

## **Gateshead Council – Annual Air Quality Progress Report 2008**

### **Introduction**

As part of their duties under Local Air Quality Management Review and Assessment, local authorities are required to submit annual air quality Progress Reports, in between three-yearly Updating and Screening Assessments (USA), except for those years in which a Detailed Assessment of a pollutant, or pollutants, is carried out.

Gateshead Council carried out its second USA in 2006, and subsequently a Detailed Assessment (DA) for Nitrogen Dioxide was carried out during 2006/7 followed by a further detailed assessment during 2007/8. This is the Council's second annual Air Quality Progress Report, the first being in 2005.

The main component of the Progress Report is to report on monitoring data collected since completion of the USA in 2006, for the years 2006 and 2007, and to provide information on any new or potential developments in the Gateshead area. Progress reporting can thereby be used as a tool to identify potential new areas of poor air quality close to relevant receptors at an early stage.

Monitoring data is presented in this report for nitrogen dioxide, and fine particles (PM10) – monitoring of these pollutants was carried out due to the findings of the 2006 USA report.

### **Updating and Screening Assessment of Air Quality in Gateshead 2006**

An Updating Screening Assessment of the seven relevant pollutants for Local Air Quality Management in the Government's National Air Quality Strategy was carried out by Gateshead Council, and the report submitted to the Department for Environment, Food and Rural Affairs (Defra) in 2006.

For carbon monoxide, benzene, 1,3 butadiene, lead, sulphur dioxide and fine particulates (PM10), the USA found that there were no exceedences of any of the Government's air quality objectives. Detailed assessments were therefore not required for any of these pollutants, although monitoring of PM10 was carried out at three locations in the Gateshead borough, and the results are shown in this report.

For nitrogen dioxide (NO<sub>2</sub>), the USA confirmed the need for the existing Town Centre Air Quality Management Area (AQMA) due to exceedences of the 40µgms/m<sup>3</sup> annual mean air quality objective (AQO) at three monitoring locations within the area. Additionally, the AQO was found to be at risk of being exceeded at three monitoring locations outside of the AQMA which have residential properties in close proximity. For this reason, the Council carried out a Detailed Assessment (DA) of NO<sub>2</sub> at these locations and the report was submitted to, and subsequently endorsed by Defra, in May 2007.

The USA 2006 and Detailed Assessment reports can be found on the Council's website, via the Air Pollution and Environmental Protection links, at [www.gateshead.gov.uk](http://www.gateshead.gov.uk).

## **Carbon monoxide, 1,3 Butadiene, Benzene, Lead, and Sulphur dioxide**

For these pollutants the USA 2006 revealed no exceedences of the air quality objectives. As there have been no significant changes and no new sources since the USA was carried out, no further work has been carried out on these pollutants.

## **Nitrogen Dioxide**

Subsequent to declaration of the Town Centre AQMA in April 2005 Gateshead Council drafted an air quality action plan (AQAP) which was endorsed by the Council in January 2008 following submission to Defra and full internal and public consultation. The Council also endorsed the integration of the AQAP into the Tyne & Wear Local Transport Plan (LTP2) which has key priorities focussing on air quality and congestion, and for which the Tyne & Wear LTP Core Team has recently completed an air quality delivery plan.

The AQAP was published in January and can be viewed on the Council's website via the Air Pollution and Environmental Protection links, at [www.gateshead.gov.uk](http://www.gateshead.gov.uk).

The Detailed Assessment of NO<sub>2</sub> carried out in 2006/7 subsequent to the findings of Gateshead's Updating and Screening Assessment 2006, confirmed the need for further AQMA's at the junction of the A167 (Durham Road) with Dryden Road, and in the Portobello Terrace area of Birtley. A further detailed assessment of NO<sub>2</sub> is currently being carried out and the report will be duly submitted to Defra and published on the Council's website.

The Council endorsed extension of the existing Town Centre AQMA to include the Dryden Road/Durham Road junction in January 2008, and a Variation Order was issued, commencing 1<sup>st</sup> April 2008. Declaration of an AQMA for Portobello Terrace in Birtley was also endorsed by Council in January 2008 and an Air Quality Management Order issued commencing 1<sup>st</sup> April 2008. Copies of both of these orders will be sent to Defra as soon as they become available.

Real time and diffusion tube monitoring data for 2006 and 2007 for the locations within the AQMA's are presented in the Detailed Assessment and Further Detailed Assessment reports.

Diffusion tube monitoring results for other locations, including three co-located tubes with the A1 Dunston automatic monitor, are presented in this report (Table 1). Passive diffusion tubes are exposed for a month at a time, before being returned to Jesmond Dene Laboratory for analysis using the 50% TEA in acetone method. All of the data presented in this report have been adjusted to account for diffusion tube bias, using the correction factor on the R&A helpdesk website: spreadsheet version 04/08 – the factor used is 0.79.

Real time data for the A1 Dunston (southbound) is also presented, and as real time monitoring has been carried out at this site for several years, annual mean concentrations of nitrogen dioxide have also been plotted for the years 2005 -2007 (Figure 1). These results are published on the internet as part of the Tyne & Wear Air Quality Network which is maintained by the University of Sunderland, at [tyneandwearair.sunderland.ac.uk](http://tyneandwearair.sunderland.ac.uk).

The NO<sub>2</sub> monitoring results (Tables 1 and 2) show there were no exceedences of either the 1hour mean (200µgms/m<sup>3</sup>) or annual mean (40µgms/m<sup>3</sup>) air quality objectives at any of the monitoring locations.

**Table 1: NO<sub>2</sub> concentrations from diffusion tube sites outside AQMA's 2007.**

Tube No.	Location	Easting	Northing	Survey Mean	Bias Adjusted X 0.79
4	North Dene, Birtley	427187	557230	39.65	31.32
9	Craithie, Birtley	427563	557037	34.12	26.95
12	Coach Rd,Lobley Hill	423765	560510	36.87	29.12
13	Coach Rd,Lobley Hill	423791	560360	34.08	26.93
14	Park Tce, Dunston	422485	561863	37.63	29.72
31	Westway, Dunston	423086	561543	36.4	28.76
35	A1 Dunston AQU 1*	422513	561925	45.89	36.25
40	A1 Dunston AQU 2*	422513	561925	41.65	32.90
41	A1 Dunston AQU 3*	422513	561925	46.09	36.41
46	Team Vale Villas	425297	562886	36.39	28.75
49	StaLa/DurRd, Birtley	427152	555833	31.82	25.14
50	Chowdene Bank	425862	559620	45.23	35.73
51	Cuthbert St	424833	562379	45.23	35.73
52	Coatsworth Rd	425034	562736	38.46	30.38
54	Sage, Quayside	425469	563760	38.34	30.29
79**	Brightlea, Birtley	428131	556273	28.49	22.50
85**	Abbeyfield Ct,	423868	562204	29.77	23.52
86**	Yetholm Rd, Teams	423934	562393	36.73	29.02
87**	A1 rear Park Tce,	422519	561933	45.52	35.96

All monitoring locations are roadside and represent relevant exposure.

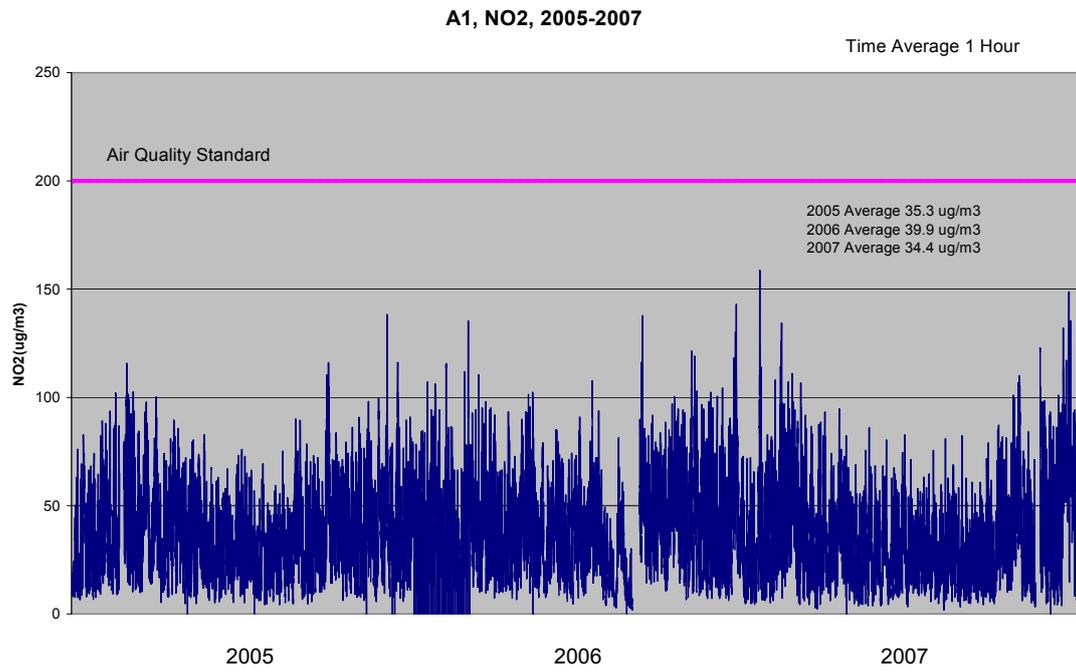
\* Diffusion tubes co-located with real time air quality monitoring unit.

\*\* Less than 9 months monitoring data

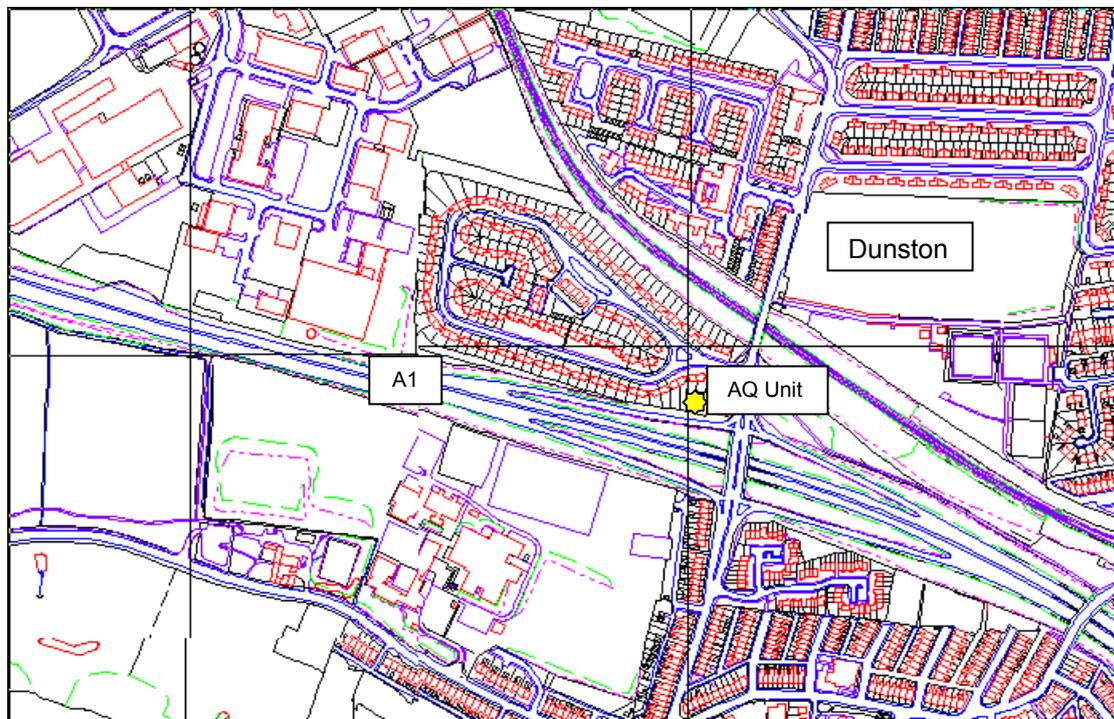
**Table 2: NO<sub>2</sub> Automatic Monitoring Data (µgms/m<sup>3</sup>) A1 Dunston**

Year	1 Hour Mean AQO	No of Breaches	1 Hour Max	Annual Mean	% Data Capture
2006	200	0	142.9	39.9	93.7
2007	200	0	158.7	34.4	97.8

**Figure 1: Hourly Mean Concentrations of NO<sub>2</sub> (µgms/m<sup>3</sup>) A1 Dunston 2005-2007**



**Figure 2: Map showing location of A1 Dunston AQ Monitoring Unit (NO<sub>2</sub> and PM<sub>10</sub>)**



## Fine Particles (PM10)

The Updating Screening Assessment 2006 revealed no exceedences of either the annual mean air quality objective ( $40\mu\text{gms}/\text{m}^3$ ) or the 24-hour mean objective ( $50\mu\text{gms}/\text{m}^3$ ) for PM10. However, Gateshead has several busy roads and road junctions with relevant receptors in close proximity, so the Council has continued to monitor PM10 concentrations at three such locations since completion of the USA. The monitoring data for 2006 and 2007 are presented in this report in Table 3.

Real time monitoring of PM10 was carried out at Lychgate (near the junction of the A184 and A167); the A1 on the Dunston southbound slip road; and at Portobello Terrace, Birtley using Teom samplers located inside mobile laboratories. All data was quality assured and ratified using techniques outlined in Annex 1 of Defra's technical guidance LAQM.TG(03). As the data was collected by TEOM samplers, the default 1.3 factor has been applied to all data to estimate gravimetric concentrations, as required in the guidance.

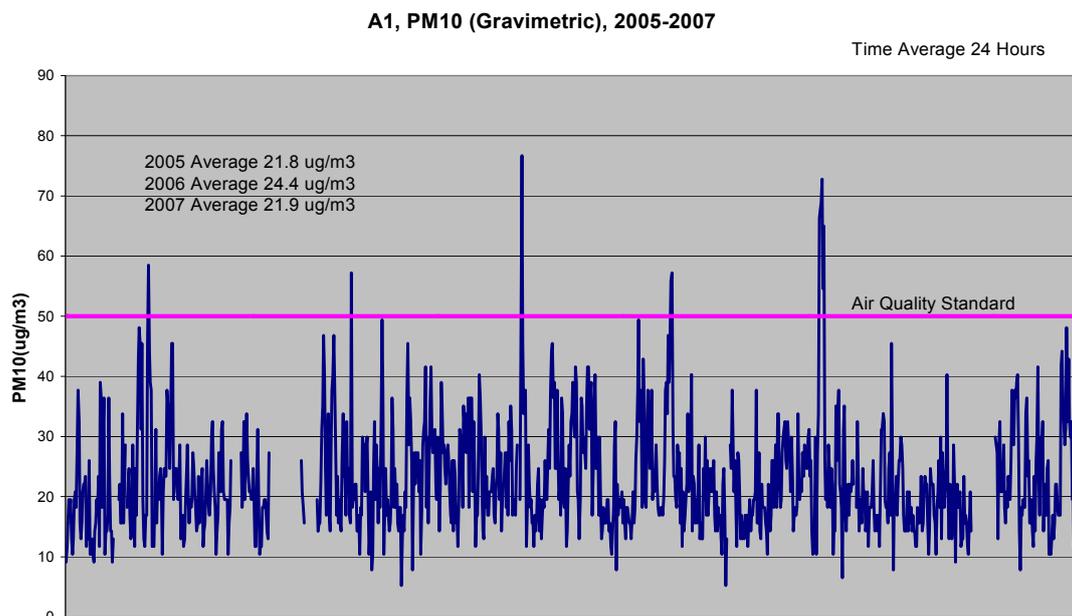
The results show (Table 3) that there were no exceedences of the 24 hour mean AQO ( $50\mu\text{gms}/\text{m}^3$ ) for PM10 - the number of exceedences of the objective for all of the monitoring locations being well below the 35 allowed per year. Annual mean concentrations for all of the locations were also well below the of  $40\mu\text{gms}/\text{m}^3$  air quality objective during 2006 and 2007.

As real time monitoring of PM10 has been carried out at the A1 Dunston site for several years, annual mean concentrations have also been plotted for the years 2005 -2007 (Figure 3). The Council intends to retain the air quality monitoring unit in this location for the foreseeable future, and continue to monitor PM10 concentrations in areas where there is relevant exposure and a risk of the air quality objectives being exceeded.

**Table 3: PM10 Automatic Monitoring Data ( $\mu\text{gms}/\text{m}^3$ )**

Monitoring Location	Map Ref	Year	No. Breaches 24hr AQO (50)	24 Hour Max	Annual Mean (AQO 40)	% Data Capture
A1 Dunston	422513 561925	2006	3	76.6	24.7	99
		2007	6		22.1	93
Lychgate A184/A167	425883 563103	2006	9	75.4	26.0	93
		2007	10		24.7	99
Portobello	428265 554970	June 06 – May 07	6	25.8	21.7	94.2

**Figure 3: 24 Hour Mean Concentrations of PM10 ( $\mu\text{gms}/\text{m}^3$ ) A1 Dunston 2005-2007**



### **New/Proposed Local Developments**

Information on proposed developments is obtained from the Council's Planning Service, and procedures have been developed to ensure that planning applications for proposed developments that might impact on air quality are forwarded to the Council's Environmental Health Service.

Gateshead town centre is currently undergoing substantial redevelopment which will affect traffic flows and the number of relevant receptors within the AQMA. Planning proposals include commercial developments in the form of a hotel, retail units and a supermarket which will be significantly larger than the existing one with three times as many parking spaces; and residential development in the form of accommodation for 1000 students. These proposals are kept under careful review in regard to the impact of developments on air quality within the AQMA, with ongoing liaison between the Council's planners, Environmental Health Officers and Consultants, and the developers.

A planning application for residential properties on the old site of Gateshead College has recently been rejected, although the site has been earmarked for residential development. This site is located just outside of the extended town centre AQMA, south on the A167, Durham Road. A traffic analysis has shown that there could be a marginal increase in traffic in the area caused by the development. Although this is not likely to have a significant impact on air quality, NO<sub>2</sub> levels will be monitored using diffusion tubes in the area, due to its proximity to the Durham Road/Dryden Road hotspot which led to extension of the town centre AQMA.

The final phase of an extensive housing development in Birtley has recently obtained planning permission and is currently undergoing the final stages of the planning process. Air quality monitoring with NO<sub>2</sub> diffusion tubes has commenced in this area in recent months (Table 1 - tube locations Northside, Craithie and Brightle, the tubes being exposed on the walls of the receptors' houses). So far monitoring results have shown no exceedences of the annual mean air quality objective.

There has been no new Part A, Part B, retail, road, mineral or landfill developments since the Updating Screening Assessment of 2006.

### **Local Air Quality Strategy**

In 2005 the five Tyne & Wear local authorities (Gateshead, Newcastle CC, Sunderland CC, North Tyneside MBC and South Tyneside MBC) produced a joint air quality strategy for the Tyne and Wear area, which demonstrates the commitment of the Councils to securing future air quality improvements across the region.

The strategy addresses a number of policy areas which have the potential to impact on air quality, including transport planning, land use planning and Local Agenda 21. Environmental Health Officers, together with Transport planners and LA21 and planning officers representing the Tyne & Wear authorities were all actively involved in producing the strategy, which provides a framework for these and other organisations and agencies, including the local public transport operators, with respect to integrating air quality considerations into their policy areas, and vice versa.

The strategy can be viewed on the Councils' websites.

### **Local Transport Plan**

Current air pollution issues in Gateshead are all related to emissions from road traffic sources. Any measures implemented to improve air quality will thus be closely related to the local transport plan (LTP2). Gateshead Council works in partnership with the other four Tyne & Wear authorities to produce a joint Tyne & Wear LTP, and Transport planners and Environmental Health Officers from all five authorities have worked in close liaison for the LTP2 and the Tyne & Wear Air Quality Strategy.

The Tyne and Wear LTP Core Team have recently completed delivery plans for each of the LTP shared priorities agreed between the Department for Transport and the Local Government Association; air quality being one of these. The Tyne and Wear Air Quality Delivery Plan outlines the background to air quality problems in the region, current levels of pollution and proposed actions to improve area specific and regional Tyne and Wear air quality levels. The Tyne and Wear Joint Transport Steering Group recently approved an attached budget to the Air Quality Delivery Plan of £100 000 to be spent on the implementation of some of the plan's proposed actions. The budget is envisaged to aid the implementation of a range of air quality actions, such as the implementation of a bus quality partnership, further monitoring, and strengthening of relationships between the councils and academic institutions.

## **Other Joint Projects**

### MESSAGE Project

The Council, in co-operation with Newcastle University and Professor Margaret Bell from Instrumented Cities, is working on a project called Mobile Environmental Sensing System Across a Grid Environment (MESSAGE), which develops traffic sensors calculating levels of emissions. These small sensors can count traffic flows and measure road traffic pollutants and noise levels, as well as communicate with each other using ultrasound. They can also be placed on moving vehicles in order to monitor and measure a wider area and build up a database of information. The project, which is jointly funded by the Department for Transport and EPSRC (Engineering and Physical Sciences Research Council), began in October 2006 and is envisaged to last for 3 years.

The project is organised in a series of parallel research and development activities, such as communication and positioning and sensor technologies, which are interweaved with a series of diverse demonstration activities such as traveller behavioural responses. The MESSAGE consortium (led by Imperial College) brings together internationally leading specialist research groups in the fields of e-Science, transport, sensors, communications and positioning technologies across five universities, together with a number of major industrial partners and transport authorities.

Gateshead Council is in a position to update the rest of the Tyne & Wear partners on outcomes and results of the current pilot study by sharing relevant data, and is able to advise them on the potential of rolling out the project across Tyne and Wear.

### Tyne & Wear Public Awareness Campaign

One of the specific measures for improving air quality outlined in Gateshead's Air Quality Action Plan for the Town Centre AQMA is information and education on air quality for the public. To this end, the Tyne & Wear Partners have recently submitted a joint bid to Defra for an air quality grant to fund a project which is aimed at raising awareness of air quality issues and encouraging residents and businesses to help improve air quality across the region. The project would be run along similar lines as the successful Care4Air campaign currently being run by a partnership of South Yorkshire local authorities and Travelwise, for which Sheffield CC, as lead authority, received Beacon Status.

The project, which would be delivered over a three year period, would seek to raise awareness of air quality issues by using web based information and a PR campaign using printed materials and on the ground work carried out by the Tyne & Wear local authorities' Environmental Health Officers. It would be managed by the LTP Core Team.

## UTMC Study

Gateshead Council has recently commissioned consultants to undertake a study exploring the feasibility and practicalities of implementing an Urban Traffic Management and Control (UTMC) system for parts of the borough, including the Town Centre Air Quality Management Area. This study is to follow on from and build upon the regional UTMC study recently completed for the Tyne & Wear TIF Board.

The benefits of such a UTMC system include improvement in congestion management, air quality management and traveller information, with the objective of resolving future congestion problems and thereby improving air quality.