Daresbury Road	urban background	436618	384814	NO ₂	Y	Housing 2m	N/A	N
East Bank Road	urban background	436507	385056	NO ₂	Y	Housing 2m	N/A	N
Community - Kelham Island								
Wicker	urban background	435901	388068	NO ₂	Y	Housing 2m	N/A	N
Lady's Bridge	urban background	435792	387845	NO ₂	Y	Housing 2m	N/A	N
Gibraltar Street	urban background	435214	387899	NO ₂	Y	Housing 2m	N/A	N
Penistone Road	urban background	434806	388216	NO ₂	Y	Housing 2m	N/A	N
Community - King Ecgbert School								
Back of School	urban background	431020	380901	NO ₂	Y	Housing 2m	N/A	N
Car park	urban background	431094	380895	NO ₂	Y	Housing 2m	N/A	N
Top of drive	urban background	430962	380738	NO ₂	Y	Housing 2m	N/A	N
Tesco Express Abbeydale Road	urban background	431836	380676	NO ₂	Y	Housing 2m	N/A	N
Ashfurlong Road	urban background	431492	381286	NO ₂	Y	Housing 2m	N/A	N
Community - Melrose Burngreave								
Burngreave Road 1	urban background	435773	388948	NO ₂	Y	Housing 2m	N/A	N
Burngreave Road 2	urban background	435805	388901	NO ₂	Y	Housing 2m	N/A	N

Burngreave Road 3	urban background	435838	388853	NO ₂	Y	Housing 2m	N/A	N
Burngreave Street junction	urban background	435880	388835	NO ₂	Y	Housing 2m	N/A	N
Burngreave Road 4	urban background	435843	388814	NO ₂	Y	Housing 2m	N/A	N
Community - Netheredge								
Junction Road	urban background	439953	390961	NO ₂	Y	Housing 2m	N/A	N
Osbourne Road	urban background	440035	390828	NO ₂	Y	Housing 2m	N/A	N
Montgomery Road	urban background	439852	390709	NO ₂	Y	Housing 2m	N/A	N
Zeds Nether Edge Road	urban background	440411	390874	NO ₂	Y	Housing 2m	N/A	N
Clifford School Psalter Lane	urban background	440199	390610	NO ₂	Y	Housing 2m	N/A	N
Community - Park Community Action								
Dovecourt Road	urban background	437227	386269	NO ₂	Y	Housing 2m	N/A	N
Blackwell Close	urban background	436644	386658	NO ₂	Y	Housing 2m	N/A	N
Ingram Court	urban background	437179	387385	NO ₂	Y	Housing 2m	N/A	N
Bard Street	urban background	436167	387515	NO ₂	Y	Housing 2m	N/A	N
Community - Tinsley								
Town Street	urban background	439953	390961	NO ₂	Y	Housing 2m	N/A	N
Siemens Close	urban background	440035	390828	NO ₂	Y	Housing 2m	N/A	N
Greasebro Road	urban background	439852	390709	NO ₂	Y	Housing 2m	N/A	N
Ferrars Road	urban background	440411	390874	NO ₂	Y	Housing 2m	N/A	N
Ingfield Avenue (Dr's Surgery)	urban background	440199	390610	NO ₂	Y	Housing 2m	N/A	N
Sheffield Road back	urban background	440111	391199	NO ₂	Y	Housing 2m	N/A	N
Ferrars Road	urban background	440400	390870	NO ₂	Y	Housing 2m	N/A	N
Sheffield Road front	urban background	440080	391250	NO ₂	Y	Housing 2m	N/A	N
Junior school building	urban background	440286	390541	NO ₂	Y	Housing 2m	N/A	N
Junior school field	urban background	440242	390513	NO ₂	Y	Housing 2m	N/A	N

Community – Carter Knowle								
981 Abbeydale Road	urban background	433640	383391	NO ₂	Y	Housing 2m	N/A	N
La Scala, Abbeydale Rd /Archer Rd Jc	urban background	433601	383337	NO ₂	Y	Housing 2m	N/A	N
102 Archer Rd	urban background	434188	383548	NO ₂	Y	Housing 2m	N/A	N
Chippendale, Abbeydale Rd /Archer Rd	urban background	434123	383874	NO ₂	Y	Housing 2m	N/A	N
879 Abbeydale Rd	urban background	434143	383915	NO ₂	Y	Housing 2m	N/A	N
Community – Brunswick School								
Science Garden	urban background	442626	385025	NO ₂	Y	Housing 2m	N/A	N
Millenium Garden	urban background	442627	384990	NO ₂	Y	Housing 2m	N/A	N
Top of Car Park	urban background	442602	384996	NO ₂	Y	Housing 2m	N/A	N
Top Yard	urban background	442648	384970	NO ₂	Y	Housing 2m	N/A	N
Bottom yard	urban background	442613	384920	NO ₂	Y	Housing 2m	N/A	N
Community – Hinde House single tubes								
Hinde House Lane	urban background	437132	390985	NO ₂	Y	Housing 2m	N/A	N
Derbyshire Lane	urban background	435338	382924	NO ₂	Y	Housing 2m	N/A	N
Winchester Avenue Front	urban background	430001	385968	NO ₂	Y	Housing 2m	N/A	N
Winchester Avenue Back	urban background	430008	385978	NO ₂	Y	Housing 2m	N/A	N
Community – Deepcar /Stocksbridge								
Lidl (Tube 2)	urban background	427257	398421	NO ₂	Y	Housing 2m	N/A	N
PO (Tube 3)	urban background	428189	398209	NO ₂	Y	Housing 2m	N/A	N
Carr Road (Tube 1)	urban background	428818	397977	NO ₂	Y	Housing 2m	N/A	N

Community – Penistone Road								
SCT Bedford St/Penistone Road	urban background	434622	388387	NO ₂	Y	Housing 2m	N/A	N
Regent Court Floor 7, Hillsborough	urban background	433572	389761	NO ₂	Y	Housing 2m	N/A	N
Catchbar Lane Traffic Light	urban background	433087	390643	NO ₂	Y	Housing 2m	N/A	N
Broughton Rd /Penistone Rd	urban background	433515	390188	NO ₂	Y	Housing 2m	N/A	N
Walkley Lane Newsagent Rear	urban background	433320	389323	NO ₂	Y	Housing 2m	N/A	N
Walkley Lane Newsagent Front	urban background	433308	389319	NO ₂	Y	Housing 2m	N/A	N
Regent Court Driveway	urban background	433505	389783	NO ₂	Y	Housing 2m	N/A	N
Community – Breatheasy Group								
Manor Oaks Close	urban background	437200	387116	NO ₂	Y	Housing 2m	N/A	N
Ridgeway Rd	urban background	438171	384707	NO ₂	Y	Housing 2m	N/A	N
Harborough Ave	urban background	438194	386634	NO ₂	Y	Housing 2m	N/A	N
Houstead Rd	urban background	439862	387360	NO ₂	Y	Housing 2m	N/A	N
Argyle Close	urban background	435574	384224	NO ₂	Y	Housing 2m	N/A	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

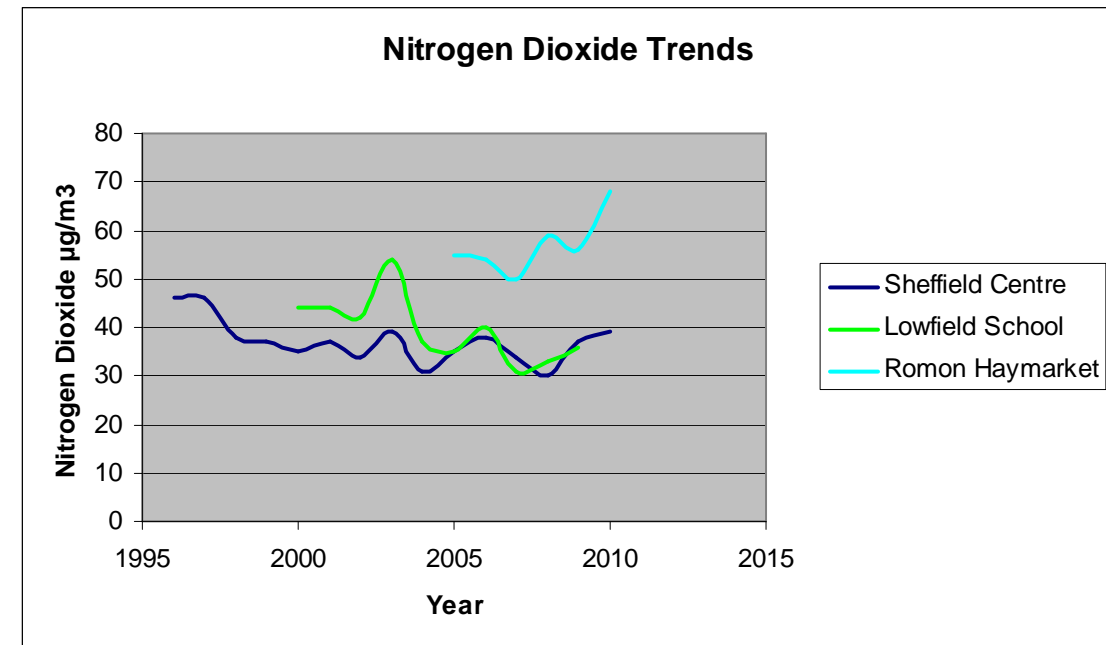
Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
						2008	2009	2010
GH1	Firvale School	Y	Y	95	48	-	29	29
GH2	Tinsley Infant Sc	Y	Y	96	46	41	33	33
GH3	Lowfield School	Y	Y	0 ¹	0	33	36	-
GH4	Wicker	Y	Y	0 ²	0	36	24	-
GH5	King Ecgberts	Y	Y	36	17	14	13	12
RM1	Waingate	Y	Y	82	41	59	56	68
LC2	Sheffield Centre	Y	Y	-	94	30	37	39
LS8	Sheffield Tinsley	Y	Y	-	99	-	34	35

¹instrument fault reaction chamber fault

²Failed leak test.

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.



The data although incomplete shows trends which are typical of that reported nationally, that is general reduction in levels which may be levelling out, but no evidence of reductions in the worst areas (Romon Haymarket). Indeed the levels at the Haymarket show a marked increase in 2010. The Sheffield DEFRA Centre site shows no evidence of a decrease in levels since 1998. In the city centre traffic levels have dropped over this period, however the standard of some buses in the city has declined as old buses (which are at best Euro3 and at least 9 years old) have been imported to Sheffield from London, Ireland and China. This could also explain the increasing levels measured by the Romon, this monitor is adjacent to a road which is a bus (and taxi) only lane.

Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Number of Exceedences of hourly mean (200 µg/m ³) If the period of valid data is less than 90% of a full year, include the 99.8 th percentile of hourly means in brackets.		
						2008	2009	2010
GH1	Firvale School	Y	Y	95	48	-	0(110)	0(95)
GH2	Tinsley Infant School	Y	Y	96	46	5	0(118)	0(109)
GH3	Lowfield School	Y	Y	0 ¹	0	1	4(136)	-
GH4	Wicker	Y	Y	0 ²	0	0 (100)	0(80)	-
GH5	King Ecgberts	Y	Y	36	17	0 (80)	0(70)	0(55)
RM1	Waingate	Y	Y	82	41	47 (240)	15(210)	18(218)
LC2	Sheffield Centre	Y	Y	-	94	4	0(118)	0(153)
LS8	Sheffield Tinsley	Y	Y	-	99	1 (n/a)	0(126)	0(181)

¹instrument fault reaction chamber fault

²Failed leak test.

Diffusion Tube Monitoring Data

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
						2008	2009	2010
1	Warren Lane	Y	Y		100	30	34	30
2	7 Bawtry Gate	Y	Y		100	44	48	46
3	47 Bawtry Road	Y	Y		100	52	55	51
4	109 Bawtry Road	Y	Y		100	43	48	42
5	Ecclesfield Road Low Wincobank	Y	Y		100	47	51	47
6	Attercliffe Road	Y	Y		100	48	51	47
7	Attercliffe Road duplicate	Y	Y		100	46	50	47
8	Barnsley Rd Fir Vale	Y	Y		100	47	58	53
9	Upwell Street	Y	Y		100	40	45	45
10	Burngreave Road/Minna Road	Y	Y		100	36	38	38
11	Loxley New Road	Y	Y		100	40	45	46
12	Loxley New Road-duplicate	Y	Y		100	41	43	44
13	Bowden Wood Close	Y	Y		100	36	43	36
14	Parkway Broad Lane	Y	Y		100	43	41	44
15	Parkway Broad Lane duplicate	Y	Y		100	42	48	42
16	Exchange Street	Y	Y		100	41	42	36
17	Duke Street	Y	Y		100	48	47	45
18	Waingate	Y	Y		75	51	62	59
19	Fitzalan Square	Y	Y		100	54	59	60
20	Barkers Pool	Y	Y		83	29	33	29
21	Scotland Street	Y	Y		100	23	27	26
22	Eldon St/ Wellington St	Y	Y		100	nr	46	43
23	Broomspring Close	Y	Y		100	23	26	25
24	University Roundabout	Y	Y		100	48	53	47
25	Netherthorpe School	Y	Y		75	36	46	42
26	Upper Hanover Street	Y	Y		100	39	45	47
27	Shoreham St	Y	Y		100	46	50	49
28	St Marys Road	Y	Y		83	29	36	37
29	Chesterfield Road/Woodseats Road	Y	Y		100	38	44	46
30	Queens Rd/Edmund Rd	Y	Y		100	35	44	41

31	Abbeydale Road/Carter Knowle Road	Y	Y		92	40	42	42
32	Ecclesall Road	Y	Y		100	37	50	50
33	AUN	Y	Y		92	31	34	33
34	AUN	Y	Y		100	31	34	33
35	AUN	Y	Y		100	31	32	31
36	ACE	Y	Y		100	29	32	30
37	ACE	Y	Y		100	29	32	31
38	Hillbro Corner	Y	Y		100	33	39	38
39	82 Bawtry Road	Y	Y		100	47	52	48
40	98 Bawtry Road	Y	Y		100	48	55	47

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
						2008	2009	2010
1	Redmires Road/Crimicar Lane	Y	Y		100	19	19	19
2	Coldwell Lane/Sandygate Road	Y	Y		83	25	26	22
3	Manchester Road/Sandygate Road	Y	Y		92	27	27	23
4	Manchester Road/Sale Road	Y	Y		100	45	44	42
5	Witham Road/Crookes	Y	Y		92	58	56	53
6	Witham Road/Moor Oaks	Y	Y		100	52	54	50
7	Western Bank/Northumberland Road	Y	Y		100	44	42	39
8	Western Bank/Clarkson Road	Y	Y		100	49	51	48
9	Brook Hill/Favell Road	Y	Y		92	41	40	40
10	Upper Hanover Street/Hounsfield Road	Y	Y		100	33	33	31
11	Crimicar Road/Hallamshire Road	Y	Y		100	18	18	18
12	Crimicar Road/Brookhouse Hill	Y	Y		100	26	27	27
13	Fulwood Road/Tom Lane	Y	Y		100	24	24	25
14	Fulwood Road/Gladstone Road	Y	Y		100	28	31	30
15	Fulwood Road/Ashdell Road	Y	Y		100	30	31	31
16	Glossop Road/Peel Road	Y	Y		92	33	30	31
17	Glossop Road/Westbourne Road	Y	Y		100	36	37	39
18	Glossop Road/Clarkehouse Road	Y	Y		100	39	37	35
19	West Street/Regent Street	Y	Y		100	42	44	44
20	West Street/Leopold Street.	Y	Y		83	46	47	45
21	Queens road Mecca	Y	Y		100	52	50	50
22	Queens road Netto	Y	Y		100	41	41	40
23	463 Queens road	Y	Y		100	53	57	52
24	London road -Sark Road	Y	Y		100	49	52	52
25	London road - Ponsfords	Y	Y		100	53	57	52

26	Chesterfield road - Meersbrook park road	Y	Y		100	54	53	57
27	513 Chesterfield road	Y	Y		100	38	35	35
28	Chesterfield road - Olivet road	Y	Y		100	46	45	48
29	Chesterfield road - Charles Ashmore road	Y	Y		100	33	33	32
30	Meadowhead road	Y	Y		83	30	30	30
31	GH3	Y	Y		100	35	34	36
32	GH3	Y	Y		100	33	34	36
33	GH3	Y	Y		100	33	37	36

Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008	2009	2010
Community - Brinsworth & Catcliffe (Rotherham)							
Pringle Road Brinsworth	Y	Y		0	27	28	-
Broadway Brinsworth	Y	Y		0	31	30	-
Grange Farm Close	Y	Y		0	42	42	-
Catcliffe Junior School	Y	Y		0	25	26	-
Highfield View Catcliffe	Y	Y		0	29	29	-
Main Street Catcliffe	Y	Y		0	30	30	-
Sheffield Lane	Y	Y		0	25	26	-
Catcliffe JI School #2/Brinsworth Road	Y	Y		0	37	36	-
Derwent Crescent	Y	Y		0	53	55	-
St Davids Drive	Y	Y		0	29	30	-
Community - Broomhall							
Ruth Square	Y	Y		92	20	27	24
Broomhall Road	Y	Y		67	26	25	26
Hanover Methodist Church	Y	Y		100	25	24	25
Springfield School	Y	Y		83	24	25	24
Exeter Drive 1	Y	Y		100	24	18	24
Exeter Drive 2	Y	Y		100	28	23	22
Community - Burngreave GCA							
Abbeyfield Park House	Y	Y		0	23	-	-
Burngreave Road	Y	Y		0	32	-	-
Scott Road	Y	Y		0	27	-	-
Firhill School Barnley Road	Y	Y		0	25	-	-
Barnsley Road	Y	Y		0	35	-	-
Community - Crookes							
Wesleyan Chapel	Y	Y		75	24	21	15
Arran Road	Y	Y		83	17	16	16
Cross Lane	Y	Y		83	17	16	15

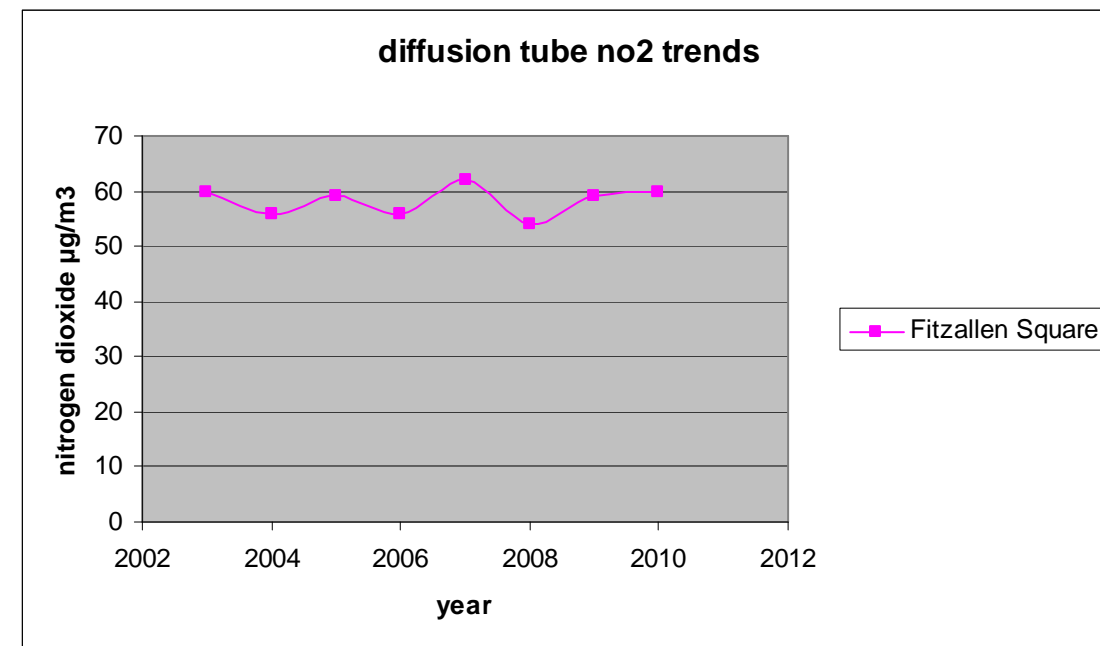
Community - Firvale GCA							
Earl Marshal Youth Centre	Y	Y		0	25	-	-
Firth Park Road	Y	Y		0	nr	-	-
Owler Lane 1	Y	Y		0	36	-	-
Owler Lane 2	Y	Y		0	32	-	-
Barnsley Road	Y	Y		0	38	-	-
Community - Foxhill							
Wolfe Road	Y	Y		92	17	21	19
Keats Road	Y	Y		83	16	16	16
Foxhill medical centre	Y	Y		100	20	21	22
Birley Carr Church	Y	Y		100	16	17	18
Chaucer School	Y	Y		100	21	16	22
Housing office	Y	Y		42	-	-	25
484 Deerlands Ave	Y	Y		42	-	-	30
Community - Greenhill							
Westwick Crescent	Y	Y		100	16	14	17
Bocking Lane 1	Y	Y		100	21	20	21
St Peter's Church	Y	Y		100	18	17	18
Greenhill Library	Y	Y		100	20	18	20
Bocking Lane 2	Y	Y		100	24	23	25
Community - Handsworth & Darnall							
Highfields Highfield Lane	Y	Y		100	30	28	27
St Mary's Church	Y	Y		100	32	32	34
Fitzallan Road Handsworth	Y	Y		100	26	24	24
Anglers Rest	Y	Y		42	25	23	22
Handsworth Road 1	Y	Y		100	38	38	36
Handsworth Road 2	Y	Y		100	39	37	36
Shop Front Parkway R/A	Y	Y		100	39	40	41
Retford Rd	Y	Y		100	25	23	26
Prince of Wales Road	Y	Y		75	25	24	24
Greenland Junior School 1	Y	Y		75	26	25	22
Greenland Junior School 2	Y	Y		75	27	25	23
Greenland Court	Y	Y		75	24	21	21
Darnall Medical Centre	Y	Y		75	31	29	27
Nursery Handsworth Road	Y	Y		75	30	28	27

Norfolk Arms Finchwell Road	Y	Y		100	26	32	27
Handsworth nursery	Y	Y		100	23	21	19
Retford Road	Y	Y		58	34	32	32
BT Pole 62 Rotherham Road	Y	Y		100	34	34	34
Community - Heeley Development Trust							
Myrtle Road	Y	Y		75	21	22	21
Heeley Bank Road	Y	Y		-	35	34	-
Daresbury Road	Y	Y		75	25	27	24
East Bank Road	Y	Y		75	26	25	27
Community - Kelham Island							
Wicker	Y	Y		100	42	38	38
Lady's Bridge	Y	Y		92	43	42	40
Gibraltar Street	Y	Y		92	34	34	32
Penistone Road	Y	Y		100	49	51	45
Community - King Ecgbert School							
Back of School	Y	Y		100	12	12	12
Car park	Y	Y		100	16	16	15
Top of drive	Y	Y		100	16	15	15
Tesco Express Abbeydale Road	Y	Y		100	27	27	27
Ashfurlong Road	Y	Y		100	13	13	13
Community - Melrose Burngreave							
Burngreave Road 1	Y	Y		67	29	25	29
Burngreave Road 2	Y	Y		67	33	25	29
Burngreave Road 3	Y	Y		67	30	27	32
Burngreave street junction	Y	Y		67	24	20	25
Burngreave Road 4	Y	Y		67	40	33	38
Community - Netheredge							
Junction Road	Y	Y		100	27	24	27
Osbourne Road	Y	Y		100	28	28	29
Montgomery Road	Y	Y		100	25	23	24
Zeds Nether Edge Road	Y	Y		100	23	23	24
Clifford School Psalter Lane	Y	Y		100	23	23	24

Community - Park Community Action							
Dovecourt Road	Y	Y		33	29	-	28
Blackwell Close	Y	Y		42	27	-	26
Ingram court	Y	Y		50	26	-	26
Bard Street	Y	Y		58	39	-	34
Community - Tinsley							
Town Street	Y	Y		100	47	45	43
Siemens Close	Y	Y		100	43	40	40
Greasebro Road	Y	Y		100	39	35	37
Ferrars Road	Y	Y		100	31	28	30
Ingfield Avenue (Dr's Surgery)	Y	Y		92	36	34	32
Sheffield Road back	Y	Y		100	35	33	31
Ferrars Road	Y	Y		100	35	35	35
Sheffield Road front	Y	Y		100	33	30	24
Junior School building	Y	Y		92		40	40
Junior School field	Y	Y		100		43	44
Community – Carter Knowle							
981 Abbeydale Road	Y	Y	100	58	-	-	33
La Scala, Abbeydale Rd/Archer Rd Jc	Y	Y	100	58	-	-	43
102 Archer Rd	Y	Y	100	58	-	-	32
Chippendale, Abbeydale Rd/Archer Rd	Y	Y	100	58	-	-	45
879 Abbeydale Rd	Y	Y	100	58	-	-	40
Community - Brunswick School							
Science Garden	Y	Y		100	-	21	21
Millenium Garden	Y	Y		100	-	24	25
Top of Car Park	Y	Y		83	-	24	26
Top Yard	Y	Y		100	-	23	25
Bottom yard	Y	Y		100	-	22	23
Community – Hinde House single tubes							
Hinde House La	Y	Y		100	-	22	26
Derbyshire La	Y	Y		100	-	21	24

Winchester Ave Front	Y	Y		100	-	19	14
Winchester Ave Back	Y	Y		100	-	21	16
Community – Deepcar/ Stocksbridge							
Lidl (Tube 2)	Y	Y		100	-	27	31
PO (Tube 3)	Y	Y		100	-	28	31
Carr Road (Tube 1)	Y	Y		100	-	35	35
Community - Penistone Road							
SCT Bedford St/Penistone Rd	Y	Y		100	-	33	36
Regent Court Floor 7, Hillsborough	Y	Y		100	-	20	20
Catchbar Lane Traffic Light	Y	Y		92	-	47	46
Broughton Rd/Penistone Rd	Y	Y		92	-	34	38
Walkley La Newsagent Rear	Y	Y		100	-	24	24
Walkley La Newsagent Front	Y	Y		83	-	26	31
Regent Court Driveway	Y	Y		92	-	22	24
Community- Breatheasy Group							
Manor Oaks Close	Y	Y		-	-	20	-
Ridgeway Rd	Y	Y		92	-	22	27
Harborough Ave	Y	Y		-	-	24	-
Houstead Rd	Y	Y		92	-	23	25
Argyle Close	Y	Y		92	-	15	17

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.



The trend chart above is for one diffusion tube only, located at Fitzallen Square. The tube is in Sheffield city centre in an area where there is a large proportion of heavy vehicles particularly buses. The trend shown here, that is constant levels of nitrogen dioxide since 2003, is typical of that shown in Sheffield tubes, although this tube shows some of the highest levels.

2.2.2 PM₁₀**Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective**

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations (µg/m ³)		
					2008	2009	2010
GH1	Firvale School	Y	98	49	-	18	23
GH2	Tinsley Infant Scho	Y	97	49	22.7	21	24
GH3	Lowfield School	Y	86	43	22.4	22	28
GH4	Wicker	Y	99	58	15	17	23
GH5	King Ecgberts	Y	-	-	11.6	12	-
RM1	Waingate	Y	95	47	24	24	28
LC2	Sheffield Centre	Y	-	94	22	n/a	22

Volatile Correction Model values are shown for 2008 and 2009 and 2010 means are annualised by using box 3.2 of Technical Guidance, stations used are Sheffield Centre, Leeds Centre and Nottingham Centre, and this resulted in a factor of 1.04 which was applied.

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2010 %	Number of Exceedences of daily mean objective (50 µg/m ³) If data capture < 90%, include the 90 th percentile of daily means in brackets.		
					2008	2009	2010
GH1	Firvale School	Y	98	49	-	0	2(34)
GH2	Tinsley Infant School	Y	97	49	10	7	2(37)
GH3	Lowfield School	Y	86	43	13	7	8(39)
GH4	Wicker	Y	99	58	0	3	0(34)
GH5	King Ecgberts	Y	-	-	0	0	-
RM1	Waingate	Y	95	47	18	12	9(41)
LC2	Sheffield Centre	Y	-	94	0	0	0

2.2.3 Sulphur Dioxide

Table 2.6 Results of SO₂ Automatic Monitoring: Comparison with Objectives

Location	Within AQMA	Data Capture for monitoring period %	Data Capture 2010 %	Number of Exceedences of:		
				15-minute Objective (266 µg/m ³)	1-hour Objective (350 µg/m ³)	24-hour Objective (125 µg/m ³)
Lowfield School	Y	43	21	0	0	0
Sheffield Centre	Y		98	0	0	0

Sulphur dioxide is monitored at the DEFRA Sheffield Centre site and the Lowfield School automatic station (GH3).

In the years 2006-2010 there were no exceedences of any of the sulphur dioxide objectives.

2.2.4 Benzene

Benzene levels are measured by pumped tube at the Sheffield Centre site. No data is available for running annual mean values. The measured levels are however low annual mean levels of $0.7 \mu\text{g}/\text{m}^3$ for 2010.

2.2.5 Other pollutants monitored

PM2.5 is measured at GH2 at Tinsley Infant School using a TEOM with PM2.5 head. No correction factors have been applied to the data. The DEFRA site at Sheffield Centre also monitors PM2.5.

Table 2.7 PM2.5 Results

Site ID	Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2008	2009	2010
GH2	Tinsley Infant School	Y	40	14	14	14
Sheffield Centre (DEFRA)		Y	98.6	n/a	11	12

2.2.6 Summary of Compliance with AQS Objectives

Sheffield City Council has examined the results from monitoring in the district. The whole urban area of the city is an AQMA for PM10 and nitrogen dioxide; The Objectives for all the remaining 5 pollutants are not breached, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

Sheffield City Council confirms that there are no new road traffic sources since the Progress Report 2009.

3.2 Other Transport Sources

Sheffield City Council confirms that there are no new transport sources since the Progress Report 2009.

3.3 Industrial Sources

These are the new Pollution Prevention and Control PPC processes since June 2010

Bardon Concrete on Warren Street S4 - concrete batching plant.
Remploy Ltd (Furniture) on Brightside Lane - a di-isocyanate process that also releases VOC and particulates.

3.4 Commercial and Domestic Sources

A new biomass combustion plant is under construction.

Blackburn Meadows Renewable Energy Plant.
Tinsley
Sheffield

E.ON proposes to build a biomass plant at Tinsley. The plant was given outline planning permission in July 2008. It is currently under construction. The plant will produce up to 30MW of electricity and will burn waste wood.

3.5 New Developments with Fugitive or Uncontrolled Sources

Sheffield City Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Sheffield City Council confirms that all the following have been considered –

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Air Quality Planning Policies

Air Quality planning policies can be found in the following documents which are on the internet;

Policy - Sheffield Development Strategy and Sheffield Core Strategy: Air Quality; Core Strategy is CS 66

http://sheffield-consult.limehouse.co.uk/portal/sdfcs/core_strategy/core_strategy?pointId=d16609031e398

CS66 Air Quality

11.17 The strategy supports air quality management initiatives in the city. These are now based on an Air Quality Management Area that covers the whole of the main built-up area. Planning decisions may particularly affect air quality where they influence levels of traffic, which is a major source of emissions.

Policy CS 66

Air Quality

Action to protect air quality will be taken in all areas of the city. Further action to improve air quality will be taken across the built-up area, and particularly where residents in road corridors with high levels of traffic are directly exposed to levels of pollution above national targets.

11.18 The locations where the most harmful impacts may change over time but where air quality currently fails to meet the national targets have included areas near the motorway at Meadowhall and in parts of the City Centre. But new locations are being identified on major roads and particularly at major road junctions and these may be sensitive as places where people live or shop.

11.19 Protection and improvement of air quality will be achieved particularly through decisions about planning applications for uses that give rise to significant amounts of traffic, through the Air Quality Plan and through successive Local Transport Plans.

5 Local Transport Plans and Strategies

South Yorkshire third Local Transport Plan (SYLTP3)

South Yorkshire's ITA has drafted third Local Transport Plan Strategy and Implementation Plan for the sub region from 2011 until 2015 and explains the longer term vision for transport in supporting aspirations for transformational economic growth in the sub region.

The Strategy has been prepared by the South Yorkshire LTP Partnership, which comprises South Yorkshire Passenger Transport Executive (SYLTE), and Barnsley Metropolitan Borough Council (BMBC), Doncaster Metropolitan Borough Council (DMBC), Rotherham Metropolitan Borough Council (RMBC), and Sheffield City Council (SCC). The Strategy has been shaped jointly with our City Region Partners in Derbyshire and Nottinghamshire, and in consultation with key partners such as South Yorkshire Police, the Primary Care Trusts (PCTs), and the Highways Agency.

The South Yorkshire Implementation Plan

This document provides a framework for our actions and expenditure in South Yorkshire for the next four years, with outline proposals for the period beyond. It recognises that funding and resource issues to deliver this Plan will present partners with key challenges and the need for significant prioritisation of ambitions. It sets out how we will go about delivering the SCR Transport Strategy. The Implementation Plan focuses on transport interventions in South Yorkshire, with neighbouring authorities in the SCR area setting out their actions in their own LTPs.

The Plan does set a framework for the broader delivery ambition in South Yorkshire, which would be achieved if partners had access to additional resources, for example Local Transport Sustainable Fund (LSTF) and Regional Growth Fund (RGF). Over the next several months, partners will be agreeing the priorities and will pursue in parallel other funding opportunities. In the meantime, the principles for this prioritisation process are set out in this Plan.

LTP Annual Delivery Programme

The LTP Settlement for 2011/2012 and 2012/2013 involves substantial reductions in Government funding for transport. Once we have considered the full implications of the Settlement for South Yorkshire, we will draw up detailed programmes of investment in our Annual Delivery Programme and understand the opportunity to secure additional funds. This will be initially for Year 1 (2011/2012), building into a four year rolling programme going forward. We aim to have the first programme in place by spring 2011 and to refresh it annually and this programme will be based on the prioritisation of LTP3 funds.

To meet our goals, we have identified 26 transport policies which summarise our key priorities for action and investment over the next 15 years. The 5 policies which relate to air quality and carbon emissions are summarised in Table 5.1, which will be led by the Air Quality and Climate Change implementation group.

Table 5.1 Summary of Policies

To work to improve the efficiency of all vehicles and reduce their carbon emissions
To encourage active travel and develop high-quality cycling and walking networks
To provide information and travel advice for the users of all modes of transport, so that they can make informed travel choices
To support the generation of energy from renewable sources, and use energy in a responsible way
To improve air quality, especially in designated AQMA areas

In translating the Transport Strategy into action, the South Yorkshire partners will follow four cross-cutting principles:

‘We will squeeze more from existing assets – in the current funding climate this principle will ensure our assets are well managed and maintained and used to their fullest potential, minimising the need for major infrastructure work is key to this first Implementation Plan. Our efforts will be targeted on the routes, locations, customer groups and issues we have identified from our evidence base as being particularly important.

We will make our growth sustainable - we will look to achieve economic growth while minimising the impact on the environment, reducing emissions wherever possible;

We will give people choice – we will enable people to make informed choices about whether and how they travel, through providing a range of transport links and services to match varying lifestyles;

We will encourage a change in travel culture - facilitating a shift from car-dependency to more active and sustainable travel modes. ‘

One of the LTP’s goals is **to reduce the emissions from vehicles and the supporting transport infrastructure**, since these can lead to air pollution and climate change, with serious health impacts. We want to support a cultural change into a future where people are happy to make sustainable travel choices, this will mean tackling the reasons people do not choose more sustainable travel options, for example confidence in bus punctuality and issues of affordability. There are already a number of Air Quality Management Areas (AQMAs) in the SCR and we will strive to reduce these by working with the relevant bodies and policy leaders. We will promote an approach to land use planning which reduces the need to travel, and ensure schemes are progressed in a way which maximises environmental benefits and minimises environmental harm.

We will also take action to make wiser use of energy. We will do this through educating drivers how to be more fuel-efficient and encouraging the use of less polluting vehicles. Many of our policies aim to make SCR less car-dependent, and our approach to their implementation combines the provision of better alternatives with taking complementary planning and enforcement steps. The provision of alternatives includes improving the walking and cycling environment and designing pedestrian-friendly streets; creating an improved quality on- and off- street cycle network; tackling the reasons for non-use of public transport and making information about public transport services easier to find and understand; and strengthening the integration between public transport routes.

6 Climate Change Strategies

Sheffield while not having a full Climate Change Strategy has:-

The Sheffield Carbon Reduction Framework

The Sheffield Carbon Reduction Framework (CRF) was approved by the Council's Cabinet on May 27th 2009 and the Framework was referred to Council on June 3rd 2009.

It can be found on the Sheffieldismyplanet website;

<http://sheffieldismyplanet.co.uk/getinvolved/council-actions/sheffield-city-council>

The CRF sets out commitment to reducing carbon emissions across the City through direct action, and provides a mechanism for other partners in the city to make their contribution to the shared city-wide commitments to tackle climate change.

The CRF sets out the three critical areas where the City needs to focus attention: housing, transport and business.

Underpinning these is a commitment to effectively engage and communicate with local people and businesses to take simple steps to reduce their carbon emissions and help save them money. The framework sets out the support and help that the Council, with a wide range of partners, is putting in place to enable local people to make these simple changes.

The CRF also recognises that the challenges of climate change, peak oil and carbon reduction, presents a great opportunity to show ambition and clear support for the development of a low carbon economy. The CRF promotes and supports the development of environmental technologies and services businesses in the City that will provide new growth opportunities and support the City's own ambitions for carbon reduction.

The framework highlights the key actions to reduce carbon emissions, and to fully embed our guiding principle of environmental sustainability. Finally it sets out the areas where we need Government to take more action if we are to achieve our ambitions for carbon reduction in Sheffield. Taken as a whole, this framework provides a route map to achieve our target of 30% reduction in carbon emissions in the city by 2020.

7 Implementation of Action Plans

Table 7.1 Action Plan Progress

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
Quality Bus Corridors	S10 Corridor	SCC / SYPTE	2002-2006	2002-2006	Bus priority signals and 24hr bus lane on A57 Western Bank finished and operational.	-	Completed	Completed	Completed	Improvements for public transport users, pedestrians, cyclists and to tackle congestion
	Sheaf Valley		2002 - 2006	2006 - 2009	Bus priority signals and 24hr bus lane on A61 finished and operational.	-	Completed	Completed	Completed	
	North Sheffield Better Buses		2004 – 2007	2006 – 2008	Spital Hill traffic management for bus priority finished and operational.	-	Completed	Completed	Completed	1st Statutory Quality Partnership Scheme in England. Provision of Euro 3 buses required.
	Ecclesall Road		2009 - 2011	2010 - 2014	Reduced passenger	-	Planning and consultation	Consultation phase	2014	Improvements for

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Smart Route				journey time increase. Infrastructure / route improvements finished and operational.		phase complete. Selected measures have been implemented.	complete. Selected measures have been implemented. Proposed improvements are dependent on the availability of funding.		public transport users, pedestrians, cyclists and to tackle congestion.
	Bus Key Routes		2009 - 2011	2009 - 2014 (subject to funding)	Bus infrastructure / route improvements on a number of key routes.	-	Development and consultation on schemes below largely complete. City Centre – Gleadless: Improvements to bus facilities (2009/10). City Centre – Woodhouse: highway engineering works and	On hold subject to funding. A number of discrete interventions have been linked to the bus hotspots programme.	2014	

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							Traffic Regulation Orders (2010).			
Bus Hotspots	Rolling programme of site specific improvements to aid bus performance.	SCC / SYPTE	2007 - Ongoing	2007 - Ongoing	Site specific improvements completed (number of outputs subject to funding levels).	-	Delivery of annual programme of improvements including for example Urban Traffic Control schemes, Traffic Regulation Order /Parking Restriction schemes, Bus Lane schemes and Enforcement schemes.	In 10/11 three schemes were completed following in year reductions in Local Transport Plan funding.	Ongoing.	Improved bus performance, including journey times, and associated benefits.
Media and Publicity Campaigns / Marketing Techniques	Care4Air	SCC/LTP (+ SY Districts)	2001 - 2002	2002 - 2011	Increase in awareness of air quality issues.	-	Award winning website, annual 'Clearer Future' conference, annual	Website recognised by 'Air Quality Bulletin' magazine as Best National website.	Unlikely to be continued after 2011	Very successful campaign but immeasurable results for emission

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							awards ceremony for air quality 'Champions'.	Sheffield Air Map section of site developed to include Car Club locations and Alternative Fuel Stations.		reduction
	European Mobility Week (EMW)	SCC	Annual	Annual	Participation in EMW events and travel pledges.	-	<p>SYLTE held highly successful 'Carbon Quids' promotional campaign, EMW 2007.</p> <p>Sheffield were awarded Best UK EMW campaign 2008.</p> <p>Successful EMW events held in 2009 and 2010.</p>	EMW event held in Barkers Pool in conjunction with Sheffield is My Planet. Over 100 people signed up to Sheffield is My Planet.	Ongoing subject to funding.	Annual programme of events promoting sustainable and alternative modes of transport.
	ECO Stars	BMBC/LTP (+ SY Districts)	2008 - 2009	2009 -	Number of vehicles	-	3,300 vehicles	Funding for European	Ongoing	Report carried out

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
					signed up to fleet recognition scheme.		registered on scheme to improve environmental performance of operating fleets	project obtained		by consultants
Tram – Train	Rotherham to Sheffield via freight line.	DfT / SYPT	2011		Line from Carbrook to Parkgate via Rotherham to be electrified		DfT award £150k for feasibility study for northern rail to buy 4veh at £18m		2014	
Bus Rapid Transit (BRT)	2 routes linking Rotherham and Sheffield - providing a high quality public transport alternative on a key commuter corridor.	SYPT / SCC / RMBC	2008 - 2012	2013 - 2015	Improved journey times by utilising bus priority measures. Improved public transport capacity through corridor.	The Business Case for BRT Northern Route shows overall impact of local and regional air quality is considered to be <u>slight beneficial</u> .	Endorsed by the Regional Transport Board, the business case for BRT Northern Route was submitted to DfT for Major Scheme funding April 2010.	Post spending review BRT Northern Route accepted into the Development Pool for Major Schemes by the DfT. Final decision expected end of 2011. BRT Southern	2015	Reduction in emissions will arise from reduced travel times, less time spent queuing in traffic, fuel efficiency and technology improvements.

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
								route progress suspended as a result of the spending review.		
Additional Supertram Vehicles		SYPTTE	2011				Bid to DfT for 4 trams		Decision on bid 2012, if successful enter service May 2014	
Park and Ride (PnR)	Dore	SYPTTE / SCC	2008 - 2011	2012 - 2013	To be determined.	-	Location for Dore PnR identified and site acquired. Planning application developed.	Planning application developed. Submission planned for 2011.	2013 subject to funding.	Provision of strategic Park and Ride sites to reduce onward car journeys into the city centre, reducing mileage and emissions.
	Abbeydale Drive (Tesco's)		2009 - 2010	To be determined	Increase in number of Park and Ride spaces.	-	Bus service from existing site at Tesco store on Abbeydale Road now serves the	Progressing extension to existing site capacity as part of proposed planning	Reliant on funding, as yet unknown.	

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							University and Hospital areas.	application to extend store.		
	2 strategic sites at the South and North ends of the A61 corridor		2008 - 2011	2012 +	Creation of 2 strategic sites and associated priority measures.	-	Proposals in development	Proposals in development.	To be determined.	
	Meadow hall		2009 - 2011	To be determined.	Increase in number of Park and Ride spaces.	-	Discussions with Meadowhall to develop Park and Ride.	Discussions with Meadowhall to develop Park and Ride.	To be determined.	
Penistone Rd	Tackle congestion and improve public transport along A61, Penistone Rd.	SCC	2008 - 2011	On hold.	Primary indicators are around car and bus journey times. Air quality features as a secondary indicator.	-	<ul style="list-style-type: none"> Scheme endorsed by the Regional Transport Advisory Board. Business Plan submitted to DfT and entered into the 	<ul style="list-style-type: none"> Business Plan submitted to DfT and entered into the 'pre qualification group'. Following the introduction of a 	On hold.	Modelling activity has indicated that the scheme may have an impact on Air Quality. More detail is to be added to the

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							<p>'pre qualification group'.</p> <ul style="list-style-type: none"> • Business Plan developed into an 'Expression of Interest' and submitted to the DfT. • DfT decided not to fund the scheme within the period of the current spending review. 	<p>new national system Business Plan developed into an 'Expression of Interest' and submitted to the DfT.</p> <ul style="list-style-type: none"> • DfT decided not to fund the scheme within the period of the current spending review. 		Business Case over the course of the next year.
Northern Relief Road	Closing of major gap in Sheffield's Inner Ring	SCC	2003 - 2007	2005 - 2007	Northern Relief Road complete and opened.	-	New 1.5 km dual carriageway between the Wicker and Penistone	Complete	Complete	Traffic can pass around the city centre, improving access by

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Road.						Road open. 4,625m of cycle lane, 680m of pedestrian/cycle path and 11 toucan crossings constructed.			all modes and impacts on air quality.
Encouraging and Enabling Walking	Development	SCC	Ongoing	Ongoing	*Proportion of person trips / walk (Annual Cordon and Screen-line Vehicle Occupancy Surveys).	-	Schemes implemented to: Reduce traffic speeds and volume on city centre roads. Create high quality public spaces, and walking routes, such as the Gold Route. Increase number of 'at grade' pedestrian crossings. *Walking	*Walking held at 7.5% in 2010.	Ongoing	Proportion of person trips made by walking.

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							7.5% in 2010.			
	Walking Journey Planner (walkit.com) for Sheffield	SCC	2008	2008 - Ongoing	Number of people using the site. Number of journeys searched for.	-	Walkit.com includes Sheffield. Promotional campaign undertaken in 2009.	Walking journey planner in place.	Ongoing	Promoting and enabling a zero emission form of transport.
	Community Street Audit programme	SCC / NHS Sheffield (Change4Life)	2008 - 2009	2009 – 2011	Number of audits carried out. Number of people trained to carry out audits.	-	All audits completed (11). 92 people trained.		2011	Funding was also available to implement improvements to encourage local walking and cycling trips.
	Development of (10) utility walking maps	SCC / NHS Sheffield (Change4Life)	2009 - 2010	2010 - 2011	Number of maps distributed. Anecdotal evidence.	-	9 area maps complete. 1 map under development.	7 area maps complete. 1 map under development.	2011	Maps are focussed around areas where there are large employers or where schools have high levels of car

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
										use in order to encourage walking as a mode of transport.
Encouraging and Enabling Cycling	Development	SCC	Ongoing	Ongoing	*Proportion of person trips / cycle (Annual Cordon and Screen-line Vehicle Occupancy Surveys)	-	Schemes implemented to: 8 Work towards a joined up network of cycle routes (including on and off road cycle facilities and crossings) 9 Improved cycle parking 'Connect' cycle signing implemented across the city centre. *Cycling 0.7% in 2010	*Cycling up from 0.6% in 2009 to 0.7% in 2010.	Ongoing.	Increasing proportion of person trips made by cycling.
	Bikelt	SCC	2007 - 2008	2008 -	Modal shift	-	Two 'Bike It'	Work with	Ongoing	Scheme

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
				Ongoing	from car to bike in schools (hands up survey).		officers working closely with 35 schools to overcome barriers to cycling to school.	Bikelt schools continuing. Initiatives include Dr Bike Sessions and classroom based activities. Bike Breakfasts and Bike to School days are also proving popular. Many schools are also taking part in the national virtual bike race.		targeted at encouraging and enabling children to cycle to school, thereby reducing emissions.
	BikeBoost	SCC	2009 - 2010	2010 – 2012	<ul style="list-style-type: none"> • Number of workplaces • Number of people • Number of people post scheme who continue to 	-	<ul style="list-style-type: none"> • Scheme began March 2010 • 'Bike Boost' officer in place • 16 organisatio 	<ul style="list-style-type: none"> • organisations commenced with the scheme 	2012 – potential for scheme to continue subject to funding (included in LSTF bid).	Scheme targeted at car drivers to cycle as a mode of transport, thereby reducing emissions.

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
					cycle		ns commenced with the scheme			From 270 participants, 164 were previously car drivers and 120 of these have carried on cycling to work.
	Free Cycle Training	SCC	2004 – Ongoing	2004 – Ongoing	Number of people trained.	-	Increasing level of free 1-to-1 cycle training for adults across the City. Community cycling teams have been working to get more people cycling more safely more often. Learn to ride scheme developed.	2010/11 1 cycle training for adults across the City: work-based individual learn to ride scheme developed.	Ongoing	Previous work has shown that 85% of adult cycle trainees said they would cycle more as a result of cycle training. Of those people undergoing cycle training who also have a car, 65% said they may or would

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
										substitute bike for car on some journeys.
	Sheffield Cycle Map – 3 rd Edition	SCC	2006 - 2007	2007 - 2010	Number of copies distributed.	-	Sheffield Cycle Map available (3rd edition, 2007).	4 th edition of Cycle Map in the planning phase. Pilot local map indicating 'bikeability' level of routes, including crossings, being developed.	2012 subject to funding.	Designed to encourage and enable cycling as a mode of transport, therefore reducing emissions.
Low Emission Strategy	To be determined	SCC	To be determined.	To be determined.	To be determined.	-	Scoping and feasibility study on a Low Emission Strategy for Sheffield carried out. LES to be investigated as part of the development	LES to be investigated as part of the development of the revised AQAP for Sheffield.	To be determined.	Potential reduction in emissions is predicted to produce an improvement in air quality and a reduction in health impacts, particularly

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							of the revised AQAP for Sheffield.			in urban areas.
Green Parking Schemes	In addition to the existing city centre 'Green Parking Scheme' free permits in suburban permit parking schemes for low emission vehicles.	SCC	2009	2009 - Ongoing	Scheme implemented	-	Scheme (free permits in suburban permit parking schemes for low emission vehicles) implemented September 2009. The existing 'Green Parking Scheme' (GPS) is in the city centre. With a city centre GPS permit, subject to a fee, free parking in city centre Council parking spaces is available for	Scheme (free permits in suburban permit parking schemes for low emission vehicles) implemented September 2009.	2009	Incentive scheme to encourage low emission vehicles.

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
							eligible vehicles.			
Travel Plans	Sheffield City Council	SCC	2011 - 2012	2012 (tbc) - Ongoing	Council travel plan under review.	-	Current measures include: <ul style="list-style-type: none"> • Car Club • Employee discount schemes • Car share website • Managing efficiency of the council fleet Bike boost scheme implemented.	Bike boost scheme implemented.	Ongoing	Outlines a package of measures and incentives to manage and reduce the impact of council related travel on the environment and congestion.
	Area Travel Plans (ATP) – covering organisations based in Permit Parking	SCC	2007 - 2008	2008 - Ongoing	Number of organisations signed up. Modal split of organisations signed up.	-	Area Travel Plans issued in: <ul style="list-style-type: none"> • Sharrow Vale PPZ • Broomhill PPZ • Highfield PPZ 	Area Travel Plans drafted for: <ul style="list-style-type: none"> • Upper Don PPZ • Upperthorpe / Netherthorpe PPZ 	Ongoing	To secure additional Parking Permits businesses have to sign up to a ATP within 6 months and implement

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Zones (PPZ).						Area Travel Plans drafted for: <ul style="list-style-type: none"> • Upper Don PPZ • Upperthorpe / Netherthorpe PPZ 			7 travel related measures aimed at encouraging modal shift away from single occupancy car use within 2 years.
	Workplace	SCC	2000 onwards	2000 onwards.	Number of monitored workplace travel plans.	-	141 organisations have monitored workplace travel plans.	27 additional organisations with monitored workplace travel plans.	Ongoing	Travel plan monitoring now included within the standard travel plan condition. Monitoring will soon convert mileage savings to reduction in CO2.
	School	SCC	2004 onwards.	2004 onwards.	100% of schools to have Travel Plan by 2010.	-	100% schools offered support. 95.2% of Sheffield	Approximately 75% of schools with school travel plans updated	Ongoing	Aim for modal shift away from car, and thus a reduction in

Measure	Focus	Lead authority	Planning phase	Implement-ation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
					% of schools updating travel plans annually.		schools have travel plans. Measures include: The WOW (Walk Once a Week) scheme Park & Stride schemes Cycle training Pedestrian training Walking buses Staff car sharing	them.		emissions related to the school run.
Car Club	To enable the growth of the Car Club in Sheffield, for example by providing bays and promotio	SCC	2006 - 2007	2007 – ongoing.	Number of Car Club cars available. Number of Car Club members.	-	Car Club has been operating in Sheffield since 2007. Where Traffic Regulation Orders are implemented for Permit Parking	Van and hybrid car introduced into the car club fleet. Mix of car types introduced into the car club fleet. Four vehicles	Ongoing	Car Plus website 2010 (www.carplus.org.uk) suggests that one car club car could replace around 24.5 private cars and that the

Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	n / marketing.						schemes this includes an allowance for bays to be used as Car Club bays in the future.	relocated to more high profile locations.		cars are used more efficiently.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The whole of the urban city area is an Air Quality Management Area. Monitoring is therefore not carried out outside of the AQMA. Monitoring within the AQMA shows that the nitrogen dioxide objective (annual) is exceeded at one automatic monitoring site (Waingate) and numerous diffusion tube locations. Generally monitoring shows that levels of nitrogen dioxide have not shown any noticeable reduction since 2000.

8.2 Conclusions relating to New Local Developments

None of the new local developments gave rise to the need for a Detailed Assessment.

8.3 Other Conclusions

An Air Quality Action Plan was first written for nitrogen dioxide in 2003.

DEFRA although accepting the Action Plan later raised the following issues;

- No estimation of the potential reduction in nitrogen dioxide concentrations of the Actions was made or any timescales were set.
- Many of the actions in the AQAP are dependent on national policy and therefore outside of what the Council could achieve.
- The Actions in the AQAP 2003 were shown to be not enough to meet the DEFRA objectives for fine particles and nitrogen dioxide
- Many of which were outside of the means of SCC to implement.
- It has become apparent that the AQAP has had no significant success in reducing nitrogen dioxide levels in the city. Any benefits the AQAP might have produced have been negated by increases in traffic emissions; there is also a doubt as to whether new vehicles are as clean as had been predicted.
- Therefore more ambitious actions will be needed to be implemented across the whole of Sheffield.

A new AQAP is currently being written for nitrogen dioxide and PM10, the draft AQAP has recently May 2011 been out to public consultation. In the light of comments the AQAP will be rewritten and is due to go to Council Cabinet for approval in late 2011.

Additional monitoring for PM2.5 was carried out at station GH2 at Tinsley Infant School.

8.4 Proposed Actions

New monitoring data has not identified a need to proceed to Detailed Assessment for any pollutant (The whole of the Sheffield urban area is a AQMA for nitrogen dioxide and PM10 – PM10 AQMA was declared in March 2010).

Following Detailed Assessment of PM10 (2008) and Upgrading and Screening Assessment (2009) a Further Assessment of PM10 will be carried out.

An update of the Air Quality Action Plan, for both nitrogen dioxide and PM10, is currently in progress.

An Upgrading and Screening Assessment will be done in 2012.

9 References

Local Air Quality Management –Technical Guidance LAQM.TG(09)

Low Emission Strategies – using the planning system to reduce transport emissions.
March 2008

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Two tube suppliers were used;
Gradko and South Yorkshire Air Quality Samplers. Both 50% TEA in acetone.

Bias adjustment factors were calculated by incorporating our factor to the National database;

Gradko bias adjustment factor 1.0

SYAQS bias adjustment factor 0.92

Factor from Local Co-location Studies (if available)

Year	SY Labs	Gradko
2005	1.0	1.11
2006	1.03	1.04
2007	1.08	1.03
2008	0.98	0.93
2009	0.91	0.99
2010	0.92 SYAQS	1.00

Discussion of Choice of Factor to Use

Prior to 2008 local bias adjustment factors were used for SY Lab tubes, this was based on co-location in Rotherham and Barnsley. For Gradko tubes bias adjustment factors were based on co-location studies at GH4 and Sheffield Centre stations. In 2008 the bias adjustment factor used was taken from the Review and Assessment website (March 2009). Local co-location studies were included in the national database.

Factors used in the report for 2009 are from Review and Assessment Support website.

Factors for 2010 were obtained by incorporating results into the Review and Assessment Support website.

Gradko tubes were co-located at AURN site at Sheffield Centre and SYAQS tubes were co-located at Sheffield Centre, GH2 Tinsley Infant School and GH3 Lowfield School. All results are included in the R&A Support National Bias Adjustment website.

PM Monitoring Adjustment

Prior to 2008 TEOM results were multiplied by a factor of 1.3. For 2008 and after the volatile correction model VCM was used.

Short-term to Long-term Data adjustment

No long term correction was done

QA/QC of automatic monitoring

QA/QC is carried out in-house. Calibrations are carried out fortnightly. Auditing is carried out by AEA Calibration Club every 6 months. AEA recommendations relating to data auditing are then implemented.

QA/QC of diffusion tube monitoring

The diffusion tubes supply and analysis were done by two companies; South Yorkshire Air Quality Samplers and Gradko International. Gradko were rated as GOOD performance on the basis of RPI new criteria in the WASP scheme and South Yorkshire Air Quality Samplers as ADEQUATE.