

School of
Health and
Life Sciences

Environmental
Research Group



University of London

**UK Automatic Urban Network
London Air Quality Network Affiliated Sites**

**Management Report
October to December 2001**

Prepared for the Department of Environment, Food and Rural Affairs by:

**David Green
Principal Air Quality Analyst**

King's College London – Environmental Research Group

Contents

London Air Quality Network Affiliate Site Management Report October to December 2001	4
1. King's ERG Interface with the Data Dissemination Unit (DDU)	4
1.1. Data Handling	4
2. Site Performance	4
2.1. Scaling of Data for October to December 2001	4
2.2. Quality Control / Quality Assurance (QA/QC)	4
2.3. Data for October to December 2001	4
2.3.1. <i>Hackney</i>	7
2.3.2. <i>Lewisham</i>	7
2.3.3. <i>Marylebone Road</i>	7
2.3.4. <i>Southwark Roadside</i>	7
3. Annual Data Capture Statistics	8
3.1. <i>Hackney</i>	8
3.2. <i>Lewisham</i>	9

List of Tables

Table 1: QA/QC Audit Dates	4
Table 2: Hourly Data Capture % for October 2001	5
Table 3: Hourly Data Capture % for November 2001	5
Table 4: Hourly Data Capture % for December 2001	6
Table 5: Hourly Data Capture % for October to December 2001	6
Table 6: Hourly Data Capture % for January to December 2001	8
Table 7: Details of Data Loss for Hackney Ozone Analyser	8

List of Figures

Figure 1: Data loss from Hackney Ozone Analyser	9
---	---

London Air Quality Network Affiliate Site Management Report October to December 2001

1. King's ERG Interface with the Data Dissemination Unit (DDU)

1.1. Data Handling

Between October and December 2001, King's College London Environmental Research Group have estimated that over 99% of hourly e-mails arrived at the DDU to meet their timetabled requirements. Accurate figures of punctual e-mails can be obtained from the DDU.

2. Site Performance

2.1. Scaling of Data for October to December 2001

Scaling of data was carried out as in previous months using the zero and span readings from fortnightly calibration checks. Validation of data was carried out twice daily and reviewed again at the end of each month.

2.2. Quality Control / Quality Assurance (QA/QC)

The QA/QC Unit (NPL) carried out routine equipment audits at the London affiliated AURN sites during this quarter to assess the performance of the instruments.

Site	Audit Dates
Bromley Central	18/10/01
Camden Kerbside	11/12/01
Eltham	12/12/01
Haringey Roadside	09/11/01
London Haringey	09/11/01
Hackney	30/11/01
Hounslow Roadside	15/10/01
London North Kensington	12/11/01
Lewisham	20/12/01
Marylebone Road	30/11/01
London Southwark	12/11/01
Southwark Roadside	11/12/01
Sutton Roadside	17/12/01
London Sutton	17/10/01
Tower Hamlets Roadside	19/12/01
London Wandsworth	23/10/01

Table 1: QA/QC Audit Dates

2.3. Data for October to December 2001

Data capture rates for October, November and December are detailed in Tables 1 to 3. The data capture rates for each month are expressed as a percentage of valid hourly averages, after excluding data lost due to calibration and the faults discussed. The overall data capture rates for the quarter October to December are detailed in the Table 4.

Specific issues affecting data collection and quality at each site are discussed in Sections 4.1 to 4.4. Details of faults are given where data capture rates fall below 90% for the quarter.

Site	Hourly Data Capture % for October 2001				
	CO	PM ₁₀	NO _x	O ₃	SO ₂
Bromley Central	99		99		
Camden Kerbside		100	99		
Eltham		99	100	99	99
Haringey Roadside		99	99		
London Haringey				99	
Hackney	99		99	99	
Hounslow Roadside	99		99		
London North Kensington	99	98	94	99	99
Lewisham			0	0	0
Marylebone Road	100	93	100	97	97
London Southwark	96		96	96	96
Southwark Roadside	99		99		99
Sutton Roadside	98	97	99		99
London Sutton			99	99	
Tower Hamlets Roadside	99		96		
London Wandsworth			99	99	

Table 2: Hourly Data Capture % for October 2001

Site	Hourly Data Capture % for November 2001				
	CO	PM ₁₀	NO _x	O ₃	SO ₂
Bromley Central	85		85		
Camden Kerbside		92	99		
Eltham		99	100	96	98
Haringey Roadside		99	99		
London Haringey				99	
Hackney	99		99	53	
Hounslow Roadside	99		99		
London North Kensington	98	99	99	98	99
Lewisham			0	0	0
Marylebone Road	99	82	99	95	95
London Southwark	99		99	83	99
Southwark Roadside	75		75		75
Sutton Roadside	99	94	100		100
London Sutton			100	100	
Tower Hamlets Roadside	99		86		
London Wandsworth			100	100	

Table 3: Hourly Data Capture % for November 2001

Site	Hourly Data Capture % for December 2001				
	CO	PM ₁₀	NO _x	O ₃	SO ₂
Bromley Central	100		100		
Camden Kerbside		99	99		
Eltham		94	99	99	99
Haringey Roadside		99	100		
London Haringey				100	
Hackney	99		99	98	
Hounslow Roadside	84		84		
London North Kensington	100	100	99	99	100
Lewisham			0	0	0
Marylebone Road	100	81	99	96	96
London Southwark	99		99	99	99
Southwark Roadside	81		81		81
Sutton Roadside	99	98	99		99
London Sutton			100	100	
Tower Hamlets Roadside	99		99		
London Wandsworth			99	99	

Table 4: Hourly Data Capture % for December 2001

Site	Hourly Data Capture % for October to December 2001				
	CO	PM ₁₀	NO _x	O ₃	SO ₂
Bromley Central	95		95		
Camden Kerbside		97	99		
Eltham		98	100	98	99
Haringey Roadside		99	99		
London Haringey				99	
Hackney	99		99	84	
Hounslow Roadside	94		94		
London North Kensington	99	99	97	99	99
Lewisham			0	0	0
Marylebone Road	100	85	99	96	96
London Southwark	98		98	93	98
Southwark Roadside	85		85		85
Sutton Roadside	99	96	99		99
London Sutton			100	100	
Tower Hamlets Roadside	99		94		
London Wandsworth			99	99	

Table 5: Hourly Data Capture % for October to December 2001

2.3.1. Hackney

2.3.1.1. Ozone 84%

8th – 21st November 2001 (312 hours).

A broken UV lamp led to the loss of 312 hours of data. ERG informed the Local Authority of the fault immediately. At this site the Local Authority manage their service contact.

2.3.2. Lewisham

All the analysers at this site were decommissioned on 18th June 2001 due to construction work being undertaken in and around the room where the monitoring equipment is housed. The analysers were commissioned again on the 13th December. However, a combination of power interruptions and the absence of calibration gas following the long shut down has led to a lack of calibration history. The data until the start of January has therefore been excluded.

2.3.2.1. All Analysers 0%

1st October – 31st December 2001 (2208 hours)

2.3.3. Marylebone Road

2.3.3.1. PM₁₀ 85%

12th – 16th November 2001 (109 hours)

Data was lost due to a flow fault; the ESU traced the fault to the mass flow controller and replaced it due to a history of faults.

23rd – 28th December 2001 (137 hours)

A flow fault caused data loss following a site visit. Due to repeated flow faults the ESU has replaced the TEOM control unit with a spare and returned the original to the workshop for further investigation.

2.3.4. Southwark Roadside

2.3.4.1. All Analysers 85%

23rd November – 6th December 2001 (314 hours)

An air conditioning unit failure led to the loss of data from all analysers.

3. Annual Data Capture Statistics

Data capture rates for the whole of 2001 are detailed in Table 6. The data capture rates for the years are expressed as a percentage of valid hourly averages, after excluding data lost due to calibration and the faults discussed. The final data capture figures for the network after ratification can be obtained from the QA/QC unit. Data capture rates below DEFRA's target of 90% are highlighted, a summary of these shortfalls is given below.

Site	Hourly Data Capture % for January to December 2001				
	CO	PM ₁₀	NO _x	O ₃	SO ₂
Bromley Central	97		92		
Camden Kerbside		99	99		
Eltham		99	97	99	99
Haringey Roadside		99	98		
London Haringey				98	
Hackney	94		96	88	
Hounslow Roadside	98		97		
London North Kensington	92	96	96	97	97
Lewisham			46	43	46
Marylebone Road	98	92	97	96	96
London Southwark	91		91	90	91
Southwark Roadside	92		92		92
Sutton Roadside	98	96	99		98
London Sutton			99	99	
Tower Hamlets Roadside	98		91		
London Wandsworth			99	99	

Table 6: Hourly Data Capture % for January to December 2001

3.1. Hackney

The ozone analyser at Hackney did not meet the 90% data capture target. Data loss from the ozone analyser at Hackney has been caused by a number of problems. Table 7 shows the reasons for data loss from the analyser. Figure 1 shows the reasons for data loss as percentages of the overall data loss.

Details	Start Date	End Date	Hours Lost
Overnight Calibration Fault	01/01/01 00:00	30/09/01 00:00	273
Communications Fault	28/06/01 04:00	29/06/01 09:00	29
Blocked sample inlet filter	03/07/01 04:00	03/07/01 15:00	11
Air Conditioning Fault	29/07/01 01:00	08/08/01 12:00	251
Blocked sample inlet filter	26/08/01 13:00	27/08/01 01:00	12
Blocked sample inlet filter	28/08/01 08:00	30/08/01 10:00	50
Blocked sample inlet filter	05/11/01 07:00	05/11/01 20:00	13
UV lamp Failure	08/11/01 15:00	21/11/01 15:00	312

Table 7: Details of Data Loss for Hackney Ozone Analyser

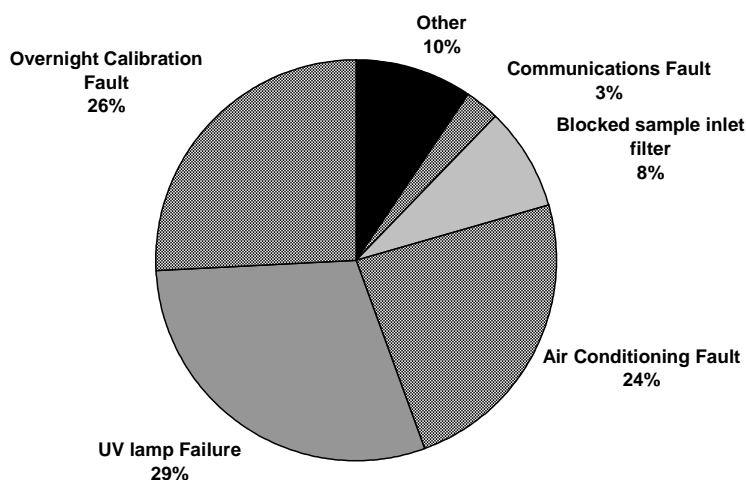


Figure 1: Data loss from Hackney Ozone Analyser

The London Borough of Hackney is an affiliated site that holds its own service contract with the ESU for maintenance of the analysers. ERG liaise with the ESU concerning many other monitoring sites and have a good working relationship with them. We use this position to instigate and callouts wherever possible. However, ERG have no direct influence over the response time of the contractors.

Data loss from the overnight calibration fault is due to the incompatibilities between the logger and auto-calibration system that arise from the age of much of the equipment. The former ageing logger could not be supported by modern data collection software and was therefore replaced in 2000. Unfortunately the new logger did not have the necessary functionality to correctly operate the auto-calibration system leading to the loss of an extra 15 minutes of data per day from some of the analysers. The auto calibration interval has now been changed to every 5 days to ensure that this does not affect data capture rates but still provides the necessary calibration history for ratification purposes.

3.2. Lewisham

None of the analysers at Lewisham met the 90% data capture target. This was due to extensive building works in and around the room where the monitoring equipment is housed. The analysers were commissioned again on the 13th December. However, a combination of power interruptions and the absence of calibration gas following the long shut down has led to a lack of calibration history. Data dissemination recommenced at the start of January 2002.