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# 2009 Air Quality Updating and Screening Assessment for Gateshead Council

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

Date April, 2009

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## **Executive Summary**

Gateshead Council's Updating and Screening Assessment 2009 has found that there are no new developments or changes in existing pollutant sources which may have a significant impact on pollutant concentrations in Gateshead.

All of the air quality objectives in the Government's National Air Quality Strategy 2007 are met for all of the relevant pollutants, namely benzene, 1-3 butadiene, carbon monoxide, lead, nitrogen dioxide, PM10, and sulphur dioxide, except for a few marginal exceedences, or borderline cases, of the annual mean objective for nitrogen dioxide. These isolated cases are all within the existing Town Centre Air Quality Management Area and a Further Detailed Assessment of Nitrogen Dioxide for this and the Portobello AQMA has recently been submitted to Defra for appraisal.

The Council does not therefore intend to carry out detailed assessments for any of the relevant pollutants.

Although there were no exceedences of the nitrogen dioxide objectives within the Portobello AQMA for 2008, the Council does not consider it appropriate to revoke the AQMA based on only one year's data.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Gateshead is a unitary authority with a population of just under 200,000 in the heart of North East England, bordering the cities of Newcastle and Sunderland and the unitary authorities of South Tyneside, Northumberland and Durham. Covering 142 square kilometres and stretching 21 kilometres along the south bank of the River Tyne it is the largest of the Tyneside Districts, with a mix of large urban and rural areas.

A substantial road and rail network covers the region which includes the A1(M) at Portobello, Birtley and the A1, which passes the MetroCentre, the largest out of town retail and leisure complex in Europe. A comprehensive network of bus services and regional and national rail systems operate within the Gateshead area, as well as a Metro light rail network. There are rail and road bridge crossings over the River Tyne, the roads suffering high traffic flows and congestion.

There are a total of 87 industrial processes registered under the Environmental Permitting Regulations 2007, 18 Part A1's, 4 Part A2's, and 65 Part B's. Proposals for substantial redevelopment of Gateshead town centre, including a hotel, retail units, a large supermarket and student accommodation, have received outline planning permission, and demolition of existing retail units has recently commenced.

An Air Quality Management Area (AQMA) for nitrogen dioxide pollution from road traffic was declared for the town centre in April 2005. This was amended to include a southward extension along the A167 road in April 2008, when an AQMA was also declared in the south east of the borough along Portobello Terrace, a C category road which runs parallel to the A1(M) the Portobello area of Birtley.

## 1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

## 1.3 Air Quality Objectives

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

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
<b>Benzene</b>	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
<b>1,3-Butadiene</b>	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
<b>Carbon monoxide</b>	10.0 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
<b>Lead</b>	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
<b>Nitrogen dioxide</b>	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
<b>Particles (PM<sub>10</sub>) (gravimetric)</b>	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
<b>Sulphur dioxide</b>	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

<b>Date</b>	<b>R&amp;A Round</b>	<b>Stage/Report</b>	<b>Outcome/Comment</b>
April 1999	1	R&A Stage 1 Tyne & Wear	Proceeded to Stage 3 for all pollutants except 1-3 butadiene
November 2000	1	R&A Stage 3 Gateshead	No exceedences of any of 6 pollutants investigated, therefore no AQMA's
May 2003	2	Updating & Screening Assessment	Exceedences of annual mean objective for NO <sub>2</sub> at 2 busy road junctions predicted by DMRB modelling. Proceeded to DA for NO <sub>2</sub> . Further investigations required for benzene - reported in 2005 Progress Report
January 2005	2	Detailed Assessment of NO <sub>2</sub>	AQMA required due to slight exceedence of NO <sub>2</sub> annual mean objective at Trinity Court in town centre (junction of A167 & A184)
April 2005	2	Air Quality Management Order	AQMA declared for whole of Gateshead town centre
April 2005	2	Annual Progress Report	Benzene & PM <sub>10</sub> assessed - AQO's found to be achieved at all relevant locations. Ref made to DA for NO <sub>2</sub> . No further NO <sub>2</sub> hotspots identified
March 2006	2	Further Detailed Assessment	AQMA declared for NO <sub>2</sub> found to still be justified, with no need to amend AQO exceedence areas
April 2006	3	Updating & Screening Assessment	AQO's found to be achieved for all pollutants, except for annual mean NO <sub>2</sub> - 3 exceedences found at locations outside of existing AQMA - one south of AQMA on A167, and 2 in Birtley.
April 2007	3	Detailed Assessment of NO <sub>2</sub>	AQMA as declared found still be justified. AQMA's also found to be required at A167 Durham/Dryden Road junction, south of AQMA, and at Portobello, Birtley
January 2008	2	Air Quality Action Plan	For Town Centre AQMA
April 2008	3	Air Quality Management Orders	Variation Order to extend existing Town Centre AQMA southwards along A167 to include Durham/Dryden Road junction. AQMA declared for Portobello Tce, Birtley. (Maps Figs 1 & 2)
April 2008	3	Annual Progress Report	AQO's found to be achieved for all pollutants, except for annual mean NO <sub>2</sub> - Ref made to DA, Further DA AND AQAP
April 2009	3	Further Detailed Assessment (unpublished)	For Town Centre and Portobello AQMA's submitted to Defra for appraisal



## **2 New Monitoring Data**

### **2.1 Summary of Monitoring Undertaken**

#### **2.1.1 Automatic Monitoring Sites**

Gateshead Council measures nitrogen dioxide concentrations using real-time chemiluminescent monitors at five roadside sites - three within the Town Centre AQMA, at Trinity Court, Lychgate, and Bottle Bank, one within the Portobello AQMA, and one on the A1 South slip road at Dunston. Their locations are shown on the maps in Appendix 2. All of the sites are roadside and are situated closer to the road traffic pollution source than the nearest relevant receptors which are residential properties. The Portobello site was started up in May 2008 subsequent to declaration of an AQMA for Portobello Terrace.

Pm10 concentrations are measured using TEOM samplers at the Lychgate and A1 Dunston sites. The monitors are located in self contained mobile units together with the NO2 monitors.

QA/QC procedures for automatic monitoring are outlined in Appendix 1.

**Table 2.1 Details of Automatic Monitoring Sites**

<b>Site Name</b>	<b>Site Type</b>	<b>OS Grid Ref</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Relevant Exposure ?</b>	<b>Distance to kerb of nearest road</b>	<b>Worst-case Location ?</b>
Trinity Ct	Roadside	X 425781 Y 563055	NO2	Y	Y (8m)	10m	Y
Lychgate Ct	Roadside	X 425912 Y 563108	NO2 PM10	Y	Y (6m)	7m	Y
Bottle Bank	Roadside	X 428265 Y 554970	NO2	Y	Y (8m)	2.5m	Y
Portobello	Roadside	X 428265 Y 554970	NO2	Y	N (13m)	2m	Y
A1 Dunston	Roadside	X 422510 Y 561928	NO2 PM10	N	N (16M)	9m	Y

#### **2.1.2 Non-Automatic Monitoring**

Monthly average nitrogen dioxide concentrations are measured at a large number of sites in Gateshead using passive diffusion tubes. Monitoring sites in the AQMA's and the A1 Dunston site are shown on the maps in Appendix 2. Most of the sites are located roadside, and represent residential exposure, or are sets of triplicate tubes used at co-location sites with automatic monitors. Each site produced at least 9 months (most 12 months) worth of data during the study years.

QA/QC procedures for diffusion monitoring are outlined in Appendix 1.

**Table 2.2 Details of Non- Automatic Monitoring Sites – NO2 Diffusion Tubes**

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Priory Court Gtshd	Roadside	425737 563251	Yes	Y 0 metres	10 metres	Y
Peareth Ct Gtshd	Roadside	425770 563135	Yes	Y 0 metres	10 metres	Y
Trinity Ct Gtshd	Roadside	425781 563055	Yes	Y 0 metres	7 metres	Y
Trinity Ct AQ Unit*	Roadside	425753 563061	Yes	Y 8 metres	10 metres	Y
Park Ct Gtshd	Roadside	425756 563193	Yes	Y 0 metres	10 metres	N
St Mary's Ct Gtshd	Urban bkground	425798 562968	Yes	Y 0 metres	21 metres	N
Lychgate Ct Gtshd	Roadside	425912 563108	Yes	Y 0 metres	13 metres	Y
Lychgate AQ Unit*	Roadside	425883 563103	Yes	Y 6 metres	8.5 metres	Y
Regent Ct Gtshd	Roadside	425553 562965	Yes	Y 0 metres	9 metres	N
Monk Ct Gtshd	Urban bkground	425855 562994	Yes	Y 0 metres	20 metres	N
Adelaide Ct Gtshd	Urban bkground	425292 563233	Yes	Y 10 metres	13 metres	N
Melbourne Ct, Gtshd	Urban bkground	425305 563093	Yes	N 15 metres	28 metres	N
Dryden Rd Gtshd	Roadside	425760 561641	Yes	Y 0 metres	6 metres	Y
Newsag Durham Rd	Roadside	425761 561660	Yes	Y 0 metres	3 metres	Y
Durham Rd Gtshd 1	Roadside	425751 562214	Yes	Y 0 metres	8.5 metres	N
Durham Rd Gtshd 2	Roadside	425722 562203	Yes	Y 0 metres	8 metres	N
Durham Rd Gtshd 3	Roadside	425727 562160	Yes	Y 0 metres	8 metres	N
Durham Rd Gtshd 4	Roadside	425788 561966	Yes	Y 0 metres	7 metres	N
Durham Rd Gtshd 5	Roadside	425793 561818	Yes	Y 0 metres	7 metres	N

\* Triplicate tube location with automatic monitor

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**Table 2.2 Details of Non- Automatic Monitoring Sites – NO2 Diffusion Tubes**

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Durham Rd Lw Fell 1	Roadside	425759 561612	Yes	Y 0 metres	5 metres	N
Durham Rd Lw Fell 2	Roadside	425770 561397	Yes	Y 0 metres	10 metres	N
Durham Rd Lw Fell 3	Roadside	425777 561492	Yes	Y 0 metres	12 metres	N
Hill St Bottle Bank Gtshd	Roadside	425447 563528	Yes	Y 1.5 metres	3.5 metres	Y
Bottle Bank AQ Unit*	Roadside	425425 563555	Yes	Y 8 metres	3 metres	Y
Baltic Flats Quayside	Urban bkground	425899 563905	No	N 15 metres	2 metres	N
The Sage Quayside	Urban bkground	425469 563760	No	N 180 metres	3 metres	N
Team Vale Villas, Gtshd	Urban bkground	425297 562886	No	Y 0 metres	12 metres	N
Coatsworth Rd, Gtshd	Roadside	425034 562736	No	Y 0 metres	6 metres	N
Chowdene Bank, Low F	Urban bkground	425862 559620	No	Y 0 metres	5 metres	N
Cuthbert St Gtshd	Roadside	424833 562379	No	Y 0 metres	9.5 metres	N
Coach Rd Lobley Hill	Urban bkground	423765 560510	No	Y 0 metres	8.5 metres	N
Coach Rd Lobley Hill	Urban bkground	423791 560360	No	Y 0 metres	10 metres	N
Westway, Dunston	Urban bkground	423086 561543	No	Y 0 metres	20 metres	N
A1 Dunston AQ Unit*	Roadside	422513 561925	No	N 16 metres	4 metres	Y
North Dene, Birtley	Urban bkground	427187 557230	No	Y 0 metres	8.5 metres	N
Portobello Tce	Roadside	428254 554988	Yes	Y 0 metres	1.5 metres	Y
Portobello Tce AQU*	Roadside	428264 554969	Yes	N 13 metres	3 metres	N
Penshaw View	Roadside	428259 555077	Yes	Y 0 metres	1.5 metres	N

\* Triplicate tube location with automatic monitor

## 2.2 Comparison of Monitoring Results with AQ Objectives

Monitoring results are shown in the tables below. Exceedences of the air quality objectives, and borderline cases, are highlighted in bold.

### 2.2.1 Nitrogen Dioxide

#### Automatic Monitoring Data

The results from automatic monitoring data for nitrogen dioxide are given in tables 2.3a and 2.3b. The automatic monitor at Portobello was started up in May 2008 due to declaration of the Portobello AQMA and the need for a further detailed assessment. Data capture was 100% for the other four locations.

The results show that there were no exceedences of either the annual mean or the hourly air quality objectives, with annual mean concentrations well below the  $40\mu\text{g}/\text{m}^3$  objective level and no exceedences of the  $200\mu\text{g}/\text{m}^3$  hourly mean concentration at any of the monitoring locations.

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

Site ID	Location	Within AQMA?	Proportion of year (%) with valid data 2008	Annual Mean Concentrations ( $\mu\text{g}/\text{m}^3$ )		
				2006	2007	2008
A1	Lychgate	Y	100	36	32	33
A2	Trinity	Y	100	32	29	31
A3	Bottle Bank	Y	100	36	36	34
A4	*Portobello	Y	83	-	-	30
A5	A1 Dunston	N	100	40	34	34

\* 10 months data: May 2008-February 2009. No surveys for 2006 or 2007

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

Site ID	Location	Within AQMA?	% Data Capture 2008	Number of Exceedences of Hourly Mean ( $200\mu\text{g}/\text{m}^3$ )		
				2006	2007	2008
A1	Lychgate	Y	98	0	0	0
A2	Trinity	Y	97	0	0	0
A3	Bottle Bank	Y	100	0	0	0
A4	*Portobello	Y	93	-	-	0
A5	A1 Dunston	N	99	0	0	0

\*10 months data: May 2008-February 2009. No study for 2006 or 2007

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### Diffusion Tube Monitoring Data

The results of diffusion tube monitoring for nitrogen dioxide are given in tables 2.4a and 2.4b. Most of the nitrogen dioxide diffusion tube locations are on the property façade of the nearest relevant receptors. Triplicate tubes co-located with an automatic monitor were started up at Portobello in May 2008 due to declaration of the Portobello AQMA. Data capture was 100% for most of the monitoring locations and above 90% for all but two of the locations.

**Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes 2008**

Site ID	Location	AQMA?	% Data Capture	Ann Mean Conc ( $\mu\text{g}/\text{m}^3$ ) Bias adjusted (X 0.77)
2	Priory Court	Y	100	31
37	Lychgate AQ Unit*	Y	100	33
42	Trinity Court	Y	100	<b>39.7</b>
43	Regent Court	Y	100	26
44	Adelaide Ct	Y	100	27
45	Melbourne Ct	Y	100	25
53	Hill Street (Bottle Bk)	Y	75	36
55	Trinity AQ Unit*	Y	100	31
58	Park Court	Y	100	27
59	Peareth Ct	Y	100	29
60	Lychgate Ct	Y	100	28
61	Monk Ct	Y	92	26
62	St Mary's Ct	Y	100	23
63	Bottle Bank AQ Unit*	Y	100	36
47	Durham/Dryden Rd	Y	92	<b>39.4</b>
71	Durham Rd Lw Fell 1	Y	100	31
72	Newsag Durham Rd	Y	100	<b>40.3</b>
75	Durham Rd Lw Fell 2	Y	75	24
76	Durham Rd Lw Fell 3	Y	100	21
80	Durham Rd Gtshd 1	Y	100	21
81	Durham Rd Gtshd 2	Y	100	27
82	Durham Rd Gthsd 3	Y	100	24
83	Durham Rd Gtshd 4	Y	92	31
84	Durham Rd Gtshd 5	Y	100	29
10	Portobello Tce	Y	100	38
68	Portobello Tce AQU*	Y	100	26
74	Penshaw View	Y	100	33
4	North Dene, Birtley	N	100	27
12	Coach Rd,Lobley Hill	N	100	24
13	Coach Rd,Lobley Hill	N	100	24
31	Westway, Dunston	N	100	26
35	A1 Dunston AQ Unit*	N	100	33
46	Team Vale Villas	N	100	31
50	Chowdene Bank	N	92	32
51	Cuthbert St	N	100	33
52	Coatsworth Rd	N	92	27
54	Sage, Quayside	N	100	28
64	Baltic Flats	N	100	30

\* Mean concentration of triplicate tube exposure

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ ) Adjusted for bias		
			2006	2007	2008
2	Priory Court	Y	36	32	31
37	Lychgate AQU*	Y	34	35	33
42	Trinity Court	Y	<b>43</b>	37	<b>39.7</b>
43	Regent Court	Y	30	28	26
44	Adelaide Ct	Y	28	28	27
45	Melbourne Ct	Y	30	27	25
53	Hill Street (Bottle Bk)	Y	<b>45</b>	<b>41</b>	36
55	Trinity AQU*	Y	35	34	31
58	Park Court	Y	32	32	27
59	Peareth Ct	Y	36	38	29
60	Lychgate Ct	Y	33	32	28
61	Monk Ct	Y	30	26	26
62	St Mary's Ct	Y	28	29	23
63	Bottle Bank AQU*	Y	<b>43</b>	38	36
47	Durham/Dryden Rd	Y	<b>45</b>	<b>40.3</b>	<b>39.4</b>
71	Durham Rd Lw Fell 1	Y	37	35	31
72	Newsag Durham Rd	Y	<b>45</b>	<b>45</b>	<b>40.3</b>
75	Durham Rd Lw Fell 2	Y	29	25	24
76	Durham Rd Lw Fell 3	Y	29	25	21
80	Durham Rd Gtshd 1	Y	29	25	21
81	Durham Rd Gtshd 2	Y	35	29	27
82	Durham Rd Gthsd 3	Y	33	26	24
83	Durham Rd Gtshd 4	Y	40	31	31
84	Durham Rd Gtshd 5	Y	37	29	29
10	Portobello Tce	Y	<b>45</b>	<b>43</b>	38
68	Portobello Tce AQU*	Y	-	-	26
74	Penshaw View	Y	38	34	33
4	North Dene, Birtley	N	29	31	27
12	Coach Rd,Lobley Hill	N	31	29	24
13	Coach Rd,Lobley Hill	N	30	27	24
31	Westway, Dunston	N	32	29	26
35	A1 Dunston AQ Unit*	N	39	35	33
46	Team Vale Villas	N	32	29	31
50	Chowdene Bank	N	34	35	32
51	Cuthbert St	N	35	36	33
52	Coatsworth Rd	N	34	30	27
54	Sage, Quayside	N	30	30	28
64	Baltic Flats	N	35	36	30

\* Mean concentration of triplicate tube exposure

Bias Adjustment Factor 0.84 for 2006; 0.79 for 2007; 0.77 for 2008

In general a year on year downward trend in annual mean concentrations is shown for most of the diffusion tube monitoring locations for the years 2006 to 2008, and at all locations concentrations for 2008 are lower than for 2006, in most cases by several microgrammes. This has meant that at all of the hotspot locations within the Town Centre AQMA the objective has now been met or exceedences are marginal, and in the Portobello AQMA the objective has been achieved for 2008. Further discussion on this situation is given in the Further Detailed Assessment recently submitted to Defra.

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### 2.2.2 PM<sub>10</sub>

Both PM10 monitoring locations are roadside and are situated closer to the source, namely road traffic, on the A1 at Dunston, and the A184/A167 junction at Lychgate, than the nearest receptors, which are residential properties.

The results show that both the annual mean and the 24-hour mean air quality objectives were met at both locations, with concentrations well below the 40µg/m<sup>3</sup> annual mean objective level, and the number of exceedences of the 50µg/m<sup>3</sup> 24-hour mean well below the 35 allowed per year.

Additionally, a downward trend in concentrations is shown at both locations for the annual mean from 2006 to 2008, although not for the number of exceedences of the 24-hour mean.

**Table 2.5a Results of PM<sub>10</sub> Automatic Monitoring: Comparison with Annual Mean Objective**

Site ID	Location	Within AQMA?	% Data Capture 2008	Annual mean concentrations (µg/m <sup>3</sup> ) (AQO 40 µg/m <sup>3</sup> )		
				2006	2007	2008
A1	Lychgate	Y	98	26	25	23
A5	A1 Dunston	N	97	25	22	22

**Table 2.5b Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective**

Site ID	Location	Within AQMA?	% Data Capture 2008	Number of Exceedences of hourly mean (50 µg/m <sup>3</sup> )		
				2006	2007	2008
A1	Lychgate	Y	98	9	10	8
A5	A1 Dunston	N	97	3	6	6

### 2.2.2 Other pollutants monitored

Gateshead Council does not monitor any of the other relevant pollutants as there are no significant sources or likelihood of the objectives being exceeded in the Gateshead area.

### **3 Road Traffic Sources**

Gateshead Council confirms that there are no new/newly identified traffic sources, and no changes or new developments which would have a significant impact on road traffic pollutant concentrations or relevant exposure.

#### **3.1 Narrow Congested Streets with Residential Properties Close to the Kerb**

Gateshead Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

#### **3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic**

Gateshead Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

#### **3.3 Roads with a High Flow of Buses and/or HGVs.**

Gateshead Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

#### **3.4 Junctions**

Gateshead Council confirms that there are no new/newly identified busy junctions/busy roads.



### **3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment**

Gateshead Council confirms that there are no new/proposed roads.

### **3.6 Roads with Significantly Changed Traffic Flows**

Gateshead Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

### **3.7 Bus and Coach Stations**

Gateshead Council confirms that there are no relevant bus stations in the Local Authority area.

## **4 Other Transport Sources**

### **4.1 Airports**

Gateshead Council confirms that there are no airports in the Local Authority area.

### **4.2 Railways (Diesel and Steam Trains)**

#### **4.2.1 Stationary Trains**

Gateshead Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

#### **4.2.2 Moving Trains**

Gateshead Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

### **4.3 Ports (Shipping)**

Gateshead Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

## **5 Industrial Sources**

### **5.1 Industrial Installations**

#### **5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out**

Gateshead Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

#### **5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced**

Gateshead Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

#### **5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment**

Gateshead Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

### **5.2 Major Fuel (Petrol) Storage Depots**

There are no major fuel (petrol) storage depots within the Local Authority area.

## **5.3 Petrol Stations**

Gateshead Council has identified one location with two petrol stations meeting the specified criteria, although the nearest relevant exposure is more than 10 metres from the fuel pumps. However, this site was examined for the 2003 USA due to the high petrol throughputs at both sites and the high traffic flows (80,000 AADT), as a result of which detailed monitoring for benzene was carried out at the site. The site is situated on the A1 at the Washington/Birtley Services, at which there are two large petrol filling stations with annual petrol throughputs of 3000 and 4000 cubic meters. Additionally there is a C category road adjacent to the nearest receptors (three blocks of terraced houses at Portobello now situated in the AQMA declared for NO<sub>2</sub>) which has an AADT of 6,500 vehicles. The C road runs parallel to the A1, between the A1 and the houses, whilst the northbound filling station lies between the A1 (northbound) and the C road. The nearest receptors are situated within 1.5 metres of the kerbside of the C road, and 30 metres of the petrol pumps.

A benzene monitoring survey, using Gradko diffusion tubes, was carried out at this site during 2003/04. The results, which showed that there were no exceedences of the 2010 benzene objectives at any of the monitoring locations, were reported in the annual Progress Report of 2005. The mean concentration for the 9 months monitoring period was 2.08µg/m<sup>3</sup>, well below the 2010 objective of 5µg/m<sup>3</sup> and the maximum mean concentration for any two week monitoring period was 5.04µg/m<sup>3</sup>, marginally above the objective.

As there have been no significant changes to this situation, and no further petrol stations identified which meet the specified criteria, Gateshead Council does not intend to carry out any further assessment work for this pollutant.

## **5.4 Poultry Farms**

Gateshead Council confirms that there are no poultry farms meeting the specified criteria.

## **6 Commercial and Domestic Sources**

### **6.1 Biomass Combustion – Individual Installations**

Gateshead Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.2 Biomass Combustion – Combined Impacts**

Gateshead Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.3 Domestic Solid-Fuel Burning**

Gateshead Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

## **7 Fugitive or Uncontrolled Sources**

Gateshead Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## **8 Conclusions and Proposed Actions**

### **8.1 Conclusions from New Monitoring Data**

Results from both automatic and diffusion tube monitoring for NO<sub>2</sub> during 2008 show that both of the air quality objectives were met at all but one location, which was only a marginal exceedence of the annual mean objective within the Town Centre AQMA. Additionally, there were borderline results for the annual mean AQO at two further locations within the Town Centre AQMA. There were no exceedences of either of the objectives within the Portobello AQMA. However, Gateshead Council does not consider it appropriate to revoke the AQMA's based on only one year's data – this is discussed in the Council's Further Detailed Assessment of NO<sub>2</sub> recently submitted to Defra for appraisal.

Monitoring has not identified any potential or actual exceedences at relevant locations outside the existing AQMA'S.

Results from automatic Monitoring for PM<sub>10</sub> during 2008 have shown that that both of the air quality objectives were comfortably met at both of the monitoring locations.

For both NO<sub>2</sub> and PM<sub>10</sub> monitoring results have shown a downward trend in annual mean concentrations from 2006 to 2008.

### **8.2 Conclusions from Assessment of Sources**

No new developments or changes in existing pollutant sources which have been assessed during earlier rounds of the review and assessment process, which may have a significant impact on pollutant concentrations have been identified by this USA.

### **8.3 Proposed Actions**

The Updating and Screening Assessment has not identified a need to proceed to a Detailed Assessment for any pollutant, or any need for additional monitoring, or changes to the existing monitoring programme (a report of the Further Detailed Assessment of NO<sub>2</sub> for the existing AQMA's was submitted to Defra in April 2009 and is awaiting appraisal).

Monitoring of both nitrogen dioxide and PM<sub>10</sub> will continue at all of the monitoring locations, and an annual Progress Report submitted to Defra in 2010.

## **9 References**

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

Defra (Air Quality Consultants): Local Authority Review and Assessment Helpdesk and Website

Defra (AEA ): R & A website - DifTPAB spreadsheet

Gateshead Council: Official Guide

Further Detailed Assessment of NO2 2009 (unpublished)

Annual Progress Report 2008

Town Centre Air Quality Action Plan 2008

Detailed Assessment of NO2 2007

Updating & Screening Assessment 2006

Further Detailed Assessment of NO2 2006

Annual Progress Report 2005

Detailed Assessment of NO2 2005

Updating & Screening Assessment 2003

R & A Stage 3 2000

R & A Stage 1 1999



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## **Appendices**

Appendix A: QA/QC Data

Appendix B: Maps showing NO<sub>2</sub>/PM<sub>10</sub> Monitoring Locations

Appendix C: Monthly NO<sub>2</sub> Diffusion Tube Results 2008

## Appendix 1: QA:QC Data

### Diffusion Tube Bias Adjustment Factors

The diffusion tubes (50% TEA in acetone) were supplied and analysed by Jesmond Dene Laboratory for the 2006 and 2007 surveys. For 2008 Harwell Scientific Services laboratory was used. Both laboratories participate in the WASP QA/QC procedure. All of the monitoring data presented in this report have been adjusted to account for diffusion tube bias. For 2006 and 2007 the correction factors from the R&A helpdesk website: spreadsheet versions 03/07 for 2006 (factor 0.84) and 04/08 (factor 0.79) for 2007 were used.

For 2008 the bias adjustment factor used (0.77) was calculated using the monitoring data from Gateshead's 5 co-location studies, and the AEA DifTPAB spreadsheet.

### Factor from Local Co-location Studies (if available)

The combined bias adjustment factor from Gateshead's 5 co-location studies for 2008 is 0.77. The NO<sub>2</sub> annual mean concentrations and the correction factor for each site are shown in table A1 below.

**Table A1: Local Bias Adjustment Factors**

Site Name	Site Type	Dif Tube Mean Concentration ( $\mu\text{g}/\text{m}^3$ )	Automatic Monitor Mean ( $\mu\text{g}/\text{m}^3$ )	Bias Adjustment Factor
Trinity Ct	Roadside	40	30	0.75
Lychgate Ct	Roadside	42	32	0.76
Bottle Bank	Roadside	47	35	0.74
*Portobello	Roadside	35	29	0.83
A1 Dunston	Roadside	45	34	0.77

\* 8 months data 1 May to 31 December 2008

### Discussion of Choice of Factor to Use

Gateshead local adjustment factor has been used for the 2008 data so that there is consistency with the factor used in the Further Detailed Assessment which was submitted to Defra earlier in April, before the factors for 2008 had been published. Data was available from the 5 co-location sites, all of which have triplicate tubes. The factor since published on the R&A website (spreadsheet version 03/09) was 0.76 for Gateshead, although the laboratory has not yet been amended to Harwell Scientific Services, in which case the combined factor to be used would be 0.78 for the Harwell laboratory surveys, including Gateshead's, slightly higher than the Gateshead combined factor. The use of this factor instead would have only a marginal effect on the results, including the exceedences/borderline cases which are in any case situated within the existing AQMA's, which Gateshead Council does not intend to revoke at this stage.

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### PM Monitoring Adjustment

Pm10 concentrations are measured using TEOM samplers. The default 1.3 factor has been applied to all data to estimate gravimetric concentrations.

### QA/QC of automatic monitoring

Gateshead Council measures NO<sub>2</sub> concentrations using real-time chemiluminescent monitors. The monitors are operated by a suitably trained officer and are serviced twice per year in accordance with manufacturers instructions. Services and repairs are carried out by Cassella Measurement who took over ETi, the company by whom the automatic monitors were originally supplied. Calibrations and filter changes are carried out at two-week intervals, and Lychgate, Portobello and the A1 Dunston monitors also have an automatic daily calibration feature. Ratification of the monitoring data is carried out by Sunderland University and the ratified data is made available on the Tyne & Wear air quality website: [tyneandwearair.sunderland.ac.uk](http://tyneandwearair.sunderland.ac.uk).

### QA/QC of diffusion tube monitoring

The precision and accuracy of the triplicate NO<sub>2</sub> diffusion tubes co-located with the automatic monitors was checked using the AEA DifTPAB spreadsheet. The results are summarised in Table A2 below.

**Table A2: Precision and Accuracy of Triplicate Tubes**

Site Name	Diff Tubes Mean ( $\mu\text{g}/\text{m}^3$ )	Diff Tube Data Capture	Mean CV (Precision)	Automatic Monitor Mean ( $\mu\text{g}/\text{m}^3$ )	Automatic Data Capture
Trinity Ct	40	100	5 Good	30	98 Good
Lychgate Ct	42	100	4 Good	32	97 Good
Bottle Bank	47	100	8 Good	35	100 Good
*Portobello	35	100	8 Good	29	93 <b>Poor</b>
A1 Dunston	45	100	8 Good	34	99 Good

### Appendix 2: Maps showing NO2/PM10 Monitoring Locations

Figure 1: Gateshead Town Centre AQMA (extended) NO2 Monitoring Locations, and PM10 (easternmost automatic monitoring location)

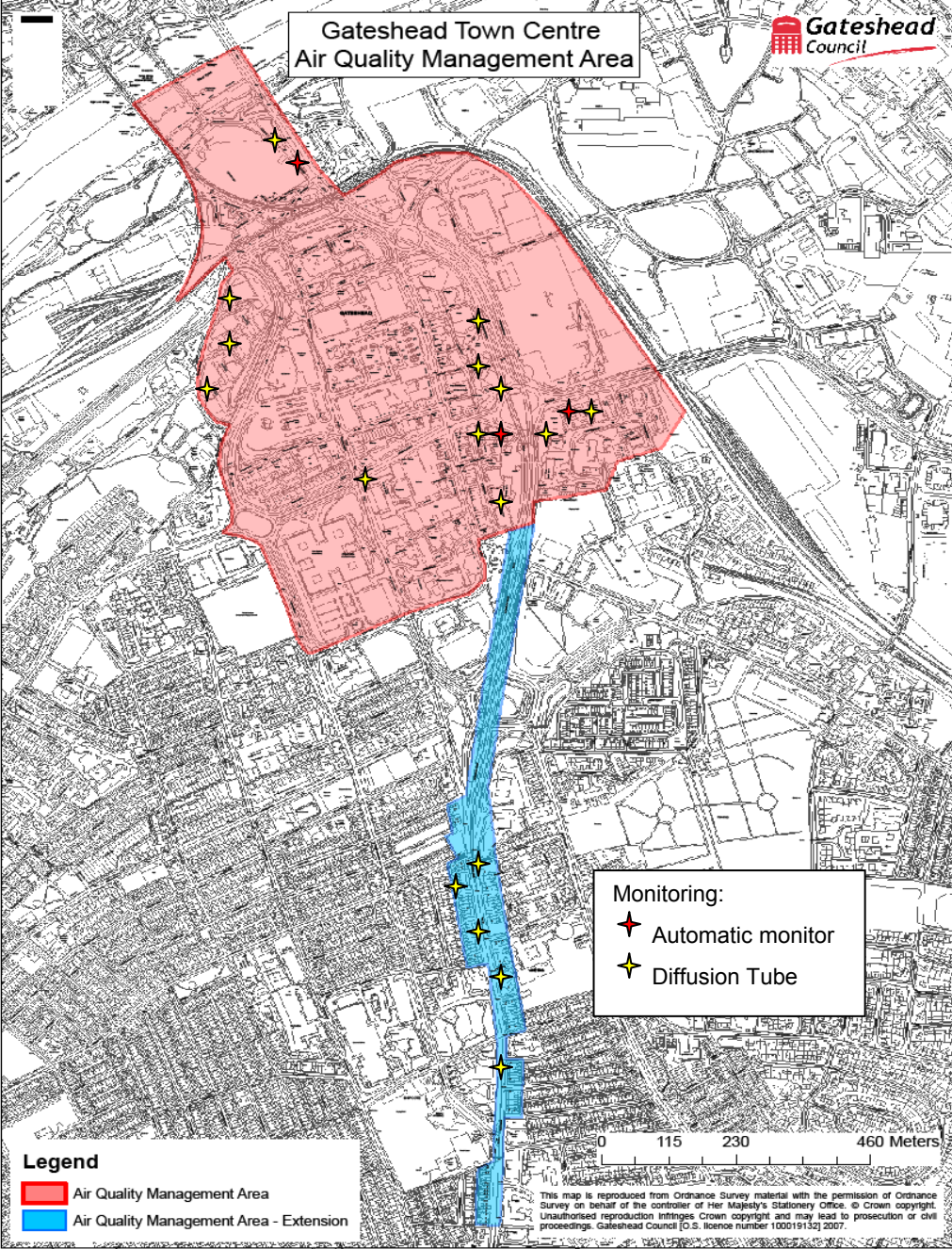


Figure 2: Portobello AQMA – NO2 Monitoring Locations

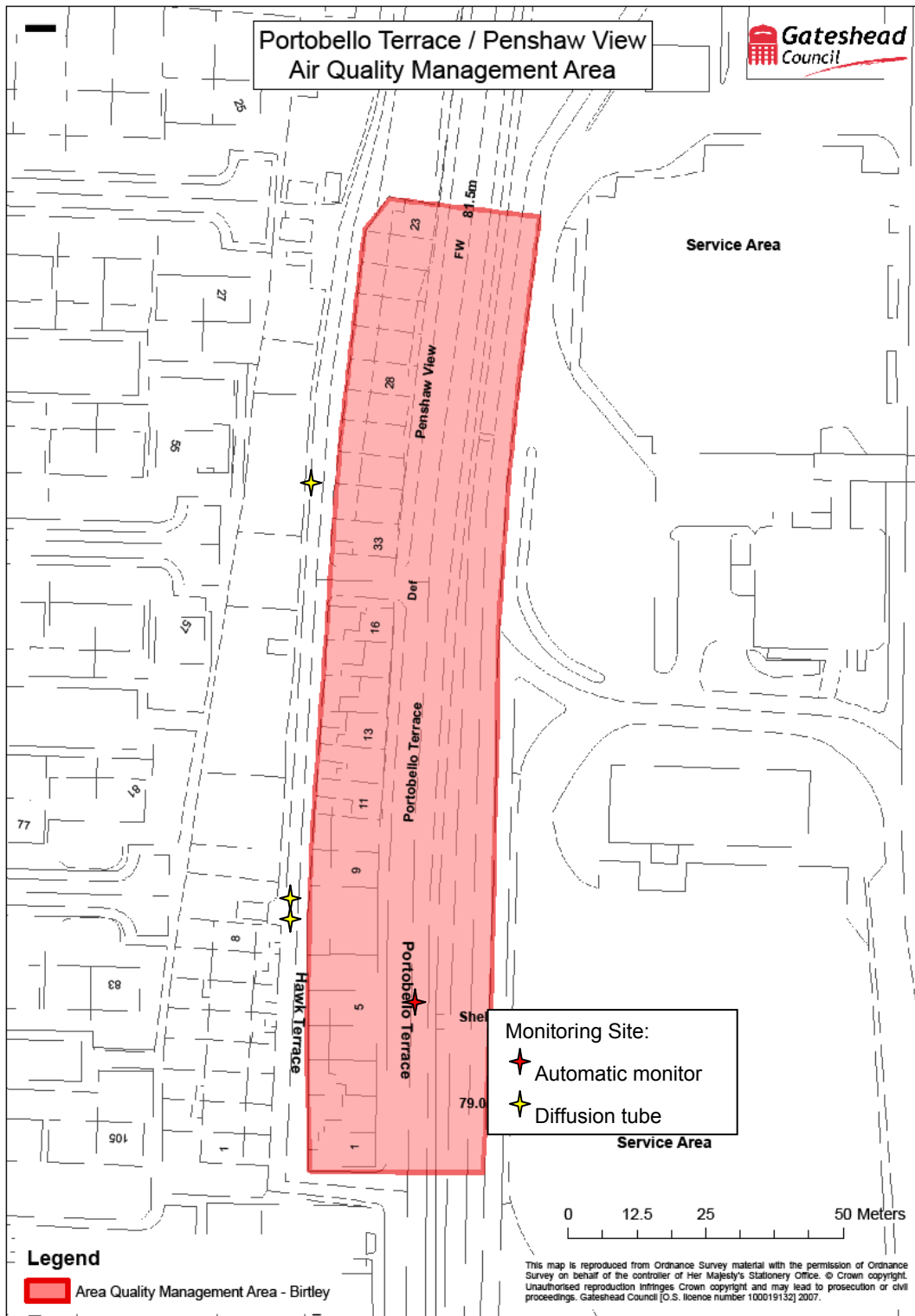
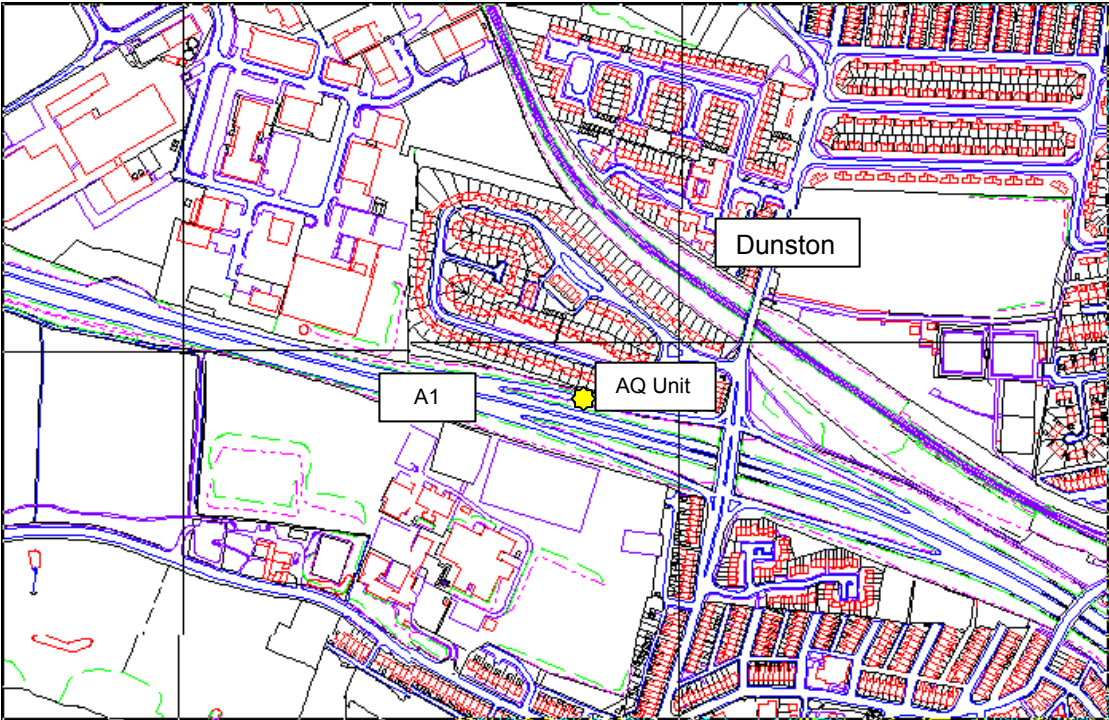


Figure 3: NO2/PM10 Automatic Monitor Location, A1 South Dunston Sliproad



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**Appendix 3: Monthly NO2 Diffusion Tube Results 2008**

Tube No.	Site	Jan 08	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2	Priory Ct	45.8	41.3	33.3	48.3	44.3	29.9	34	36.1	40.4	36.3	45	50
4	North Dene	30.6	29.3	28.1	46	50.9	29.9	32.1	29.2	37.3	25.1	45.5	43
10	Portobel Tce	56.3	54.3	39.7	59.9	43.8	37.5	44.3	44.9	55	45.5	58.3	54
12	Coach Rd	32.2	33	20.3	48.5	58.3	25.8	32	26.7	33.9	19.4	31.1	16.4
13	Coach Rd	35.5	34.7	23.6	43.8	37.6	25.4	29.8	30.2	39.5	24.9	37.8	11.7
16	Portobel Tce	57.7	50	39.6	58.9	50.6	42.1	42.5	45.4	55.3	46.3	52.7	54.6
31	West Way	31.6	23.5	25.5	46.5	43.7	25.6	31.2	30.3	36.9	27	39.3	38
35	A1 Dunston	56.3	55.3	36.8	51.1	29.2	35.1	33.8	36.4	46.9	41.6	25.9	57.9
37	LychgateAQU	41.3	49.5	37.5	46.7	38	32.3	35.8	18		40.5	51.6	49.1
38	LychgateAQU	47.7	44.2	38.5	46.2	37.8	32.6	33.9	36.9	42.6	81.3	51.9	44
39	LychgateAQU	48.7	48.1	39.2	45.6	31.8	26.9	34.3	36.8	43	40.8	51.3	50.5
40	A1 Dunston	57	56.9	42.5	50.2	36	30.9	34.1	44.2	42.1	45.9	40.3	52.2
41	A1 Dunston	59.1	44.8	37.9	52.5	34.6	31.5	32.6	35	40.8	47.7	48.7	46.7
42	Trinity Ct	52	57.1	44.3	58.5	63.8	46.2	45.6	50.9	57.8	53.5	32.4	56.8
43	Regent Ct	34.5	34.6	29.2	36.8	32.5	28.2	25.9	31	39.4	28.3	39.7	37.1
44	Adelaide Ct	41.7	39.4	30.1	39.1	29.2	20.8	30.3	31.4	40	33	34.9	46.3
45	Melbourn Ct	35	37.9	23.7	38.4	38.2	29	30.9	32.4	40.8	31.9	35.2	22
46	Team Vale V	40.9	40.8	30	41.5	42.1	30.1	31.7	32.6	48.4	32.8	63.8	40.1
47	Dryden Rd	57.8	56.4	40.7	57.1	39		45	47.6	56	61.5	41	60.8
50	Chowd Bk	44.5	43.3	36.7	46	39.9	33.4	35.6	35.4	46.3	42.4		58.1
51	Cuthbert St	39.2	46.6	34.6	48.3	43.5	36.5	36.9	31.3	51.3	42.1	44.5	45.5
52	Coatswth Rd	39.5		31.1	46	32.7	29.7	34.8	12.6	40	37.3	44.6	42.7
53	Hill St Bt Bk	54.6		43.3	58.3	30.5		43.1	34.5	60.7	42.9	52.6	
54	Sage	47.7	51.4	32.2	38.5	32.1	22.7	25.2		29.4	34.8	42.2	44.2
55	Trinity AQU	35.1	40.2	32.9	52.1	58.6	35.3	41.1	46.3	38.9	30.3	40.8	43.9
56	Trinity AQU	36.7	39.3	35.9	48.7	52.9	34.5	41.2	36.5	42.3	29.6		43.8
57	Trinity AQU	36.1	42.5	30	49.3	61	33.8	32.4	34.9		29.2	30.9	43.6
58	Park Ct	39.6	41.3	32.5		18.1	28	33.4	34.4	34.9	33.3	39.1	45.1
59	Pearreth Ct	42.2	45	36.2	47.8	39	31.4	33.1	35.9	48.9	37.5	44.8	10.5
60	Lychgate Ct	36.3	42.1	36.8	41.2	32.3	30.3	29.4	32.8	37.3	36.4	41.4	43.6
61	Monk Ct	36.5	43.3		35.8	31.5	26	25.7	30.1	37	32	35	40.6
62	St Marys Ct	41	36.2	26.1	31.5	26.5	23	18.1	25	36	28.1	35.2	36.2
63	Bot Bk AQU	53	50.4	39.4	57.5	45.9	39	40.9	47.2	58.8	45	37.2	44.1
64	Baltic flats	47.6	46.9	34	44.9	43.3	26.2	29.3	30.6	42.9	36.5	47	45.6
65	Bot Bk AQU	54	53.8	36.9	55.7	51.7	38	36.2	41.6	55.1	49.4	35.6	45.8
66	Bot Bk AQU	57.8	57.8	39.7	56.1	53.9	31.1	43	34.8	55.7	70.5	48.6	28.6
68	PortobelAQU				44.1	42.4	24.5	25.3	20.1	39.9	24.1	44.3	36.7
69	PortobelAQU				46	41.8	21.3	29.2	29.8	41.9	28.8	33.8	28.8
70	PortobelAQU				46.5	40.6	25.4	21.8	27.8	39.8	28	55.1	19.4
71	Dur Rd LF1	42.3	13.1	44	50.3	34.1	35.1	36.2	38.5	44.9	39.9	58.7	45.7
72	DurRd News	55.1	64.8	45.8	57.8	39.3	48.3	44.7	53.2	54.6	58.1	58.6	47.8
74	Penshaw Vw	51.4	46.4	36.2	52.7	43.9	29.3	38.5	34.8	40.3	39.3	51	43.3
75	Dur Rd LF 2	33.8	34.3	23.5	36.7	37.2				35.7	16.9	30.2	33.2
76	Dur Rd LF 3	32.7	30.3	22	32.2	28.9	18.5	22.3	25	29	24.3	34.2	34
80	DurRd Gthd1	14.7	34	23.9	34.3	30.4	21.2	25	26.6	33.8	26.2	28.1	25.3
81	DurRd Gthd2	39.9	41.3	31.2	40.5	21	28.4	27.4	30.5	40.2	38.1	42	37.6
82	DurRd Gthd3	33.8	35.4	25.3	34.2	25.4	23.1	24.3	22.2	33.5	38.1	41.2	38.3
83	DurRd Gthd4	39.6	49.4	30.6	49.9	43.1		34.4	36.7	46.8	29.4	37.4	41.9
84	DurRd Gthd5	43	47.8	35.7	41.7	34.7	25.1	30.8	36.5	45.7	33.2	43.2	27.7

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