

**NPL REPORT
DQL-AS-027**

**UK Non-Automatic Hydrocarbon
Network:**

Annual Report for 2005

David Butterfield,
Kevin Whiteside &
Paul Quincey

NOT RESTRICTED

March 2006

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Approved on behalf of the Managing Director, NPL
by Dr Stuart Windsor, Business Leader, Analytical Science Group

Executive Summary

This Report summarises operational matters and the data obtained by the Non-Automatic Hydrocarbon Network in the year 2005.

The background, methods used and site locations are given in Sections 1 and 2.

Annual average data for benzene and 1,3-butadiene, and data capture, are given in Section 3. No sites exceeded the European Union Limit Value for benzene or the UK Air Quality Objectives for benzene and 1,3-butadiene.

Notable operational events in 2005, including anomalous measurements from Barnsley and Middlesbrough, are summarised in Section 4.

Section 5 examines long term trends for benzene and 1,3-butadiene and compares them with the trends expected from the UK National Atmospheric Emissions Inventory. Trends in concentration over the period 1994 to 2002 are significantly downward and agree well between the two methods. The apparent upward trend in benzene concentration since this Network was set up in 2002, noted in the 2004 report, seems to have been the result of the unusual meteorological conditions in the summer of 2003. Trends in benzene since 2002 are generally downward, especially at the higher concentration sites. Recent trends in concentration at Harwell and Marylebone Road, from the Automatic Hydrocarbon Network, are also presented. The trend and recent concentrations at Marylebone Road appear to show some inconsistencies that merit further investigation.

Section 6 compares the 2005 Network data with the geographical distribution predicted by Defra-funded modelling data. As for 2004, measured concentrations of benzene at a large majority of background sites are higher than those predicted by the model, suggesting that the emissions may be underestimated. Concentrations of 1,3-butadiene are generally too low to allow any similar conclusion to be drawn.

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UK Non-Automatic Hydrocarbon Network

Annual Report for 2005

1. Introduction

1.1 General Background, History and Methods

The Hydrocarbon Networks exist within the framework of Defra's Air Quality Science Programme, the aims of which are to determine the magnitude of sources, exposure and effects of air pollutants on human health and the natural environment, to develop a better understanding of underlying processes, and to underpin the development and implementation of national and international strategies in order to reduce impacts. The Programme includes a combination of monitoring Networks, emission inventories, atmospheric modelling, strategic evaluation, scientific research and dissemination to assist in these aims.

The Automatic and Non-Automatic Hydrocarbon Networks were established in 2002, following on from the previous Hydrocarbon Network, which measured 25 species of hydrocarbon on an hourly basis at 13 sites. As more benzene monitoring sites were needed to comply with regulations, the Non-Automatic Network was set up using a less expensive method to produce benzene measurements as fortnightly averages at 35 sites. Some of the sites are at the same location as the previous Hydrocarbon Network sites, so that long term trends can be evaluated.

The benzene monitoring method involves pumping ambient air at a rate of about 10 ml/min through duplicate tubes containing the sorbent Carbopack X, with subsequent laboratory analysis of the benzene content of the tubes. This method was validated over a year- long pilot study, whose results are available through the Defra website:

http://www.airquality.co.uk/archive/reports/cat05/0407061411_btex_npl_pilot_final.pdf

The method is described in the paper:

Studies using the sorbent Carbopack X for measuring environmental benzene with Perkin-Elmer-type pumped and diffusive samplers, Nicholas A Martin, David J Marlow, Malcolm H Henderson, Brian A Goody and Paul G Quincey: *Atmospheric Environment* **37** (2003) 871-879.

In addition to the benzene measurements, 1,3-butadiene is measured at 10 sites using a diffusive technique, also using Carbopack X as the sorbent. The method is described in the paper:

Studies using the sorbent Carbopack X for measuring environmental 1,3-butadiene with pumped and diffusive samplers, Nicholas A Martin, Philippa Duckworth, Malcolm H Henderson, Nigel R W Swann, Simon T Granshaw, Robert P Lipscombe, Brian A Goody: *Atmospheric Environment* **39** (2005) 1069-1077

1.2 Regulatory Background - Update

The current ambient benzene legislation is given in The Air Quality Limit Values Regulations 2003 (UK), which came into force 9 Sept 2003. The requirements are identical to those of the EU Directive 2000/69/EC, and the relevant Table is given below:

Benzene

	<i>Averaging period</i>	<i>Limit value</i>	<i>Margin of tolerance</i>	<i>Date by which limit value is to be met</i>
Limit value for the protection of human health	Calendar year	5 $\mu\text{g}/\text{m}^3$	5 $\mu\text{g}/\text{m}^3$ reducing on 1st January 2006 and every 12 months thereafter by 1 $\mu\text{g}/\text{m}^3$ to reach 0 $\mu\text{g}/\text{m}^3$ by 1st January 2010	1st January 2010

5 $\mu\text{g}/\text{m}^3$ is expressed at 293 K and 101.3 kPa and is equivalent to 1.54 ppb.

In the Table, the Margin of Tolerance means that Member States can exceed the Limit Value for a limited period if necessary.

As part of the National Air Quality Strategy there are also Air Quality Objectives, which can be stricter than the Limit Value, and which also include 1,3-butadiene. These are published in the UK National Air Quality Strategy Addendum (2003).

The Objective for England and Wales is the same as in The Air Quality Limit Values Regulations above.

The Objective for Scotland and Northern Ireland is an annual average of 3.25 $\mu\text{g}/\text{m}^3$ (1 ppb), by 1/1/2010.

1,3-Butadiene does not feature in EU legislation except as an ozone precursor in the Ozone Directive 2002/3/EC. The annual average Objective in the National Air Quality Strategy is 2.25 $\mu\text{g}/\text{m}^3$ (1 ppb).

Standard methods for measuring benzene concentration, which include the method used in the Network, have been published by CEN as EN 14662 Parts 1 to 5.

1.3 Units of Measurement

Regulations in the United Kingdom have in the past expressed concentrations of gases in units of molar parts per billion (1,000,000,000) - ppb. This is the ratio of the number of benzene molecules, for example, to the total number of molecules in the volume of air of interest. These units have the advantage that if the temperature or pressure of the air changes, the concentration remains the same.

Current UK and European legislation sets limit value concentrations as micrograms of pollutant per cubic metre of air ($\mu\text{g}/\text{m}^3$). When these units are used without correcting to a standard temperature and pressure, the same "packet" of air will have a different concentration as these properties of the air change. The legislation specifies that the air

volume must be corrected to be at a standard temperature of 293 K (about 20°C), and a pressure of 101.3 kPa (about average atmospheric pressure at sea level).

Both sets of units are used in this report.

The conversion factors between the two sets of units are:

for benzene	1 ppb = 3.25 $\mu\text{g} \cdot \text{m}^{-3}$
for 1,3-butadiene	1 ppb = 2.25 $\mu\text{g} \cdot \text{m}^{-3}$.

2. Map and Table of Sites at the end of 2005

At the end of 2005, the sites in the Network were located as follows:

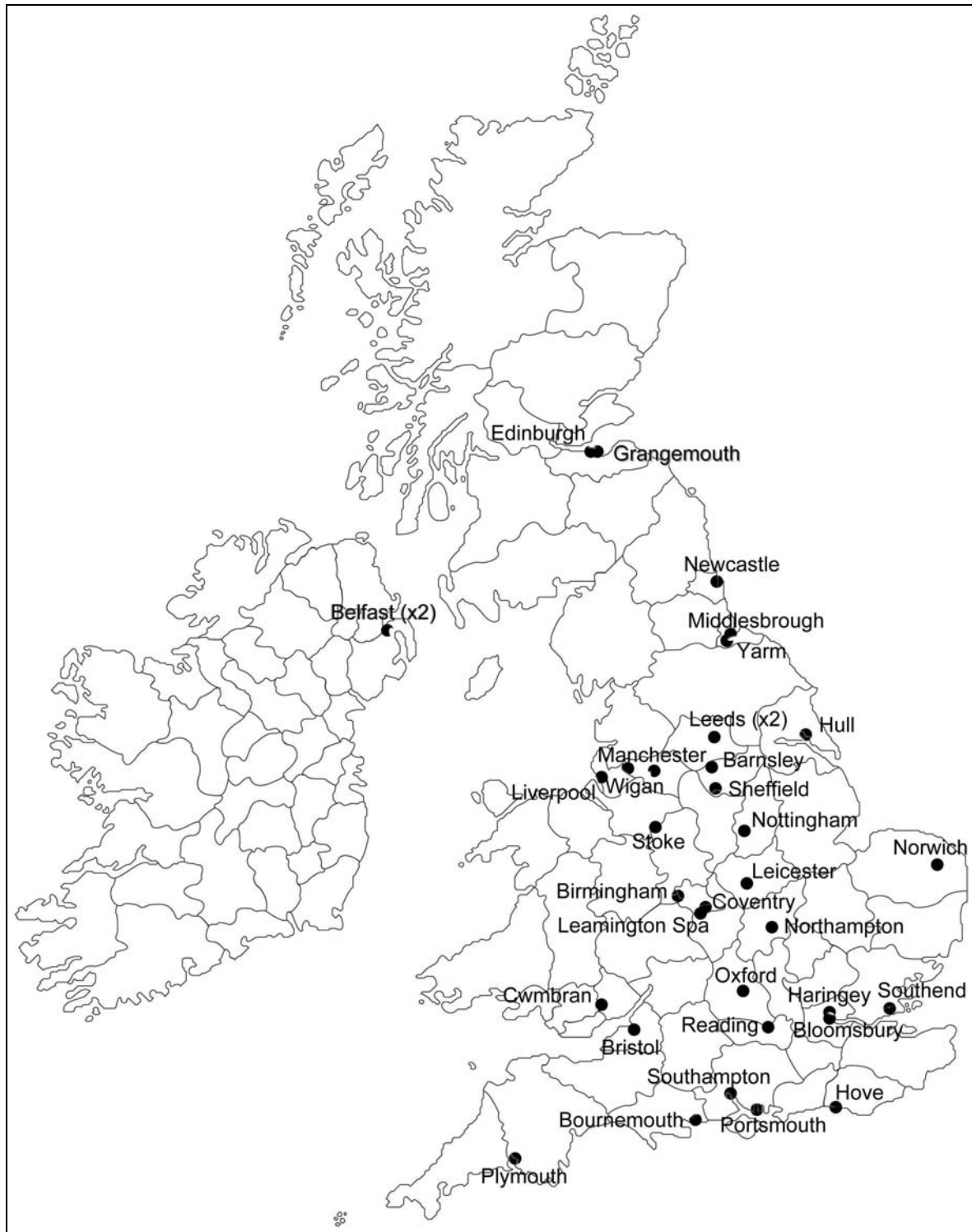


Figure 1: map of sites across the United Kingdom

Table 1 lists the sites with their Local Site Operators and whether they also measure 1,3-butadiene.

Table 1: Network sites

Site Name	Type	Local Site Operator	1,3-butadiene
Barnsley Gawber		Barnsley Council	
Belfast centre		Belfast City Council	Y
Belfast roadside	Roadside	Belfast City Council	Y
Birmingham roadside	Roadside	Birmingham City Council	Y
Bloomsbury		Casella Stanger	
Bournemouth		Bournemouth Borough C	
Bristol Old Market	Roadside	Bristol City Council	Y
Coventry Memorial Park		Coventry City Council	
Cwmbran		Torfaen CBC	
Edinburgh St Leonard's		City of Edinburgh Council	
Grangemouth	Industrial	Falkirk Council	Y
Haringey roadside	Roadside	King's College London	Y
Hove roadside	Roadside	Brighton and Hove City C	
Hull Freetown		Hull City Council	
Leamington Spa		Warwick District Council	
Leeds centre		Leeds City Council	Y
Leeds roadside	Roadside	Leeds City Council	Y
Leicester centre		Leicester City Council	
Liverpool Speke		Faber Maunsell	
Manchester Piccadilly		Manchester City Council	
Middlesbrough	Industrial	Middlesbrough Borough C	Y
Newcastle		Newcastle City Council	
Northampton		Northampton Borough C	
Norwich centre		Faber Maunsell	
Nottingham centre		Nottingham City Council	
Oxford centre		Oxford City Council	
Plymouth		Plymouth City Council	
Portsmouth		Portsmouth City Council	
Reading		Reading Borough Council	
Sheffield		Sheffield City Council	
Southampton		Southampton City Council	
Southend-on-sea		Southend-on-Sea BC	
Stoke centre		City of Stoke on Trent	
Wigan centre		Wigan Metropolitan BC	
Yarm	Roadside	Stockton on Tees BC	

All sites are Urban Background except where stated in the Type column. Further details on these sites can be found on the UK Automatic Urban and Rural Network Site Information Archive at:

<http://www.stanger.co.uk/siteinfo/>

2.1 Networks meeting and other dissemination activities

The Annual Meeting for the Automatic and Non-Automatic Hydrocarbon Networks was held at NPL on 11 October 2005. The Programme included:

Janet Dixon (DEFRA)	Update from the Department
David Butterfield and Paul Quincey (NPL)	Non-Automatic Network issues and related developments
Steve Telling (Netcen)	Automatic Network issues
Emma Yates (Bristol U)	Measurements of Non Methane Hydrocarbons at Mace Head
Wei Wei Qu (Imperial Coll)	10 Year Review of UK Hydrocarbon Data

Paul Quincey also made a presentation on ozone precursor data available from the Non-Automatic Network at the RSC meeting “Diffusive Monitoring, Techniques and Applications” in London on 14 December 2005.

This talk was based on the Report DQL-AS-017 “UK Non-Automatic Hydrocarbon Network: Measurement of Selected Ozone Precursors from Existing Chromatograms” by Hansa D’Souza, Malcolm Henderson and Paul Quincey, published in March 2005.

3. Data and Data Capture for 2005

3.1 Benzene: Comparison with Limit Values and Objectives

Table 2: Benzene Annual Average Concentrations 1/1/05 to 31/12/05

Site Name	ppb	$\mu\text{g.m}^{-3}$ *
Barnsley Gawber	1.39	4.52
Belfast centre	0.34	1.11
Belfast roadside	0.84	2.73
Birmingham roadside	0.97	3.15
Bloomsbury	0.46	1.50
Bournemouth	0.28	0.91
Bristol Old Market	0.76	2.47
Coventry Memorial Park	0.29	0.94
Cwmbran	0.24	0.78
Edinburgh (see 4.1)	0.20	0.65
Edinburgh St Leonard's	0.32	1.04
Grangemouth	0.58	1.89
Haringey roadside	0.70	2.28
Hove roadside	0.57	1.85
Hull Freetown	0.43	1.40
Leamington Spa	0.40	1.30
Leeds centre	0.39	1.27
Leeds roadside	0.85	2.76
Leicester centre	0.39	1.27
Liverpool Speke	0.45	1.46
Manchester Piccadilly	0.43	1.40
Middlesbrough	0.94	3.06
Newcastle	0.30	0.98
Northampton	0.30	0.98
Norwich Centre	0.39	1.27
Nottingham centre	0.48	1.56
Oxford centre	0.43	1.40
Plymouth	0.33	1.07
Portsmouth	0.33	1.07
Reading	0.37	1.20
Sheffield	0.49	1.59
Southampton	0.52	1.69
Southend-on-sea	0.34	1.11
Stoke centre	0.56	1.82
Wigan centre	0.32	1.04
Yarm	0.83	2.70

* standardised to 293K and 101.3 kPa.

The annual average concentration of benzene at each site over the calendar year 2005 is given in Table 2. It should be noted that some of the later data is unratified, but it is not expected that it will change significantly.

Annual average concentrations at all sites were below the Limit Value of $5 \mu\text{g.m}^{-3}$ set by the 2nd European Daughter Directive 2000/69/EC.

Within the UK Air Quality Strategy Addendum, published in 2003, the Objectives for benzene are:

- for England and Wales, an annual average of $5 \mu\text{g/m}^3$ to be achieved by 31 December 2010;
- for Scotland and Northern Ireland, a running annual mean of $3.25 \mu\text{g/m}^3$ to be achieved by 31 December 2010.

These Objectives were met in 2005 for all sites.

Data capture figures are given in Table 3.

Table 3: Benzene Data Capture 1/1/05 – 31/12/05

Site	Data capture, %	Site	Data capture, %
Leamington Spa	77	Barnsley Gawber	100
Liverpool Speke	87	Belfast Centre	100
Haringey Roadside	91	Birmingham Roadside	100
Leeds Roadside	93	Bournemouth	100
Portsmouth	94	Coventry Memorial Park	100
Norwich	94	Cwmbran	100
Plymouth	94	Grangemouth	100
Edinburgh (combined)	95	Hove Roadside	100
Belfast Roadside	96	Hull Freetown	100
Middlesbrough	96	Leeds Centre	100
Reading	96	Manchester Piccadilly	100
Bristol Old Market	97	Newcastle	100
Yarm	97	Northampton	100
Bloomsbury	98	Nottingham Centre	100
Stoke Centre	98	Sheffield	100
Leicester	99	Southampton	100
Oxford Centre	99	Wigan Centre	100
Southend-on-Sea	99		

The reasons for data loss at those sites with less than 90% data capture were:

Leamington Spa (77%)

25/07/05 – 21/10/05

No samples were taken over the period when the monitoring site building was being replaced.

Liverpool Speke (87%)

10/01/05 – 22/02/05

As previously reported, data was deleted as an NPL six-monthly audit found that the sample line was sampling cabin air rather than ambient air. The pipe work is understood to have been altered during AURN activities.

3.2 1,3-Butadiene: Comparison with Limit Values and Objectives

Annual average concentrations and data capture for 1,3-butadiene are given in Table 4.

Table 4: 1,3-butadiene measurements and data capture 1/1/05 – 31/12/05

Site	ppb	$\mu\text{g.m}^{-3}$ *	Data Capture, %
Grangemouth	0.11	0.25	54
Birmingham Roadside	0.07	0.16	100
Bristol Old Market	0.06	0.14	97
Leeds Roadside	0.05	0.11	96
Haringey Roadside	0.03	0.07	92
Belfast Roadside	0.02	0.05	99
Leeds Centre	0.02	0.05	100
Middlesbrough	0.02	0.05	93
Belfast Centre	0.01	0.02	100

* standardised to 293K and 101.3 kPa.

The method has a much larger measurement uncertainty below 0.05 ppb, so that the values below the red line should be treated accordingly.

All measured concentrations are below the United Kingdom Air Quality Strategy Objective of $2.25 \mu\text{g/m}^3$ (1 ppb). There is no European Union Limit Value for 1,3-butadiene.

Reasons For Data Capture Below 90%:

Grangemouth (54%) As previously reported, persistent theft of sampling tubes, a significant operating expense, had reduced data capture in 2004 and 2005 to such an extent that tubes had been withheld until security at the site was upgraded. The sampling point has now been moved to a more secure location.

4. Notable Operational Events in 2005

4.1 Edinburgh Site Relocation

The building that housed the benzene sampler in Edinburgh Medical School was demolished in October 2005 at very short notice. Monitoring stopped at this site on 5th October 2005. Due to no suitable new location for the benzene sampler at the Medical School site it was decided to relocate the sampler to the St Leonard's AURN site. Monitoring started at the St Leonard's site on 25th October 2005.

4.2 Local hydrocarbon source at Barnsley

The Barnsley Gawber annual benzene concentration rose dramatically in 2005, to 1.39 ppb from 0.41 ppb in 2004. This was due to coal tar deposits being uncovered by a new housing development close to the site. The coal tar had originally been used to cap old mining works. When the coal tar was removed and analysed it was found to contain a significant source of benzene. As it took a considerable length of time to remove the coal tar, and the local population would have been exposed to the released benzene, it was decided to keep the elevated concentrations in the data set. Raised concentrations of benzene were measured between 29/11/04 and 21/09/05. The following graph shows the measured benzene concentrations over the history of the site:

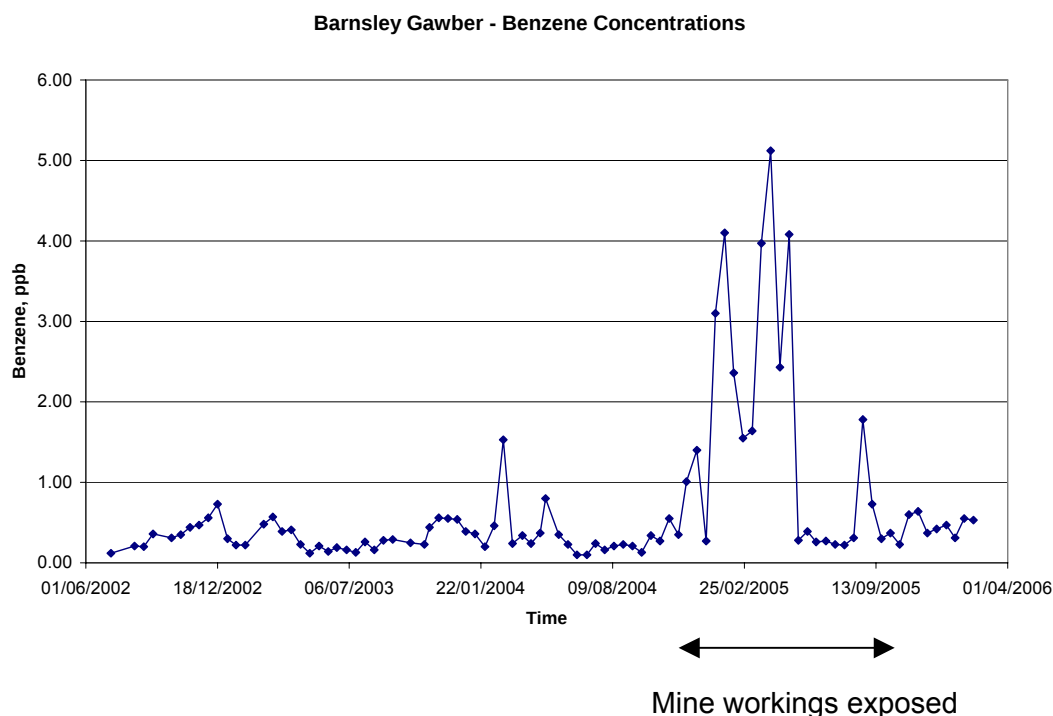


Figure 2: Barnsley Gawber benzene concentrations

4.3 Anomalous benzene measurement at Middlesbrough

The Middlesbrough annual average benzene concentration also showed a significant increase, at 0.94 ppb in 2005 compared with 0.58 ppb in 2004. This was due primarily to a single two-week elevated measurement between 19/07/05 and 02/08/05. The measured concentration over this period was 11.17 ppb. The two-week period before this period was also higher than normal, but not so significantly elevated. From examining wind data provided by the local council it was determined that the prevailing wind for these two periods was from the industrial area of Middlesbrough and therefore that the concentrations were likely to be real, and relevant to the local population. As such an event has rarely been observed in the past, it is likely that this period coincided with unusually high emissions from the industrial area, but this has not been confirmed. The following graph shows the period of the elevated benzene concentrations:

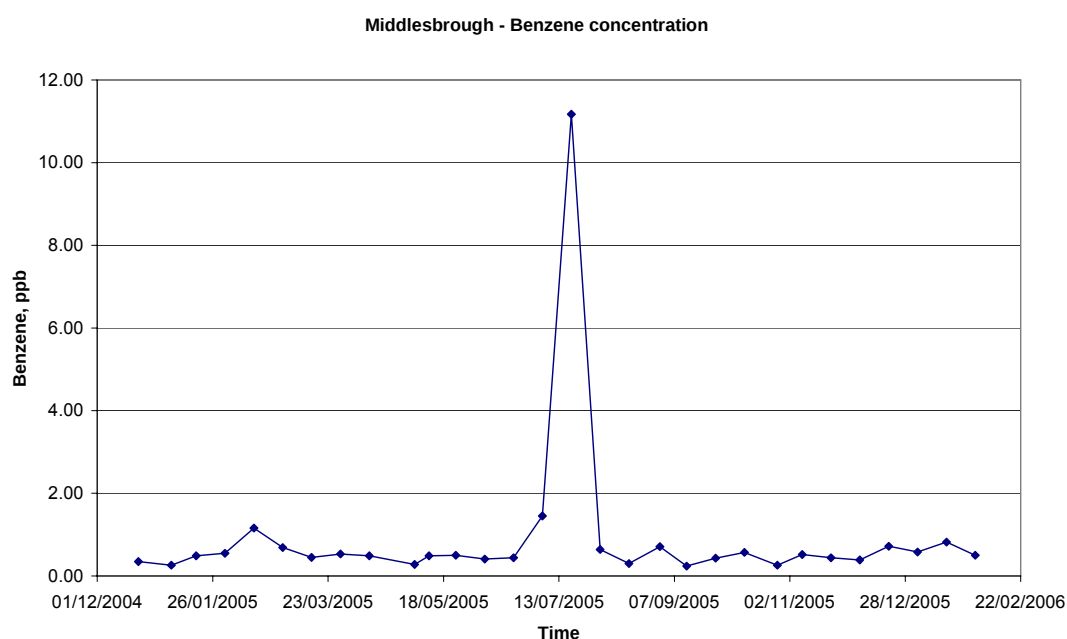


Figure 3: Middlesbrough benzene concentrations

5. Long Term Trends and Comparisons with the UK Emission Inventory and Other Data

5.1 Benzene

Benzene data from the four years of operation of the pumped samplers is shown in Figure 4. For clarity the number of sites have been divided into two graphs according to concentration. Benzene concentrations have generally dropped over the history of the Network except in 2003 when there were unusual meteorological conditions in the Summer affecting much of Europe. The reductions in concentration are more notable at the higher concentration (typically traffic influenced) sites.

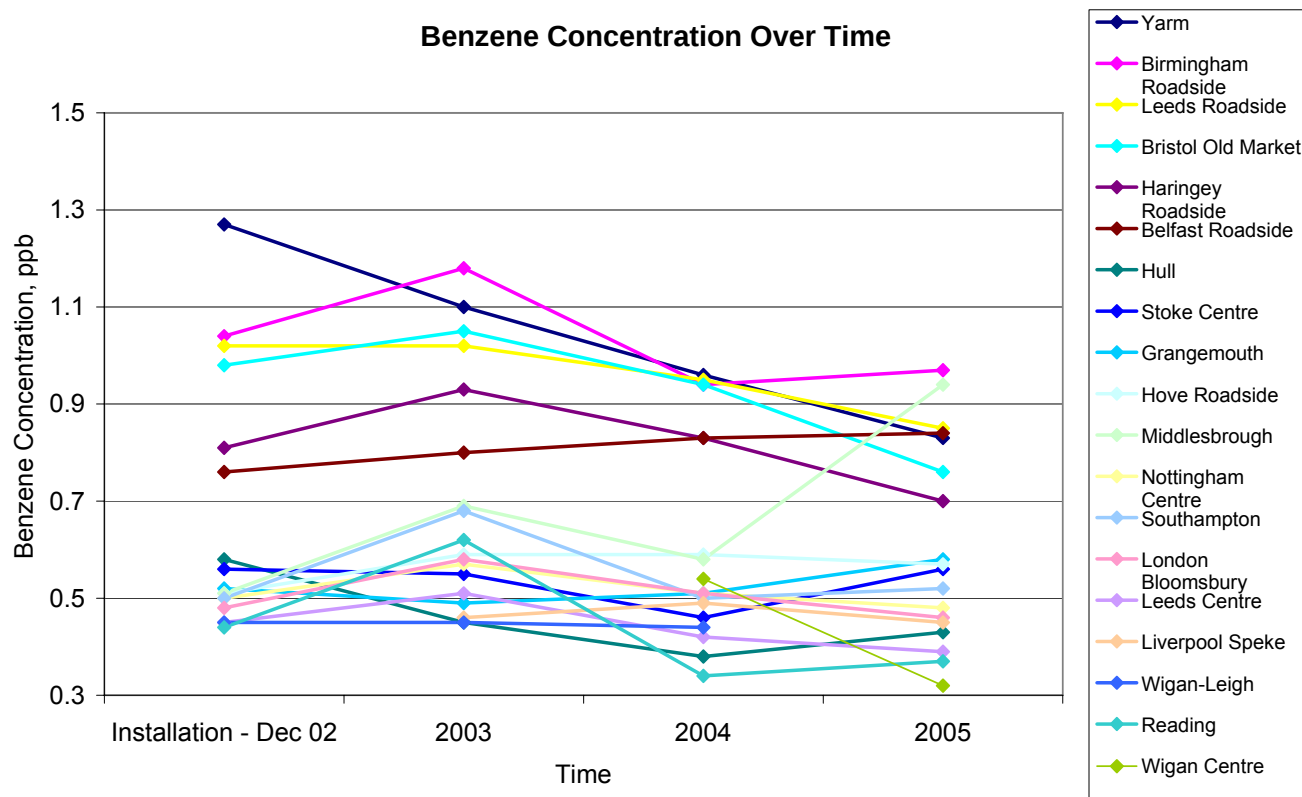


Figure 4a: Recent Annual Average Benzene Concentrations (high concentration)

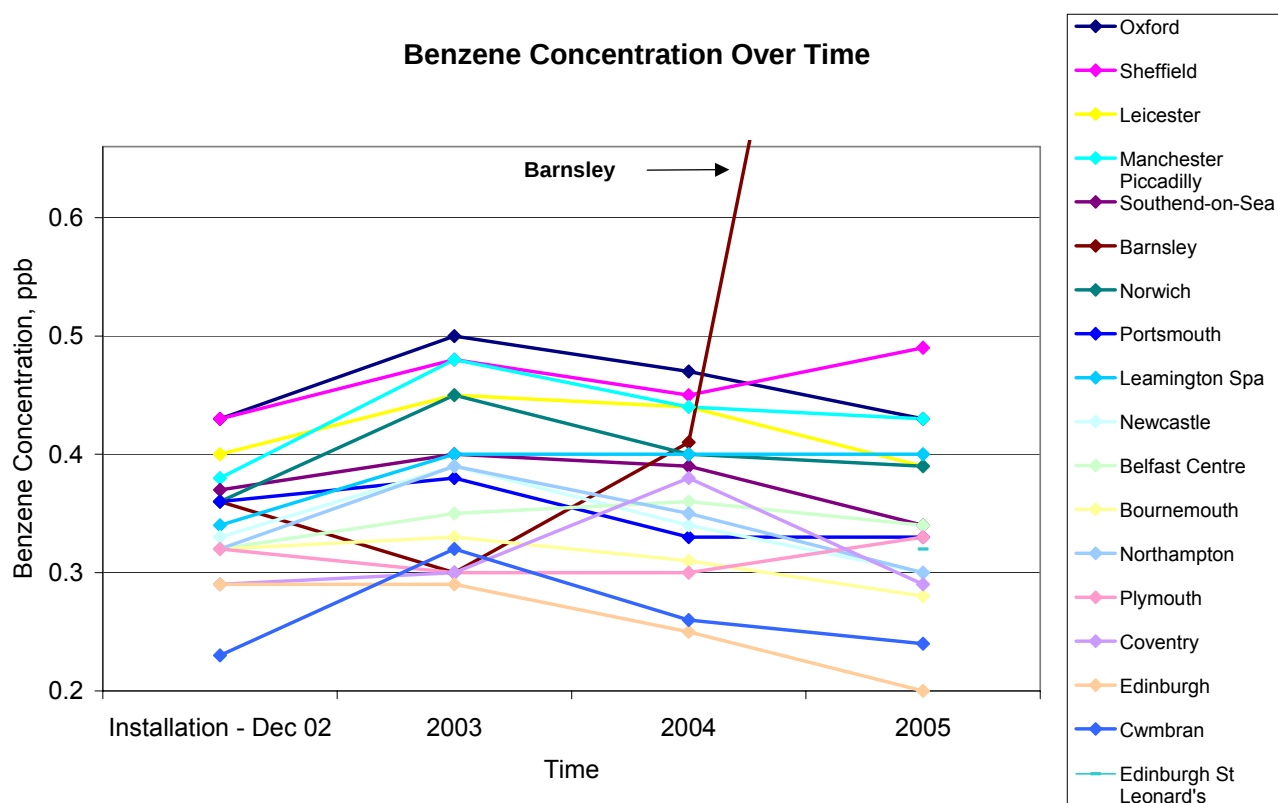


Figure 4b: Recent Annual Average Benzene Concentrations (low concentration)

Longer term trends can be gauged from data at sites that were monitoring benzene in the previous Hydrocarbon Network. This is shown in Figure 5. The results show that the recent small increase in 2003 follows a larger general decrease since 1994 and that concentrations continue to decrease in 2004 and 2005. The anomalous increase in concentration at Middlesbrough was described in Section 4.

This long term trend is well matched by the trend predicted by the National Atmospheric Emissions Inventory, shown in Figure 6.

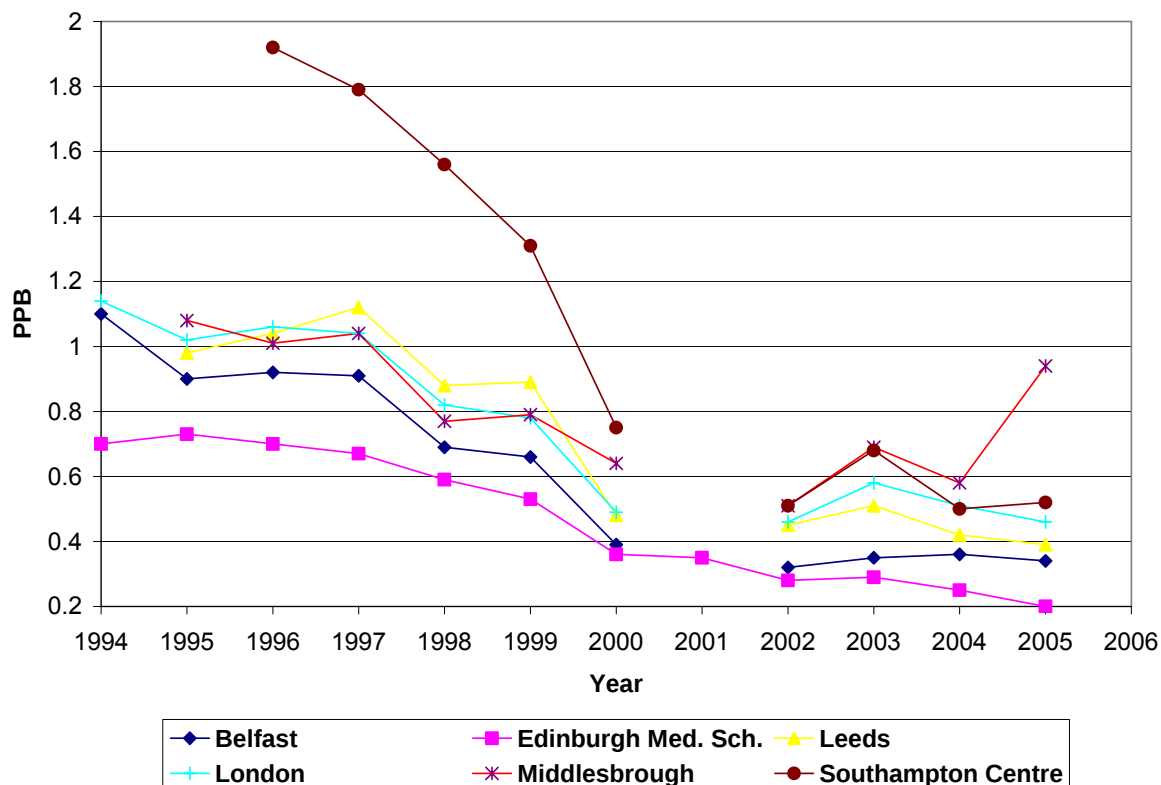


Figure 5: Long Term Trends in Benzene Concentration

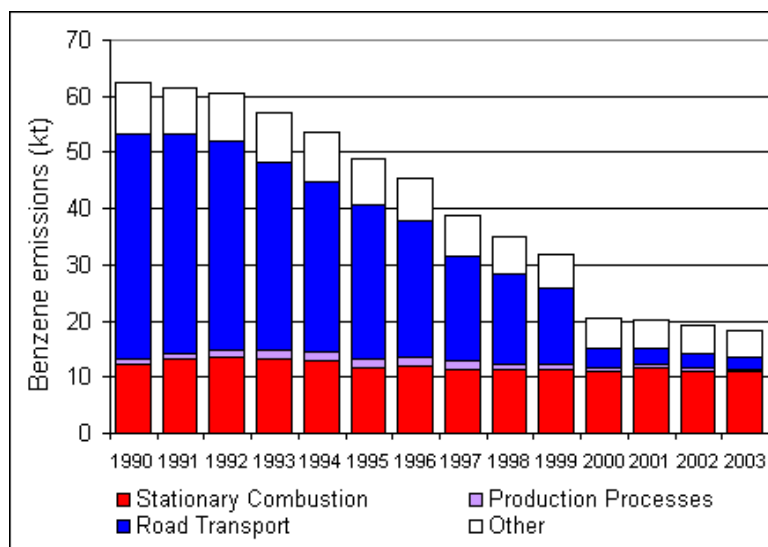


Figure 6: Emission Inventory Trend for Benzene

Figure 7 shows annual average benzene data obtained since the start of the Automatic Hydrocarbon Network in 2000. The sites shown are the only two to have operated continuously over that time, Harwell and Marylebone Road. The rural Harwell site has relatively stable concentrations of around 0.15 ppb, compatible with the measured concentrations at less-polluted urban background sites in the Non-Automatic Network of around 0.3 ppb. However, the Marylebone Road data shows a much sharper decrease over

this period than either the Non-Automatic Network roadside sites or the UK Emissions Inventory – a factor of three in 5 years. This may be due to road traffic emissions having a proportionately greater influence at this site, but this reason would not account for the fact that the measured benzene concentration at Marylebone Road in 2005 (0.67 ppb) is lower than that measured in the same year at some of the Non-Automatic Network roadside sites, the highest being Birmingham Roadside at 0.97 ppb. Discrepancies of around 0.4 ppb between these benzene monitoring methods at Marylebone Road were noted during the Pilot Study in 2001, available through:

http://www.airquality.co.uk/archive/reports/cat05/0407061411_btex_npl_pilot_final.pdf.

Further work by NPL in 2002 indicated that the difference was consistent with a non-linearity in the Perkin Elmer instrument which would make it under-read when concentrations fall below about 1 ppb. This situation merits further investigation.

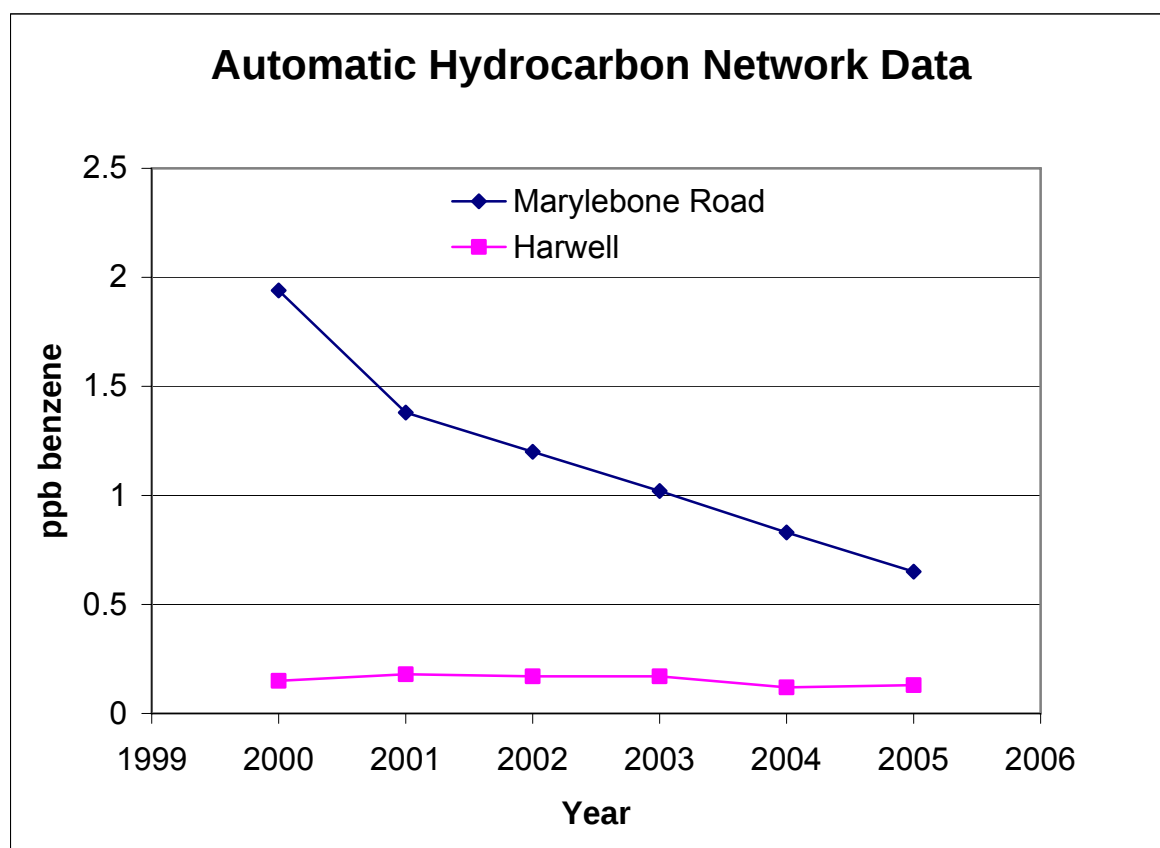


Figure 7: 2000 – 2005 Automatic Hydrocarbon Network Data
(data courtesy of Netcen)

5.2 1,3-Butadiene

Figure 8 shows recent 1,3-butadiene data at the five sites where long term measurements are available. The downward trend follows the trend predicted by the National Atmospheric Emissions Inventory, shown in Figure 9.

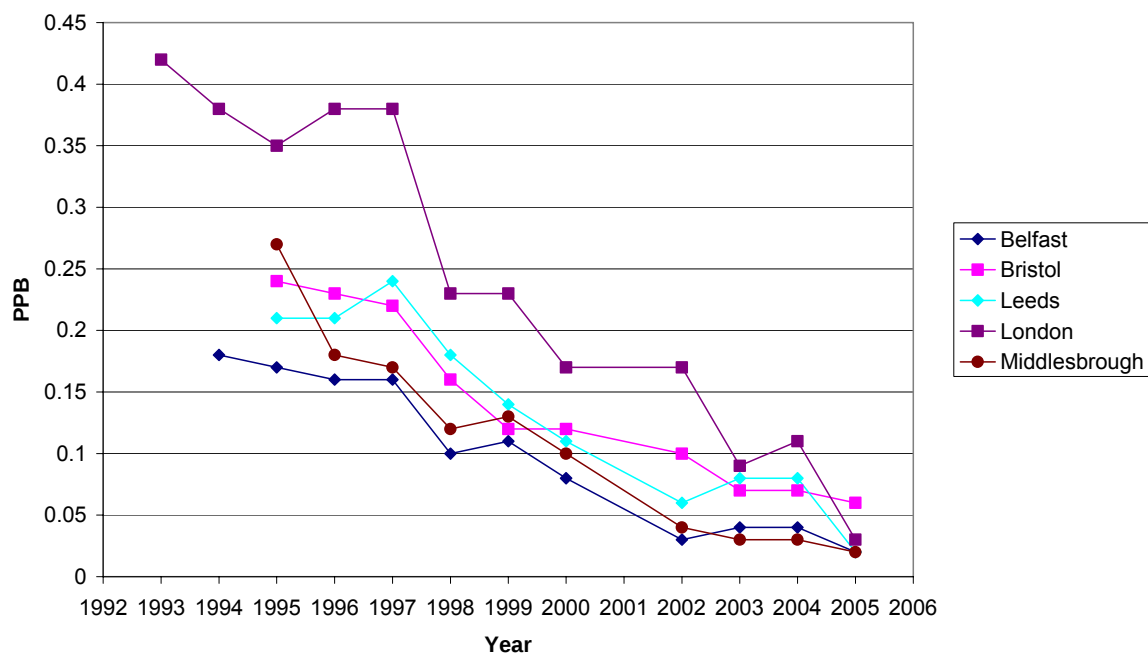


Figure 8: Long Term Trends in 1,3-Butadiene Concentration

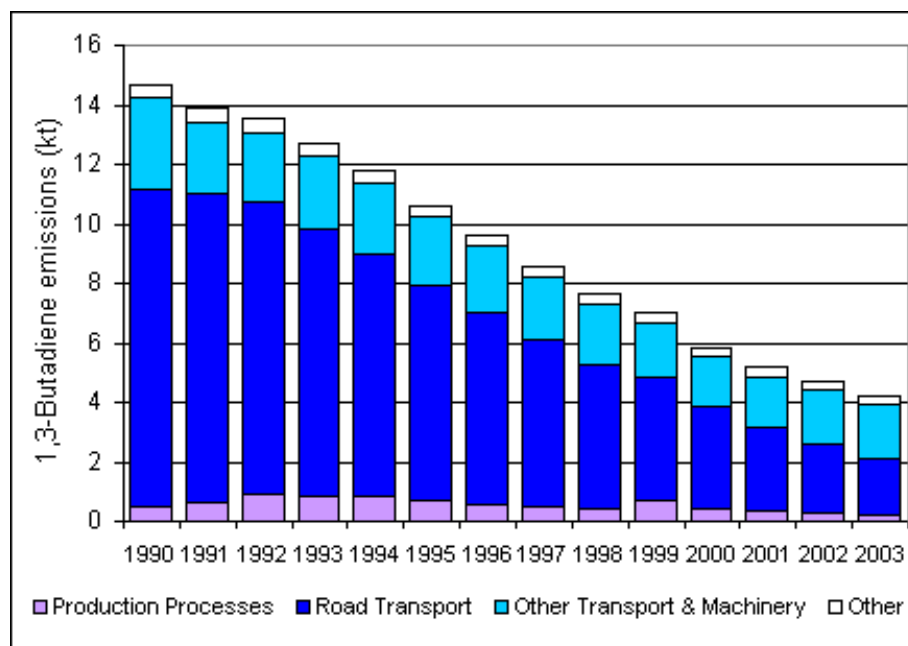


Figure 9: Emission Inventory Trend for 1,3-Butadiene

6. Geographical Distribution and comparison with modelling data

6.1 Benzene

Figure 10 shows the estimated annual mean background benzene concentrations in 2003, from projections made in 2001. The method used is given in the report:

Projecting and mapping benzene concentrations in support of the Air Quality Strategy review
AEAT/ENV/R 0722

available through

www.aeat.co.uk/netcen/airqual/reports/naqs2001/aeat-env-r-0722.pdf

To quote from this report:

Site-specific analysis techniques and high resolution mapping approaches have been used to assess concentrations for a recent and future years. Approaches have been updated with the latest pollutant models and information from the National Atmospheric Emissions Inventory (NAEI), incorporating the 10-Year Plan for Transport (DETR, 2000a) in pollutant projections. Projections to 2010 have been made using both the current baseline emissions inventory and by way of a sensitivity analysis, an alternative emissions scenario which provides more optimistic estimates for benzene emissions reductions by taking into account the impact of lower benzene content in fuels upon emissions from non-catalyst vehicles.

More recent concentration mappings starting from 2004 did not include benzene or 1,3-butadiene.

Figure 10: Estimated Mean Benzene Concentrations in 2003
(from http://www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf)

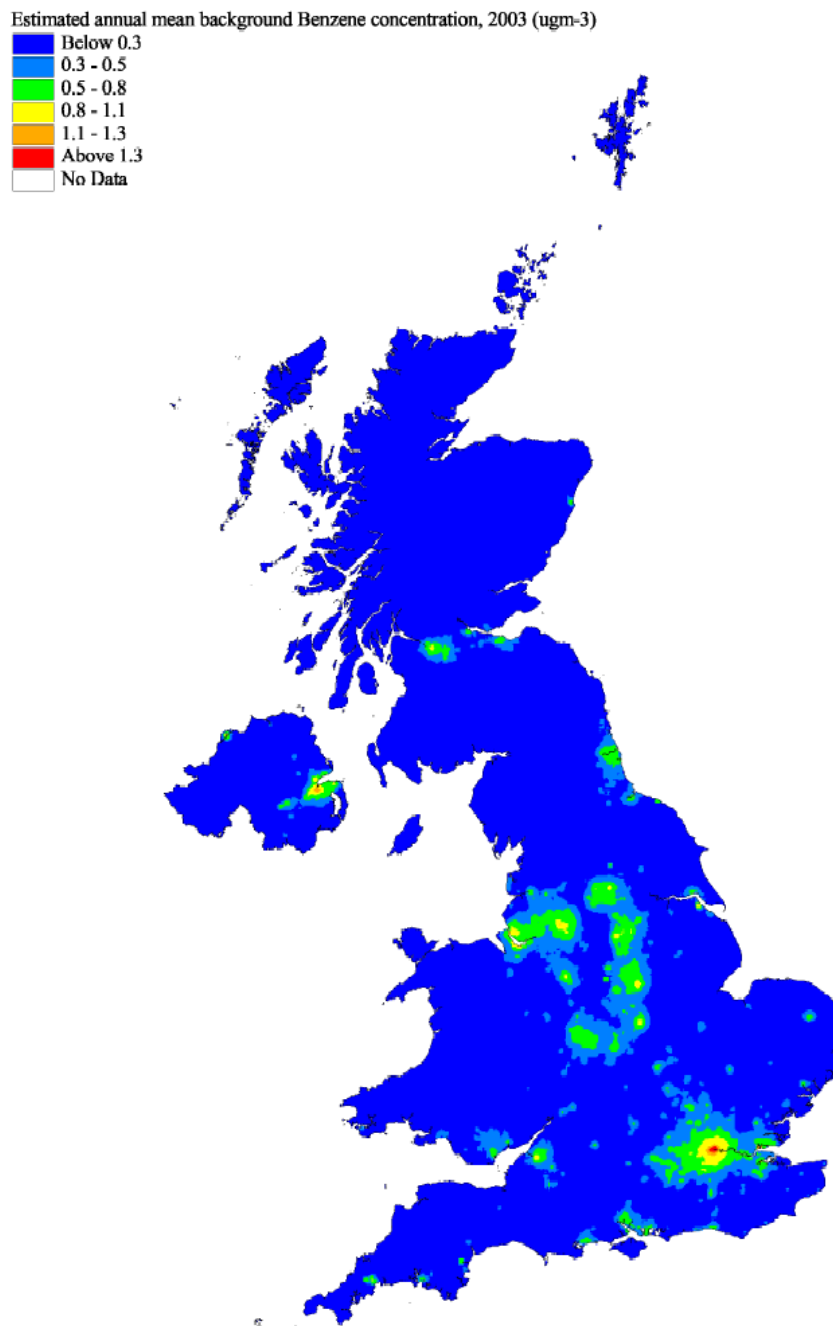


Table 5 compares the modelled concentration for each site in 2003, determined by inspection of the map, with the measured concentration for 2005.

Table 5: Comparison of Modelled and Measured Data for Benzene.

Site Name	Modelled zone ($\mu\text{g}/\text{m}^3$) 2003	Measured concentration ($\mu\text{g}/\text{m}^3$) 2005	Measured is High, Low, or Agrees?	Comment
Barnsley Gawber	0.5-0.8	4.5	H	Local source
Belfast centre	1.1-1.3	1.1	A	
Belfast roadside	1.1-1.3	2.7	H	Roadside site
Birmingham roadside	0.5-0.8	3.2	H	Roadside site
Bloomsbury	>1.3	1.5	A	
Bournemouth	0.5-0.8	0.9	H	
Bristol Old Market	0.8-1.1	2.5	H	Roadside site
Coventry Memorial Park	0.5-0.8	0.9	H	
Cwmbran	0.5-0.8	0.8	A	
Edinburgh	0.5-0.8	0.7	A	
Grangemouth	0.3-0.5	1.9	H	Industrial site
Haringey roadside	0.8-1.1	2.3	H	Roadside site
Hove roadside	0.5-0.8	1.9	H	Roadside site
Hull Freetown	0.5-0.8	1.4	H	
Leamington Spa	0.5-0.8	1.3	H	
Leeds centre	0.8-1.1	1.3	H	
Leeds roadside	0.8-1.1	2.8	H	Roadside site
Leicester centre	0.8-1.1	1.3	H	
Liverpool Speke	0.8-1.1	1.5	H	
Manchester Piccadilly	0.8-1.1	1.4	H	
Middlesbrough	0.5-0.8	3.1	H	Industrial site
Newcastle	0.5-0.8	1.0	H	
Northampton	0.5-0.8	1.0	H	
Norwich Centre	0.5-0.8	1.3	H	
Nottingham centre	0.8-1.1	1.6	H	
Oxford centre	0.5-0.8	1.4	H	
Plymouth	0.5-0.8	1.1	H	
Portsmouth	0.5-0.8	1.1	H	
Reading	0.5-0.8	1.2	H	
Sheffield	0.8-1.1	1.6	H	
Southampton	0.5-0.8	1.7	H	
Southend-on-sea	0.5-0.8	1.1	H	
Stoke centre	0.8-1.1	1.8	H	
Wigan centre	0.5-0.8	1.0	H	
Yarm	0.3-0.5	2.7	H	Roadside site

The roadside or industrial sites all measured higher concentrations than the modelling estimates, as would be expected given that the estimates are for background concentrations. However, the fact that the large majority of background sites also have higher measured concentrations than the modelling estimates suggests that the emissions may be underestimated. The similar pattern here to that observed in 2004 means that meteorological factors are less likely to have played a role in increasing annual average concentrations.

6.2 1,3-Butadiene

Figure 11 shows the estimated annual mean background 1,3-butadiene concentrations in 2003, from modelling of emissions using methods similar to those for benzene.

Figure 11: Estimated Mean 1,3-Butadiene Concentrations in 2003
(from http://www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf)

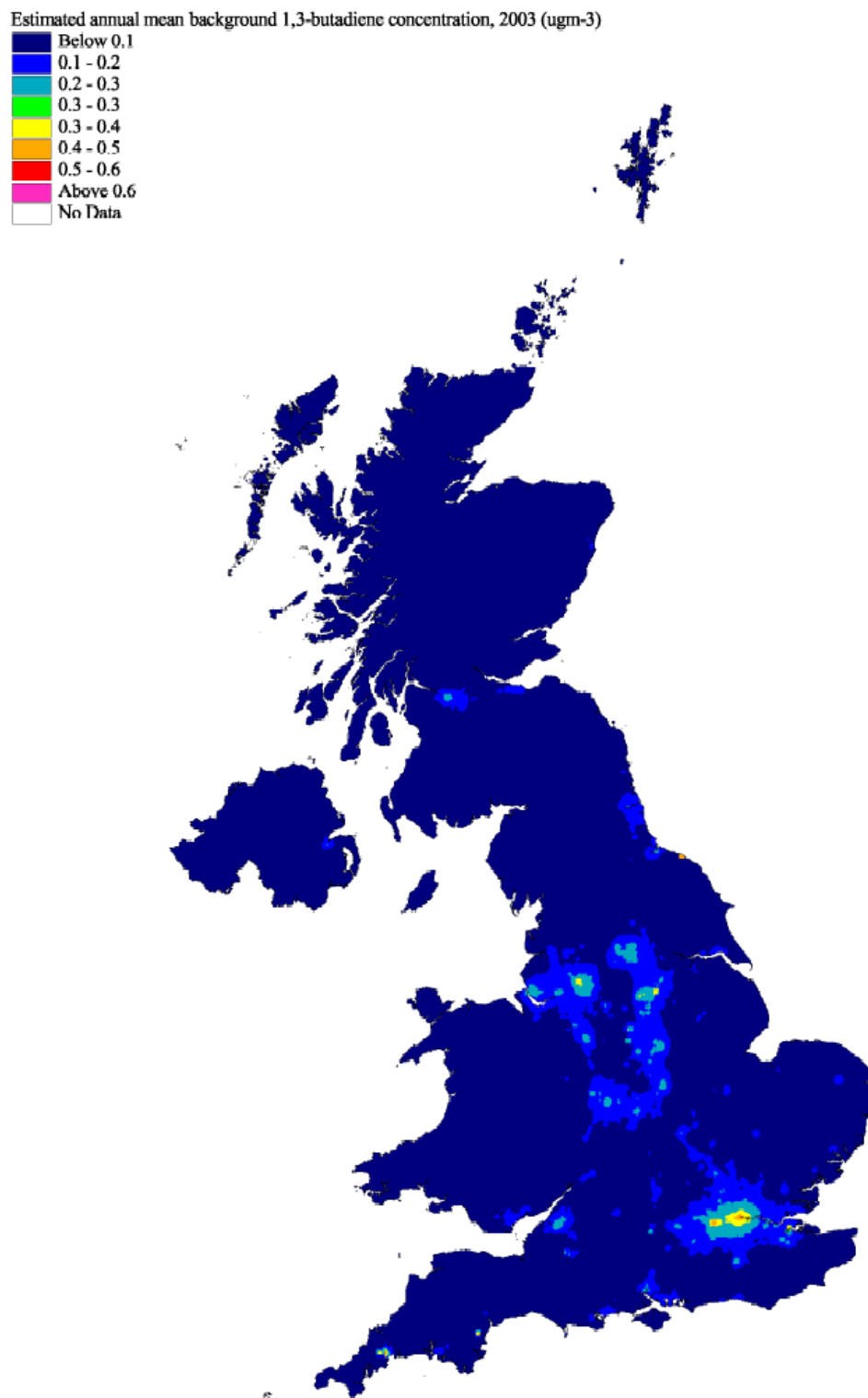


Table 6 compares the modelled concentrations for each site for 2003, determined by inspection of the map, with the measured concentration for 2005.

Table 6: Comparison of modelled and measured data for 1,3-butadiene.

Site Name	Modelled zone ($\mu\text{g}/\text{m}^3$) 2003	Measured concentration ($\mu\text{g}/\text{m}^3$) 2005	Measured is High, Low, or Agrees?	Comment
Belfast centre	0.1-0.2	0.0	L	
Belfast roadside	0.1-0.2	0.1	A	Roadside site
Birmingham roadside	0.2-0.3	0.2	A	Roadside site
Bristol Old Market	0.2-0.3	0.1	L	Roadside site
Grangemouth	0.1-0.2	0.3	H	Industrial site
Haringey roadside	0.2-0.3	0.1	L	Roadside site
Leeds centre	0.2-0.3	0.1	L	
Leeds roadside	0.2-0.3	0.1	L	Roadside site
Middlesbrough	0.1-0.2	0.1	A	Industrial site

Apart from Grangemouth, where the relatively elevated concentration can be attributed to the local oil refinery, measured concentrations of 1,3-butadiene are found to be on the low side of the estimated concentrations, in contrast to the benzene results. This might suggest that 1,3-butadiene estimates are overestimated, but it is also possible that the accuracy of the measurement technique at these low concentrations limits the conclusions that can be drawn from the comparison.

Annex 1a – Fortnightly data - Benzene

Site	Start Date	End Date	Benzene, ppb
Barnsley Gawber	29/12/2004	12/01/2005	0.27
	12/01/2005	26/01/2005	3.10
	26/01/2005	09/02/2005	4.10
	09/02/2005	23/02/2005	2.36
	23/02/2005	09/03/2005	1.55
	09/03/2005	23/03/2005	1.64
	23/03/2005	06/04/2005	3.97
	06/04/2005	20/04/2005	5.12
	20/04/2005	04/05/2005	2.43
	04/05/2005	18/05/2005	4.08
	18/05/2005	01/06/2005	0.28
	01/06/2005	14/06/2005	0.39
	14/06/2005	29/06/2005	0.26
	29/06/2005	13/07/2005	0.27
	13/07/2005	27/07/2005	0.23
	27/07/2005	10/08/2005	0.22
	10/08/2005	24/08/2005	0.31
	24/08/2005	07/09/2005	1.78
	07/09/2005	21/09/2005	0.73
	21/09/2005	05/10/2005	0.30
	05/10/2005	19/10/2005	0.37
	19/10/2005	02/11/2005	0.23
	02/11/2005	16/11/2005	0.60
	16/11/2005	30/11/2005	0.64
	30/11/2005	14/12/2005	0.37
	14/12/2005	29/12/2005	0.42
	29/12/2005	11/01/2006	0.47
Belfast Centre	29/12/2004	11/01/2005	0.34
	11/01/2005	25/01/2005	0.31
	25/01/2005	08/02/2005	0.35
	08/02/2005	23/02/2005	0.42
	23/02/2005	08/03/2005	0.31
	08/03/2005	22/03/2005	0.44
	22/03/2005	05/04/2005	0.61
	05/04/2005	19/04/2005	0.25
	19/04/2005	03/05/2005	0.30
	03/05/2005	17/05/2005	0.22
	17/05/2005	31/05/2005	0.20
	31/05/2005	14/06/2005	0.21
	14/06/2005	28/06/2005	0.20
	28/06/2005	12/07/2005	0.14
	12/07/2005	26/07/2005	0.13
	26/07/2005	09/08/2005	0.18

Site	Start Date	End Date	Benzene, ppb
	09/08/2005	23/08/2005	0.19
	23/08/2005	06/09/2005	0.21
	06/09/2005	20/09/2005	0.36
	20/09/2005	04/10/2005	0.24
	04/10/2005	18/10/2005	0.50
	18/10/2005	01/11/2005	0.32
	01/11/2005	15/11/2005	0.36
	15/11/2005	29/11/2005	0.73
	29/11/2005	13/12/2005	0.34
	13/12/2005	28/12/2005	0.70
	28/12/2005	11/01/2006	0.54
Belfast Roadside	29/12/2004	11/01/2005	0.71
	11/01/2005	25/01/2005	0.59
	25/01/2005	08/02/2005	0.87
	08/02/2005	23/02/2005	0.85
	23/02/2005	08/03/2005	0.89
	08/03/2005	22/03/2005	1.01
	22/03/2005	05/04/2005	1.02
	05/04/2005	19/04/2005	0.53
	19/04/2005	03/05/2005	0.66
	03/05/2005	17/05/2005	0.57
	17/05/2005	31/05/2005	0.41
	31/05/2005	14/06/2005	0.60
	14/06/2005	28/06/2005	0.36
	12/07/2005	26/07/2005	0.50
	26/07/2005	10/08/2005	0.49
	10/08/2005	23/08/2005	0.43
	23/08/2005	07/09/2005	0.32
	07/09/2005	20/09/2005	0.98
	20/09/2005	04/10/2005	0.92
	04/10/2005	18/10/2005	1.55
	18/10/2005	01/11/2005	1.18
	01/11/2005	15/11/2005	1.11
	15/11/2005	29/11/2005	1.53
	29/11/2005	13/12/2005	0.90
	13/12/2005	29/12/2005	1.59
	29/12/2005	11/01/2006	1.05
Birmingham Roadside	23/12/2004	06/01/2005	0.51
	06/01/2005	20/01/2005	0.42
	20/01/2005	03/02/2005	1.43
	03/02/2005	17/02/2005	1.39
	17/02/2005	03/03/2005	1.74
	03/03/2005	31/03/2005	1.63
	31/03/2005	14/04/2005	1.10
	14/04/2005	28/04/2005	1.00
	28/04/2005	12/05/2005	0.58

Site	Start Date	End Date	Benzene, ppb
	12/05/2005	26/05/2005	0.80
	26/05/2005	09/06/2005	0.73
	09/06/2005	23/06/2005	0.64
	23/06/2005	07/07/2005	0.56
	07/07/2005	21/07/2005	1.00
	21/07/2005	04/08/2005	0.97
	04/08/2005	18/08/2005	0.95
	18/08/2005	01/09/2005	0.59
	01/09/2005	15/09/2005	0.80
	15/09/2005	29/09/2005	0.46
	29/09/2005	13/10/2005	0.74
	13/10/2005	27/10/2005	0.78
	27/10/2005	10/11/2005	0.53
	10/11/2005	24/11/2005	2.33
	24/11/2005	02/12/2005	0.59
	02/12/2005	21/12/2005	1.13
	21/12/2005	05/01/2006	1.33
Bloomsbury	29/12/2004	13/01/2005	0.43
	13/01/2005	27/01/2005	0.47
	27/01/2005	09/02/2005	0.79
	09/02/2005	23/02/2005	0.58
	23/02/2005	10/03/2005	0.64
	10/03/2005	24/03/2005	0.69
	24/03/2005	07/04/2005	0.73
	07/04/2005	21/04/2005	0.42
	21/04/2005	05/05/2005	0.42
	05/05/2005	18/05/2005	0.35
	18/05/2005	02/06/2005	0.23
	02/06/2005	15/06/2005	0.34
	15/06/2005	13/07/2005	0.17
	13/07/2005	26/07/2005	0.32
	26/07/2005	09/08/2005	0.40
	09/08/2005	24/08/2005	0.41
	24/08/2005	07/09/2005	0.20
	07/09/2005	20/09/2005	0.50
	20/09/2005	06/10/2005	0.36
	06/10/2005	19/10/2005	0.51
	19/10/2005	02/11/2005	0.26
	02/11/2005	15/11/2005	0.39
	15/11/2005	30/11/2005	0.68
	30/11/2005	13/12/2005	0.56
	13/12/2005	04/01/2006	0.59
Bournemouth	29/12/2004	11/01/2005	0.26
	11/01/2005	25/01/2005	0.27
	25/01/2005	08/02/2005	0.49
	08/02/2005	22/02/2005	0.41

Site	Start Date	End Date	Benzene, ppb
	22/02/2005	08/03/2005	0.45
	08/03/2005	22/03/2005	0.49
	22/03/2005	19/04/2005	0.29
	19/04/2005	03/05/2005	0.18
	03/05/2005	17/05/2005	0.21
	17/05/2005	31/05/2005	0.12
	31/05/2005	15/06/2005	0.15
	15/06/2005	28/06/2005	0.14
	28/06/2005	12/07/2005	0.10
	12/07/2005	26/07/2005	0.13
	26/07/2005	09/08/2005	0.19
	09/08/2005	23/08/2005	0.10
	23/08/2005	06/09/2005	0.15
	06/09/2005	20/09/2005	0.15
	20/09/2005	04/10/2005	0.22
	04/10/2005	18/10/2005	0.33
	18/10/2005	01/11/2005	0.15
	01/11/2005	15/11/2005	0.31
	15/11/2005	29/11/2005	0.46
	29/11/2005	13/12/2005	0.39
	13/12/2005	28/12/2005	0.49
	28/12/2005	10/01/2006	0.57
Bristol Old Market	29/12/2004	11/01/2005	0.65
	11/01/2005	26/01/2005	0.63
	26/01/2005	09/02/2005	1.26
	09/02/2005	23/02/2005	0.92
	23/02/2005	09/03/2005	1.02
	09/03/2005	21/03/2005	0.79
	21/03/2005	06/04/2005	1.32
	19/04/2005	04/05/2005	0.90
	04/05/2005	18/05/2005	0.90
	18/05/2005	01/06/2005	0.30
	01/06/2005	14/06/2005	0.74
	14/06/2005	28/06/2005	0.65
	28/06/2005	11/07/2005	0.33
	11/07/2005	27/07/2005	0.40
	27/07/2005	10/08/2005	0.69
	10/08/2005	23/08/2005	0.65
	23/08/2005	06/09/2005	0.36
	06/09/2005	21/09/2005	0.71
	21/09/2005	05/10/2005	0.56
	05/10/2005	18/10/2005	0.81
	18/10/2005	01/11/2005	0.65
	01/11/2005	16/11/2005	0.86
	16/11/2005	30/11/2005	0.88
	30/11/2005	14/12/2005	1.00
	14/12/2005	28/12/2005	0.69

Site	Start Date	End Date	Benzene, ppb
	28/12/2005	11/01/2006	0.88
Coventry Memorial Park	11/01/2005	25/01/2005	0.30
	25/01/2005	08/02/2005	0.32
	08/02/2005	22/02/2005	0.40
	22/02/2005	08/03/2005	0.56
	08/03/2005	22/03/2005	0.48
	22/03/2005	05/04/2005	0.68
	05/04/2005	20/04/2005	0.23
	20/04/2005	03/05/2005	0.29
	03/05/2005	17/05/2005	0.30
	17/05/2005	01/06/2005	0.17
	01/06/2005	14/06/2005	0.16
	14/06/2005	29/06/2005	0.14
	29/06/2005	12/07/2005	0.09
	12/07/2005	26/07/2005	0.22
	26/07/2005	09/08/2005	0.14
	09/08/2005	23/08/2005	0.18
	23/08/2005	06/09/2005	0.12
	06/09/2005	20/09/2005	0.17
	20/09/2005	04/10/2005	0.18
	04/10/2005	18/10/2005	0.32
	18/10/2005	01/11/2005	0.19
	01/11/2005	15/11/2005	0.26
	15/11/2005	29/11/2005	0.48
	29/11/2005	13/12/2005	0.40
	13/12/2005	29/12/2005	0.30
	29/12/2005	10/01/2006	0.59
Cwmbran	17/12/2004	04/01/2005	0.38
	04/01/2005	24/01/2005	0.25
	24/01/2005	07/02/2005	0.42
	07/02/2005	23/02/2005	0.20
	23/02/2005	10/03/2005	0.38
	10/03/2005	30/03/2005	0.21
	30/03/2005	11/04/2005	0.31
	11/04/2005	27/04/2005	0.27
	27/04/2005	18/05/2005	0.18
	18/05/2005	14/06/2005	0.14
	14/06/2005	04/07/2005	0.13
	04/07/2005	20/07/2005	0.14
	20/07/2005	04/08/2005	0.21
	04/08/2005	16/08/2005	0.08
	16/08/2005	05/09/2005	0.24
	05/09/2005	23/09/2005	0.13
	23/09/2005	07/10/2005	0.29
	07/10/2005	24/10/2005	0.19
	24/10/2005	07/11/2005	0.17

Site	Start Date	End Date	Benzene, ppb
	07/11/2005	24/11/2005	0.33
	24/11/2005	13/12/2005	0.41
	13/12/2005	03/01/2006	0.45
Edinburgh	15/12/2004	29/12/2004	0.29
	29/12/2004	12/01/2005	0.16
	12/01/2005	26/01/2005	0.28
	26/01/2005	09/02/2005	0.33
	09/02/2005	23/02/2005	0.29
	23/02/2005	09/03/2005	0.34
	09/03/2005	23/03/2005	0.36
	23/03/2005	06/04/2005	0.31
	06/04/2005	20/04/2005	0.21
	20/04/2005	04/05/2005	0.20
	04/05/2005	18/05/2005	0.18
	18/05/2005	01/06/2005	0.12
	01/06/2005	15/06/2005	0.14
	15/06/2005	29/06/2005	0.13
	29/06/2005	13/07/2005	0.12
	13/07/2005	27/07/2005	0.11
	27/07/2005	10/08/2005	0.16
	10/08/2005	24/08/2005	0.12
	24/08/2005	07/09/2005	0.17
	07/09/2005	21/09/2005	0.13
	21/09/2005	05/10/2005	0.12
Edinburgh St Leonard's	25/10/2005	03/11/2005	0.21
	03/11/2005	17/11/2005	0.30
	17/11/2005	01/12/2005	0.32
	01/12/2005	15/12/2005	0.34
	15/12/2005	29/12/2005	0.27
	29/12/2005	12/01/2006	0.46
Grangemouth	24/12/2004	10/01/2005	0.35
	10/01/2005	21/01/2005	0.35
	21/01/2005	04/02/2005	0.52
	04/02/2005	18/02/2005	0.47
	18/02/2005	10/03/2005	0.73
	10/03/2005	24/03/2005	0.78
	24/03/2005	11/04/2005	0.79
	11/04/2005	27/04/2005	0.66
	27/04/2005	12/05/2005	0.28
	12/05/2005	02/06/2005	0.43
	02/06/2005	16/06/2005	0.59
	16/06/2005	08/07/2005	0.40
	08/07/2005	27/07/2005	0.60
	27/07/2005	24/08/2005	0.37
	24/08/2005	14/09/2005	0.64

Site	Start Date	End Date	Benzene, ppb
	14/09/2005	29/09/2005	0.22
	29/09/2005	26/10/2005	0.73
	26/10/2005	10/11/2005	0.68
	10/11/2005	02/12/2005	0.42
	02/12/2005	09/12/2005	1.03
	09/12/2005	10/01/2006	0.87
Haringey Roadside	23/12/2004	11/01/2005	0.70
	11/01/2005	25/01/2005	0.71
	25/01/2005	11/02/2005	1.03
	11/02/2005	24/02/2005	0.76
	24/02/2005	08/03/2005	0.86
	08/03/2005	24/03/2005	1.01
	24/03/2005	13/04/2005	0.71
	11/05/2005	12/05/2005	0.43
	12/05/2005	26/05/2005	0.41
	26/05/2005	07/06/2005	0.48
	07/06/2005	23/06/2005	0.68
	23/06/2005	01/07/2005	0.51
	01/07/2005	21/07/2005	0.48
	21/07/2005	01/08/2005	0.56
	01/08/2005	16/08/2005	0.35
	16/08/2005	01/09/2005	0.37
	01/09/2005	13/09/2005	0.57
	13/09/2005	27/09/2005	0.79
	27/09/2005	13/10/2005	0.76
	13/10/2005	25/10/2005	0.85
	25/10/2005	14/11/2005	0.83
	14/11/2005	24/11/2005	1.39
	24/11/2005	06/12/2005	0.38
	06/12/2005	20/12/2005	0.98
	20/12/2005	06/01/2006	0.88
Hove Roadside	21/12/2004	05/01/2005	0.68
	05/01/2005	19/01/2005	0.34
	19/01/2005	02/02/2005	0.56
	02/02/2005	15/02/2005	0.90
	15/02/2005	01/03/2005	1.07
	01/03/2005	17/03/2005	0.62
	17/03/2005	29/03/2005	0.89
	29/03/2005	12/04/2005	0.72
	12/04/2005	26/04/2005	0.71
	26/04/2005	11/05/2005	0.31
	11/05/2005	24/05/2005	0.27
	24/05/2005	08/06/2005	0.40
	08/06/2005	21/06/2005	0.38
	21/06/2005	05/07/2005	0.27
	05/07/2005	19/07/2005	0.47

Site	Start Date	End Date	Benzene, ppb
	19/07/2005	02/08/2005	0.31
	02/08/2005	16/08/2005	0.31
	16/08/2005	30/08/2005	0.44
	30/08/2005	13/09/2005	0.54
	13/09/2005	28/09/2005	0.40
	28/09/2005	11/10/2005	0.60
	11/10/2005	26/10/2005	0.46
	26/10/2005	16/11/2005	0.47
	16/11/2005	23/11/2005	1.36
	23/11/2005	07/12/2005	0.35
	07/12/2005	22/12/2005	1.04
	22/12/2005	11/01/2006	0.60
Hull Freetown	22/12/2004	06/01/2005	0.52
	06/01/2005	20/01/2005	0.39
	20/01/2005	03/02/2005	0.44
	03/02/2005	17/02/2005	0.85
	17/02/2005	03/03/2005	0.56
	03/03/2005	17/03/2005	0.45
	17/03/2005	31/03/2005	0.55
	31/03/2005	14/04/2005	0.52
	14/04/2005	28/04/2005	0.31
	28/04/2005	12/05/2005	0.24
	12/05/2005	26/05/2005	0.20
	26/05/2005	09/06/2005	0.33
	09/06/2005	23/06/2005	0.24
	23/06/2005	07/07/2005	0.12
	07/07/2005	21/07/2005	0.25
	21/07/2005	04/08/2005	0.20
	04/08/2005	18/08/2005	0.23
	18/08/2005	01/09/2005	0.18
	01/09/2005	15/09/2005	0.63
	15/09/2005	29/09/2005	0.40
	29/09/2005	13/10/2005	0.43
	13/10/2005	27/10/2005	0.36
	27/10/2005	10/11/2005	0.37
	10/11/2005	24/11/2005	0.93
	24/11/2005	08/12/2005	0.42
	08/12/2005	22/12/2005	0.77
	22/12/2005	05/01/2006	0.73
Leamington Spa	07/01/2005	21/01/2005	0.41
	21/01/2005	04/02/2005	0.48
	04/02/2005	17/02/2005	0.72
	17/02/2005	07/03/2005	0.52
	07/03/2005	21/03/2005	0.59
	21/03/2005	31/03/2005	0.37
	31/03/2005	14/04/2005	0.40

Site	Start Date	End Date	Benzene, ppb
	14/04/2005	28/04/2005	0.28
	28/04/2005	12/05/2005	0.17
	12/05/2005	26/05/2005	0.19
	26/05/2005	09/06/2005	0.32
	09/06/2005	23/06/2005	0.27
	23/06/2005	04/07/2005	0.21
	04/07/2005	25/07/2005	0.23
	21/10/2005	28/11/2005	0.44
	28/11/2005	14/12/2005	0.46
	14/12/2005	28/12/2005	0.55
	28/12/2005	12/01/2006	0.66
Leeds Centre	22/12/2004	05/01/2005	0.32
	05/01/2005	19/01/2005	0.40
	19/01/2005	03/02/2005	0.37
	03/02/2005	09/03/2005	0.43
	09/03/2005	30/03/2005	0.34
	30/03/2005	06/04/2005	0.86
	06/04/2005	20/04/2005	0.41
	20/04/2005	04/05/2005	0.44
	04/05/2005	18/05/2005	0.28
	18/05/2005	01/06/2005	0.23
	01/06/2005	15/06/2005	0.28
	15/06/2005	29/06/2005	0.30
	29/06/2005	13/07/2005	0.24
	13/07/2005	26/07/2005	0.16
	26/07/2005	10/08/2005	0.26
	10/08/2005	26/08/2005	0.24
	26/08/2005	07/09/2005	0.32
	07/09/2005	21/09/2005	0.47
	21/09/2005	05/10/2005	0.35
	05/10/2005	13/10/2005	0.60
	13/10/2005	02/11/2005	0.54
	02/11/2005	16/11/2005	0.32
	16/11/2005	29/11/2005	0.59
	29/11/2005	15/12/2005	0.60
	15/12/2005	03/01/2006	0.37
Leeds Roadside	23/12/2004	07/01/2005	0.60
	07/01/2005	21/01/2005	0.66
	21/01/2005	02/02/2005	1.10
	02/02/2005	15/02/2005	0.98
	15/02/2005	01/03/2005	0.87
	17/03/2005	31/03/2005	0.99
	31/03/2005	13/04/2005	1.40
	13/04/2005	15/04/2005	1.40
	15/04/2005	28/04/2005	0.71
	28/04/2005	16/05/2005	0.93

Site	Start Date	End Date	Benzene, ppb
	16/05/2005	06/06/2005	0.74
	06/06/2005	23/06/2005	0.68
	23/06/2005	11/07/2005	0.52
	11/07/2005	28/07/2005	0.59
	28/07/2005	15/08/2005	0.56
	15/08/2005	01/09/2005	0.39
	01/09/2005	21/09/2005	0.75
	21/09/2005	14/10/2005	0.83
	14/10/2005	03/11/2005	1.12
	03/11/2005	15/11/2005	0.76
	15/11/2005	29/11/2005	0.66
	29/11/2005	12/12/2005	1.10
	12/12/2005	28/12/2005	0.89
Leicester Centre	29/12/2004	10/01/2005	0.29
	10/01/2005	26/01/2005	0.39
	26/01/2005	10/02/2005	0.58
	10/02/2005	21/02/2005	0.52
	21/02/2005	10/03/2005	0.52
	10/03/2005	22/03/2005	0.33
	22/03/2005	04/04/2005	0.65
	04/04/2005	19/04/2005	0.36
	19/04/2005	03/05/2005	0.26
	03/05/2005	16/05/2005	0.25
	16/05/2005	02/06/2005	0.18
	02/06/2005	16/06/2005	0.17
	16/06/2005	28/06/2005	0.28
	28/06/2005	12/07/2005	0.18
	12/07/2005	27/07/2005	0.28
	27/07/2005	08/08/2005	0.29
	08/08/2005	24/08/2005	0.38
	24/08/2005	07/09/2005	0.21
	07/09/2005	20/09/2005	0.32
	20/09/2005	06/10/2005	0.33
	06/10/2005	19/10/2005	0.45
	19/10/2005	31/10/2005	0.26
	31/10/2005	15/11/2005	0.49
	15/11/2005	30/11/2005	0.83
	30/11/2005	15/12/2005	0.52
	15/12/2005	04/01/2006	0.64
Liverpool Speke	22/02/2005	28/02/2005	0.65
	28/02/2005	14/03/2005	0.45
	14/03/2005	30/03/2005	0.43
	30/03/2005	12/04/2005	0.41
	12/04/2005	27/04/2005	0.43
	27/04/2005	11/05/2005	0.22
	11/05/2005	25/05/2005	0.26

Site	Start Date	End Date	Benzene, ppb
	25/05/2005	06/06/2005	0.29
	06/06/2005	23/06/2005	0.33
	23/06/2005	07/07/2005	0.23
	07/07/2005	21/07/2005	0.21
	21/07/2005	02/08/2005	0.24
	02/08/2005	18/08/2005	0.44
	18/08/2005	01/09/2005	0.44
	01/09/2005	13/09/2005	0.61
	13/09/2005	27/09/2005	0.44
	27/09/2005	11/10/2005	0.39
	11/10/2005	25/10/2005	0.40
	25/10/2005	07/11/2005	0.44
	07/11/2005	24/11/2005	1.32
	24/11/2005	05/12/2005	0.22
	05/12/2005	20/12/2005	0.64
	20/12/2005	05/01/2006	0.97
Manchester Piccadilly	23/12/2004	06/01/2005	0.48
	06/01/2005	20/01/2005	0.30
	20/01/2005	02/02/2005	0.44
	02/02/2005	24/02/2005	0.60
	24/02/2005	10/03/2005	0.47
	10/03/2005	31/03/2005	0.33
	31/03/2005	14/04/2005	0.48
	14/04/2005	28/04/2005	0.34
	28/04/2005	12/05/2005	0.29
	12/05/2005	26/05/2005	0.20
	26/05/2005	09/06/2005	0.30
	09/06/2005	23/06/2005	0.18
	23/06/2005	07/07/2005	0.20
	07/07/2005	21/07/2005	0.21
	21/07/2005	28/07/2005	0.26
	28/07/2005	18/08/2005	0.26
	18/08/2005	01/09/2005	0.40
	01/09/2005	15/09/2005	0.34
	15/09/2005	29/09/2005	0.27
	29/09/2005	13/10/2005	0.50
	13/10/2005	27/10/2005	0.46
	27/10/2005	03/11/2005	0.32
	03/11/2005	10/11/2005	0.39
	10/11/2005	24/11/2005	1.49
	24/11/2005	08/12/2005	0.47
	08/12/2005	22/12/2005	0.75
	22/12/2005	05/01/2006	0.82
Middlesbrough	21/12/2004	06/01/2005	0.35
	06/01/2005	18/01/2005	0.26
	18/01/2005	01/02/2005	0.49

Site	Start Date	End Date	Benzene, ppb
	01/02/2005	15/02/2005	0.55
	15/02/2005	01/03/2005	1.16
	01/03/2005	15/03/2005	0.69
	15/03/2005	29/03/2005	0.45
	29/03/2005	12/04/2005	0.53
	12/04/2005	29/04/2005	0.49
	04/05/2005	11/05/2005	0.28
	11/05/2005	18/05/2005	0.49
	24/05/2005	07/06/2005	0.50
	07/06/2005	21/06/2005	0.41
	21/06/2005	05/07/2005	0.44
	05/07/2005	19/07/2005	1.45
	19/07/2005	02/08/2005	11.17
	02/08/2005	16/08/2005	0.64
	16/08/2005	31/08/2005	0.30
	31/08/2005	13/09/2005	0.71
	13/09/2005	27/09/2005	0.24
	27/09/2005	11/10/2005	0.43
	11/10/2005	27/10/2005	0.57
	27/10/2005	08/11/2005	0.26
	08/11/2005	22/11/2005	0.52
	22/11/2005	06/12/2005	0.44
	06/12/2005	20/12/2005	0.39
	20/12/2005	03/01/2006	0.72
Newcastle	21/12/2004	06/01/2005	0.30
	06/01/2005	18/01/2005	0.26
	18/01/2005	01/02/2005	0.26
	01/02/2005	15/02/2005	0.35
	15/02/2005	01/03/2005	0.47
	01/03/2005	15/03/2005	0.37
	15/03/2005	29/03/2005	0.55
	29/03/2005	12/04/2005	0.34
	12/04/2005	26/04/2005	0.30
	26/04/2005	10/05/2005	0.20
	10/05/2005	24/05/2005	0.16
	24/05/2005	07/06/2005	0.23
	07/06/2005	21/06/2005	0.19
	21/06/2005	05/07/2005	0.15
	05/07/2005	19/07/2005	0.26
	19/07/2005	02/08/2005	0.18
	02/08/2005	16/08/2005	0.20
	16/08/2005	30/08/2005	0.17
	30/08/2005	13/09/2005	0.28
	13/09/2005	27/09/2005	0.23
	27/09/2005	11/10/2005	0.35
	11/10/2005	25/10/2005	0.42
	25/10/2005	08/11/2005	0.38

Site	Start Date	End Date	Benzene, ppb
	08/11/2005	22/11/2005	0.27
	22/11/2005	06/12/2005	0.21
	06/12/2005	20/12/2005	0.57
	20/12/2005	03/01/2006	0.46
Northampton	30/12/2004	13/01/2005	0.30
	13/01/2005	27/01/2005	0.35
	27/01/2005	10/02/2005	0.48
	10/02/2005	24/02/2005	0.46
	24/02/2005	10/03/2005	0.49
	10/03/2005	24/03/2005	0.27
	24/03/2005	21/04/2005	0.36
	21/04/2005	05/05/2005	0.24
	05/05/2005	19/05/2005	0.23
	19/05/2005	02/06/2005	0.16
	02/06/2005	16/06/2005	0.20
	16/06/2005	30/06/2005	0.24
	30/06/2005	14/07/2005	0.15
	14/07/2005	28/07/2005	0.19
	28/07/2005	11/08/2005	0.21
	11/08/2005	25/08/2005	0.23
	25/08/2005	08/09/2005	0.13
	08/09/2005	22/09/2005	0.26
	22/09/2005	06/10/2005	0.24
	06/10/2005	20/10/2005	0.38
	20/10/2005	03/11/2005	0.23
	03/11/2005	17/11/2005	0.38
	17/11/2005	01/12/2005	0.51
	01/12/2005	15/12/2005	0.42
	15/12/2005	29/12/2005	0.41
	29/12/2005	12/01/2006	0.43
Norwich Centre	04/01/2005	18/01/2005	0.26
	18/01/2005	04/02/2005	0.43
	04/02/2005	18/02/2005	0.72
	18/02/2005	04/03/2005	0.59
	04/03/2005	18/03/2005	0.43
	18/03/2005	01/04/2005	0.45
	01/04/2005	14/04/2005	0.46
	14/04/2005	28/04/2005	0.35
	28/04/2005	10/05/2005	0.23
	07/06/2005	27/06/2005	0.24
	27/06/2005	11/07/2005	0.17
	11/07/2005	29/07/2005	0.18
	29/07/2005	17/08/2005	0.20
	17/08/2005	30/08/2005	0.29
	30/08/2005	16/09/2005	0.29
	16/09/2005	30/09/2005	0.30

Site	Start Date	End Date	Benzene, ppb
	30/09/2005	14/10/2005	0.40
	14/10/2005	28/10/2005	0.32
	28/10/2005	09/11/2005	0.24
	09/11/2005	24/11/2005	0.78
	24/11/2005	12/12/2005	0.51
	12/12/2005	23/12/2005	0.52
	23/12/2005	09/01/2006	0.70
Nottingham Centre	22/12/2004	05/01/2005	0.46
	05/01/2005	19/01/2005	0.40
	19/01/2005	02/02/2005	0.54
	02/02/2005	16/02/2005	0.59
	16/02/2005	22/02/2005	0.45
	22/02/2005	03/03/2005	1.40
	03/03/2005	16/03/2005	0.41
	16/03/2005	31/03/2005	0.37
	31/03/2005	13/04/2005	0.50
	13/04/2005	27/04/2005	0.39
	27/04/2005	11/05/2005	0.22
	11/05/2005	25/05/2005	0.18
	25/05/2005	08/06/2005	0.59
	08/06/2005	23/06/2005	0.30
	23/06/2005	06/07/2005	0.21
	06/07/2005	20/07/2005	0.32
	20/07/2005	04/08/2005	0.27
	04/08/2005	16/08/2005	0.28
	16/08/2005	31/08/2005	0.50
	31/08/2005	14/09/2005	0.51
	14/09/2005	28/09/2005	0.24
	28/09/2005	12/10/2005	0.42
	12/10/2005	26/10/2005	0.39
	26/10/2005	09/11/2005	0.37
	09/11/2005	23/11/2005	1.44
	23/11/2005	07/12/2005	0.42
	07/12/2005	21/12/2005	0.72
	21/12/2005	04/01/2006	0.43
Oxford Centre	24/12/2004	07/01/2005	0.35
	07/01/2005	24/01/2005	0.24
	24/01/2005	07/02/2005	0.49
	07/02/2005	21/02/2005	0.52
	21/02/2005	10/03/2005	0.52
	10/03/2005	21/03/2005	0.32
	21/03/2005	04/04/2005	0.83
	04/04/2005	18/04/2005	0.33
	18/04/2005	04/05/2005	0.48
	04/05/2005	16/05/2005	0.35
	16/05/2005	06/06/2005	0.52

Site	Start Date	End Date	Benzene, ppb
	06/06/2005	13/06/2005	0.43
	13/06/2005	27/06/2005	0.24
	27/06/2005	11/07/2005	0.22
	11/07/2005	22/07/2005	0.33
	22/07/2005	05/08/2005	0.38
	05/08/2005	26/08/2005	0.35
	26/08/2005	12/09/2005	0.49
	12/09/2005	26/09/2005	0.44
	26/09/2005	11/10/2005	0.36
	11/10/2005	25/10/2005	0.48
	25/10/2005	08/11/2005	0.33
	08/11/2005	21/11/2005	0.67
	21/11/2005	07/12/2005	0.40
	07/12/2005	20/12/2005	0.55
	20/12/2005	03/01/2006	0.57
Plymouth	25/01/2005	23/02/2005	0.42
	23/02/2005	08/03/2005	0.51
	08/03/2005	22/03/2005	0.29
	22/03/2005	05/04/2005	0.57
	05/04/2005	19/04/2005	0.28
	19/04/2005	03/05/2005	0.29
	03/05/2005	10/05/2005	0.16
	10/05/2005	07/06/2005	0.25
	07/06/2005	21/06/2005	0.21
	21/06/2005	05/07/2005	0.15
	05/07/2005	19/07/2005	0.24
	19/07/2005	02/08/2005	0.19
	02/08/2005	16/08/2005	0.17
	16/08/2005	30/08/2005	0.22
	30/08/2005	13/09/2005	0.23
	13/09/2005	28/09/2005	0.26
	28/09/2005	11/10/2005	0.26
	11/10/2005	25/10/2005	0.33
	25/10/2005	08/11/2005	0.23
	08/11/2005	22/11/2005	0.73
Portsmouth	22/11/2005	06/12/2005	0.36
	06/12/2005	20/12/2005	0.53
	20/12/2005	03/01/2006	0.62
	20/12/2004	17/01/2005	0.29
	17/01/2005	25/02/2005	0.48
	25/02/2005	31/03/2005	0.36
	31/03/2005	11/04/2005	0.44
	11/04/2005	13/05/2005	0.23
	13/05/2005	06/06/2005	0.20
	06/06/2005	17/06/2005	0.11
	17/06/2005	12/07/2005	0.14

Site	Start Date	End Date	Benzene, ppb
	12/07/2005	27/07/2005	0.13
	27/07/2005	15/08/2005	0.20
	15/08/2005	07/09/2005	0.52
	07/10/2005	04/11/2005	0.31
	04/11/2005	08/12/2005	0.39
	08/12/2005	03/01/2006	0.81
Reading			
	20/12/2004	06/01/2005	0.46
	06/01/2005	02/02/2005	0.33
	02/02/2005	16/02/2005	0.69
	16/02/2005	04/03/2005	0.62
	04/03/2005	18/03/2005	0.31
	18/03/2005	29/03/2005	0.41
	29/03/2005	11/04/2005	0.50
	11/04/2005	26/04/2005	0.41
	10/05/2005	24/05/2005	0.18
	24/05/2005	07/06/2005	0.23
	07/06/2005	22/06/2005	0.23
	22/06/2005	05/07/2005	0.14
	05/07/2005	19/07/2005	0.13
	19/07/2005	02/08/2005	0.19
	02/08/2005	16/08/2005	0.18
	16/08/2005	30/08/2005	0.15
	30/08/2005	13/09/2005	0.35
	13/09/2005	27/09/2005	0.21
	27/09/2005	12/10/2005	0.35
	12/10/2005	25/10/2005	0.37
	25/10/2005	08/11/2005	0.23
	08/11/2005	22/11/2005	0.91
	22/11/2005	06/12/2005	0.33
	06/12/2005	20/12/2005	0.97
	20/12/2005	03/01/2006	0.48
Sheffield			
	30/12/2004	12/01/2005	0.43
	12/01/2005	26/01/2005	0.40
	26/01/2005	08/02/2005	0.39
	08/02/2005	23/02/2005	0.66
	23/02/2005	09/03/2005	0.50
	09/03/2005	24/03/2005	0.39
	24/03/2005	07/04/2005	0.86
	07/04/2005	21/04/2005	0.42
	21/04/2005	05/05/2005	0.48
	05/05/2005	18/05/2005	0.42
	18/05/2005	02/06/2005	0.29
	02/06/2005	15/06/2005	0.38
	15/06/2005	28/06/2005	0.43
	28/06/2005	14/07/2005	0.25
	14/07/2005	27/07/2005	0.34

Site	Start Date	End Date	Benzene, ppb
	27/07/2005	11/08/2005	0.70
	11/08/2005	25/08/2005	0.46
	25/08/2005	08/09/2005	0.31
	08/09/2005	22/09/2005	0.32
	22/09/2005	06/10/2005	0.33
	06/10/2005	19/10/2005	0.59
	19/10/2005	02/11/2005	0.51
	02/11/2005	16/11/2005	0.68
	16/11/2005	02/12/2005	0.79
	02/12/2005	14/12/2005	0.60
	14/12/2005	28/12/2005	0.62
	28/12/2005	11/01/2006	0.62
Southampton	21/12/2004	04/01/2005	0.54
	04/01/2005	18/01/2005	0.48
	18/01/2005	01/02/2005	0.48
	01/02/2005	15/02/2005	0.85
	15/02/2005	01/03/2005	0.69
	01/03/2005	15/03/2005	0.61
	15/03/2005	29/03/2005	0.45
	29/03/2005	12/04/2005	0.63
	12/04/2005	26/04/2005	0.49
	26/04/2005	10/05/2005	0.28
	10/05/2005	24/05/2005	0.26
	24/05/2005	07/06/2005	0.38
	07/06/2005	21/06/2005	0.39
	21/06/2005	05/07/2005	0.23
	05/07/2005	19/07/2005	0.33
	19/07/2005	02/08/2005	0.33
	02/08/2005	16/08/2005	0.34
	16/08/2005	30/08/2005	0.44
	30/08/2005	13/09/2005	0.59
	13/09/2005	27/09/2005	0.42
	27/09/2005	11/10/2005	0.53
	11/10/2005	25/10/2005	0.48
	25/10/2005	08/11/2005	0.38
	08/11/2005	22/11/2005	1.06
	22/11/2005	06/12/2005	0.53
	06/12/2005	19/12/2005	0.80
	19/12/2005	03/01/2006	1.02
Southend-on-Sea	22/12/2004	05/01/2005	0.44
	05/01/2005	19/01/2005	0.31
	19/01/2005	02/02/2005	0.35
	02/02/2005	16/02/2005	0.71
	16/02/2005	02/03/2005	0.62
	02/03/2005	16/03/2005	0.49
	16/03/2005	06/04/2005	0.63

Site	Start Date	End Date	Benzene, ppb
	06/04/2005	20/04/2005	0.32
	20/04/2005	04/05/2005	0.39
	04/05/2005	18/05/2005	0.25
	18/05/2005	09/06/2005	0.20
	09/06/2005	23/06/2005	0.16
	23/06/2005	07/07/2005	0.21
	07/07/2005	22/07/2005	0.32
	26/07/2005	05/08/2005	0.10
	05/08/2005	18/08/2005	0.18
	18/08/2005	02/09/2005	0.25
	02/09/2005	14/09/2005	0.24
	14/09/2005	28/09/2005	0.23
	28/09/2005	14/10/2005	0.27
	14/10/2005	19/10/2005	0.17
	19/10/2005	16/11/2005	0.30
	16/11/2005	07/12/2005	0.43
	07/12/2005	21/12/2005	0.49
	21/12/2005	05/01/2006	0.52
Stoke Centre	12/01/2005	01/02/2005	0.65
	01/02/2005	15/02/2005	0.86
	15/02/2005	01/03/2005	0.70
	01/03/2005	16/03/2005	0.82
	17/03/2005	31/03/2005	0.46
	31/03/2005	13/04/2005	0.56
	13/04/2005	27/04/2005	0.43
	27/04/2005	11/05/2005	0.30
	11/05/2005	25/05/2005	0.22
	25/05/2005	08/06/2005	0.36
	08/06/2005	23/06/2005	0.28
	23/06/2005	06/07/2005	0.24
	06/07/2005	20/07/2005	0.49
	20/07/2005	04/08/2005	0.48
	04/08/2005	01/09/2005	0.48
	01/09/2005	14/09/2005	0.49
	14/09/2005	27/09/2005	0.30
	27/09/2005	12/10/2005	0.47
	12/10/2005	26/10/2005	0.38
	26/10/2005	10/11/2005	0.32
	10/11/2005	23/11/2005	1.67
Wigan Centre	23/11/2005	07/12/2005	0.63
	07/12/2005	21/12/2005	0.81
	21/12/2005	04/01/2006	0.95
Wigan Centre	22/12/2004	07/01/2005	0.44
	07/01/2005	20/01/2005	0.32
	20/01/2005	04/02/2005	0.39
	04/02/2005	17/02/2005	0.64

Site	Start Date	End Date	Benzene, ppb
	17/02/2005	07/03/2005	0.35
	07/03/2005	18/03/2005	0.38
	18/03/2005	05/04/2005	0.63
	05/04/2005	18/04/2005	0.31
	18/04/2005	06/05/2005	0.35
	06/05/2005	23/05/2005	0.18
	23/05/2005	02/06/2005	0.32
	02/06/2005	14/06/2005	0.26
	14/06/2005	29/06/2005	0.16
	29/06/2005	13/07/2005	0.13
	13/07/2005	27/07/2005	0.16
	27/07/2005	09/08/2005	0.21
	09/08/2005	26/08/2005	0.15
	26/08/2005	05/09/2005	0.23
	05/09/2005	19/09/2005	0.23
	19/09/2005	03/10/2005	0.24
	03/10/2005	17/10/2005	0.37
	17/10/2005	31/10/2005	0.29
	31/10/2005	17/11/2005	0.45
	17/11/2005	02/12/2005	0.55
	02/12/2005	16/12/2005	0.34
	16/12/2005	21/12/2005	0.33
	21/12/2005	09/01/2006	0.29
Yarm	16/12/2004	06/01/2005	0.87
	06/01/2005	18/01/2005	0.63
	31/01/2005	15/02/2005	1.32
	15/02/2005	02/03/2005	1.03
	02/03/2005	15/03/2005	1.05
	15/03/2005	29/03/2005	0.68
	29/03/2005	12/04/2005	0.81
	12/04/2005	27/04/2005	1.32
	27/04/2005	10/05/2005	0.71
	10/05/2005	24/05/2005	0.57
	24/05/2005	07/06/2005	0.81
	07/06/2005	21/06/2005	0.77
	21/06/2005	05/07/2005	0.52
	05/07/2005	19/07/2005	0.83
	19/07/2005	03/08/2005	0.91
	03/08/2005	19/08/2005	0.76
	19/08/2005	30/08/2005	0.47
	30/08/2005	13/09/2005	1.12
	13/09/2005	06/10/2005	0.49
	06/10/2005	20/10/2005	0.67
	20/10/2005	03/11/2005	0.75
	03/11/2005	17/11/2005	0.85
	17/11/2005	02/12/2005	0.89
	02/12/2005	16/12/2005	1.12

Site	Start Date	End Date	Benzene, ppb
	16/12/2005	06/01/2006	0.93

Annex 1b – Fortnightly data – 1.3 Butadiene

Site	Start Date	End Date	1,3-Butadiene, ppb
Belfast Centre	29/12/2004	11/01/2005	0.01
	11/01/2005	25/01/2005	0.01
	25/01/2005	08/02/2005	0.01
	08/02/2005	08/03/2005	0.05
	08/03/2005	22/03/2005	0.01
	22/03/2005	05/04/2005	0.01
	05/04/2005	19/04/2005	0.01
	19/04/2005	03/05/2005	0.02
	03/05/2005	17/05/2005	0.01
	17/05/2005	31/05/2005	0.01
	31/05/2005	14/06/2005	0.01
	14/06/2005	28/06/2005	0.01
	28/06/2005	12/07/2005	0.01
	12/07/2005	26/07/2005	0.01
	26/07/2005	09/08/2005	0.01
	09/08/2005	23/08/2005	0.01
	23/08/2005	06/09/2005	0.01
	06/09/2005	20/09/2005	0.01
	20/09/2005	04/10/2005	0.01
	04/10/2005	18/10/2005	0.01
	18/10/2005	01/11/2005	0.01
	01/11/2005	15/11/2005	0.01
	15/11/2005	29/11/2005	0.01
	29/11/2005	13/12/2005	0.01
	13/12/2005	28/12/2005	0.01
	28/12/2005	11/01/2006	0.01
Belfast Roadside	24/12/2004	11/01/2005	0.01
	11/01/2005	25/01/2005	0.02
	25/01/2005	08/02/2005	0.03
	08/02/2005	08/03/2005	0.07
	08/03/2005	22/03/2005	0.03
	22/03/2005	05/04/2005	0.01
	05/04/2005	19/04/2005	0.02
	19/04/2005	03/05/2005	0.01
	03/05/2005	17/05/2005	0.05
	17/05/2005	31/05/2005	0.01
	31/05/2005	14/06/2005	0.03
	14/06/2005	28/06/2005	0.01
	28/06/2005	12/07/2005	0.01
	12/07/2005	26/07/2005	0.01
	26/07/2005	10/08/2005	0.01
	10/08/2005	23/08/2005	0.01

Site	Start Date	End Date	1,3-Butadiene, ppb
	23/08/2005	07/09/2005	0.01
	07/09/2005	20/09/2005	0.01
	20/09/2005	04/10/2005	0.03
	04/10/2005	18/10/2005	0.01
	18/10/2005	01/11/2005	0.01
	01/11/2005	15/11/2005	0.01
	15/11/2005	29/11/2005	0.06
	29/11/2005	13/12/2005	0.01
	13/12/2005	24/12/2005	0.02
	29/12/2005	11/01/2006	0.01
Birmingham Roadside	23/12/2004	06/01/2005	0.01
	06/01/2005	20/01/2005	0.01
	20/01/2005	03/02/2005	0.09
	03/02/2005	17/02/2005	0.08
	17/02/2005	03/03/2005	0.11
	03/03/2005	31/03/2005	0.13
	31/03/2005	14/04/2005	0.13
	14/04/2005	28/04/2005	0.19
	28/04/2005	12/05/2005	0.12
	12/05/2005	26/05/2005	0.07
	26/05/2005	09/06/2005	0.07
	09/06/2005	23/06/2005	0.09
	23/06/2005	07/07/2005	0.02
	07/07/2005	21/07/2005	0.04
	21/07/2005	04/08/2005	0.05
	04/08/2005	18/08/2005	0.15
	18/08/2005	01/09/2005	0.02
	01/09/2005	15/09/2005	0.07
	15/09/2005	29/09/2005	0.01
	29/09/2005	13/10/2005	0.03
	13/10/2005	27/10/2005	0.01
	27/10/2005	10/11/2005	0.01
	10/11/2005	24/11/2005	0.08
	24/11/2005	02/12/2005	0.02
	02/12/2005	21/12/2005	0.03
	21/12/2005	05/01/2006	0.01
Bristol Old Market	29/12/2004	11/01/2005	0.01
	11/01/2005	26/01/2005	0.04
	26/01/2005	09/02/2005	0.06
	09/02/2005	23/02/2005	0.07
	23/02/2005	09/03/2005	0.13
	09/03/2005	21/03/2005	0.11
	21/03/2005	06/04/2005	0.09
	06/04/2005	19/04/2005	0.03
	19/04/2005	04/05/2005	0.06

Site	Start Date	End Date	1,3-Butadiene, ppb
	04/05/2005	18/05/2005	0.12
	18/05/2005	01/06/2005	0.05
	01/06/2005	14/06/2005	0.09
	14/06/2005	27/06/2005	0.16
	28/06/2005	11/07/2005	0.03
	11/07/2005	27/07/2005	0.02
	27/07/2005	10/08/2005	0.02
	10/08/2005	23/08/2005	0.02
	23/08/2005	06/09/2005	0.01
	06/09/2005	21/09/2005	0.01
	21/09/2005	08/10/2005	0.03
	05/10/2005	18/10/2005	0.03
	18/10/2005	01/11/2005	0.01
	01/11/2005	16/11/2005	0.03
	16/11/2005	30/11/2005	0.08
	30/11/2005	14/12/2005	0.07
	14/12/2005	28/12/2005	0.04
Grangemouth	27/04/2005	12/05/2005	0.01
	12/05/2005	02/06/2005	0.20
	02/06/2005	16/06/2005	0.19
	16/06/2005	08/07/2005	0.18
	08/07/2005	27/07/2005	0.15
	27/07/2005	24/08/2005	0.16
	14/09/2005	29/09/2005	0.01
	10/11/2005	02/12/2005	0.06
	02/12/2005	09/12/2005	0.15
Haringey Roadside	09/12/2005	10/01/2006	0.02
	23/12/2004	11/01/2005	0.01
	11/01/2005	25/01/2005	0.02
	25/01/2005	11/02/2005	0.04
	11/02/2005	24/02/2005	0.02
	24/02/2005	08/03/2005	0.11
	08/03/2005	24/03/2005	0.10
	24/03/2005	13/04/2005	0.02
	13/04/2005	28/04/2005	0.03
	28/04/2005	12/05/2005	0.03
	11/05/2005	26/05/2005	0.03
	26/05/2005	07/06/2005	0.01
	07/06/2005	23/06/2005	0.06
	21/07/2005	01/08/2005	0.02
	01/08/2005	16/08/2005	0.01
	16/08/2005	01/09/2005	0.01
	01/09/2005	13/09/2005	0.01
	13/09/2005	27/09/2005	0.06
	27/09/2005	13/10/2005	0.02

Site	Start Date	End Date	1,3-Butadiene, ppb
	13/10/2005	25/10/2005	0.01
	25/10/2005	14/11/2005	0.01
	14/11/2005	06/12/2005	0.03
	06/12/2005	20/12/2005	0.08
	20/12/2005	06/01/2006	0.01
Leeds Centre	22/12/2004	05/01/2005	0.01
	05/01/2005	19/01/2005	0.02
	19/01/2005	03/02/2005	0.02
	03/02/2005	09/03/2005	0.05
	09/03/2005	30/03/2005	0.05
	30/03/2005	06/04/2005	0.02
	06/04/2005	20/04/2005	0.03
	20/04/2005	04/05/2005	0.01
	04/05/2005	18/05/2005	0.01
	18/05/2005	01/06/2005	0.01
	01/06/2005	15/06/2005	0.05
	15/06/2005	29/06/2005	0.01
	29/06/2005	13/07/2005	0.01
	13/07/2005	26/07/2005	0.01
	26/07/2005	10/08/2005	0.01
	10/08/2005	26/08/2005	0.01
	26/08/2005	07/09/2005	0.01
	07/09/2005	21/09/2005	0.01
	21/09/2005	05/10/2005	0.06
	05/10/2005	02/11/2005	0.01
	02/11/2005	16/11/2005	0.01
	16/11/2005	29/11/2005	0.07
	29/11/2005	15/12/2005	0.01
	15/12/2005	03/01/2006	0.01
Leeds Roadside	23/12/2004	05/01/2005	0.01
	05/01/2005	21/01/2005	0.01
	21/01/2005	02/02/2005	0.07
	02/02/2005	15/02/2005	0.04
	15/02/2005	01/03/2005	0.09
	01/03/2005	17/03/2005	0.11
	17/03/2005	31/03/2005	0.10
	31/03/2005	15/04/2005	0.11
	15/04/2005	28/04/2005	0.13
	28/04/2005	16/05/2005	0.05
	16/05/2005	06/06/2005	0.05
	06/06/2005	23/06/2005	0.02
	23/06/2005	11/07/2005	0.01
	11/07/2005	28/07/2005	0.02
	28/07/2005	15/08/2005	0.03
	15/08/2005	01/09/2005	0.03

Site	Start Date	End Date	1,3-Butadiene, ppb
	21/09/2005	14/10/2005	0.01
	14/10/2005	03/11/2005	0.04
	03/11/2005	15/11/2005	0.01
	15/11/2005	29/11/2005	0.02
	29/11/2005	12/12/2005	0.04
	12/12/2005	28/12/2005	0.04
	28/12/2005	11/01/2006	0.02
Middlesbrough			
	21/12/2004	06/01/2005	0.01
	06/01/2005	18/01/2005	0.01
	18/01/2005	01/02/2005	0.01
	01/02/2005	15/02/2005	0.01
	15/02/2005	01/03/2005	0.01
	01/03/2005	15/03/2005	0.04
	15/03/2005	29/03/2005	0.02
	29/03/2005	12/04/2005	0.01
	15/04/2005	26/04/2005	0.02
	26/04/2005	11/05/2005	0.01
	11/05/2005	24/05/2005	0.01
	24/05/2005	07/06/2005	0.07
	07/06/2005	21/06/2005	0.01
	21/06/2005	05/07/2005	0.01
	05/07/2005	19/07/2005	0.02
	19/07/2005	02/08/2005	0.01
	02/08/2005	16/08/2005	0.01
	31/08/2005	13/09/2005	0.01
	13/09/2005	21/09/2005	0.02
	27/09/2005	11/10/2005	0.01
	11/10/2005	27/10/2005	0.01
	27/10/2005	08/11/2005	0.01
	08/11/2005	22/11/2005	0.01
	22/11/2005	06/12/2005	0.01
	06/12/2005	20/12/2005	0.03
	20/12/2005	03/01/2006	0.01

Annex 2 – Audit schedule

Site	1st Audit	2nd Audit	3rd Audit
Barnsley Gawber	15/03/2005	15/09/2005	N/A
Belfast Centre	23/02/2005	28/06/2005	N/A
Belfast Roadside	23/02/2005	28/06/2005	N/A
Birmingham Roadside	08/06/2005	22/08/2005	N/A
Bloomsbury	17/02/2005	29/09/2005	N/A
Bournemouth	22/04/2005	28/10/2005	N/A
Bristol Old Market	18/05/2005	17/11/2005	N/A
Coventry Memorial Park	11/05/2005	11/11/2005	N/A
Cwmbran	18/05/2005	03/11/2005	N/A
Edinburgh	22/06/2005	25/10/2005	N/A
Grangemouth	22/06/2005	26/10/2005	N/A
Haringey Roadside	12/05/2005	04/11/2005	N/A
Hove Roadside	13/05/2005	10/11/2005	N/A
Hull Freetown	13/04/2005	14/10/2005	N/A
Leamington Spa	11/05/2005	21/10/2005	N/A
Leeds Centre	04/05/2005	13/10/2005	N/A
Leeds Roadside	13/04/2005	13/10/2005	N/A
Leicester Centre	07/06/2005	02/12/2005	N/A
Liverpool Speke	22/02/2005	02/08/2005	N/A
Manchester Piccadilly	02/03/2005	02/08/2005	N/A
Middlesbrough	04/05/2005	12/12/2005	N/A
Newcastle	21/06/2005	12/12/2005	N/A
Northampton	16/03/2005	16/09/2005	N/A
Norwich Centre	26/01/2005	07/06/2005	01/12/2005
Nottingham Centre	22/02/2005	09/08/2005	N/A
Oxford Centre	04/06/2005	29/11/2005	N/A
Plymouth	11/01/2005	23/05/2005	17/11/2005
Portsmouth	16/02/2005	05/08/2005	N/A
Reading	19/05/2005	16/12/2005	N/A
Sheffield	13/04/2005	13/10/2005	N/A
Southampton	16/06/2005	19/12/2005	N/A
Southend-on-Sea	15/06/2005	19/10/2005	N/A
Stoke Centre	03/03/2005	17/03/2005	15/09/2005
Wigan Centre	02/03/2005	02/08/2005	N/A
Yarm	21/06/2005	12/12/2005	N/A