School of
Health and
Life Sciences
Kings
Environmental
Research Group

KING'S College LONDON
Founded 1829
University of London

UK Automatic Urban Network
London Air Quality Network Affiliated Sites

Management Report
July to September 2001

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

David Green
Principal Air Quality Analyst

King's College – Environmental Research Group

Contents

List of Figures

London Air Quality Network Affiliate Site Management Report July to September 2001

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

1.1. Data Handling

Between July and September 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 July to September 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.

3. 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	12/07/01
Camden Kerbside	18/07/01
Eltham	12/07/01
Haringey Roadside	11/07/01
London Haringey	11/07/01
Hackney	16/07/01
Hounslow Roadside	20/07/01
London North Kensington	20/07/01
Lewisham	N/A
Marylebone Road	18/07/01
London Southwark	17/07/01
Southwark Roadside	17/07/01
Sutton Roadside	13/07/01
London Sutton	13/07/01
Tower Hamlets Roadside	16/07/01
London Wandsworth	19/07/01

Table 1: QA/QC Audit Dates

4. Data for July to September 2001

Data capture rates for July, August and September 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 July to September are detailed in the Table 4.

Specific issues affecting data collection and quality at each site are discussed in Sections 4.1 to 4.8. Details of faults are given where data capture rates fall below 95% for the quarter.

Site	Hourly Data Capture % for July 2001				
	CO	PM_{10}	NO_x	O_3	SO_2
Bromley Central	99		77		
Camden Kerbside		100	99		
Eltham		99	98	99	99
Haringey Roadside		99	99		
London Haringey				99	
Hackney	87		90	85	
Hounslow Roadside	99		99		
London North Kensington	95	89	99	99	99
Lewisham			0	0	0
Marylebone Road	88	89	90	88	87
London Southwark	41		40	41	40
Southwark Roadside	99		99		99
Sutton Roadside	99	99	99		99
London Sutton			99	99	
Tower Hamlets Roadside	89		79		
London Wandsworth			99	100	

Table 2: Hourly Data Capture % for July 2001

Site	Hourly Data Capture % for August 2001				
	CO	PM_{10}	NO_x	O_3	SO_2
Bromley Central	100		72		
Camden Kerbside		100	100		
Eltham		99	98	99	98
Haringey Roadside		100	100		
London Haringey				100	
Hackney	74		73	64	
Hounslow Roadside	99		99		
London North Kensington	99	99	100	99	99
Lewisham			0	0	0
Marylebone Road	95	85	85	95	82
London Southwark	74		74	74	74
Southwark Roadside	89		89		89
Sutton Roadside	99	98	99		99
London Sutton			100	100	
Tower Hamlets Roadside	100		100		
London Wandsworth			99	99	

Table 3: Hourly Data Capture % for August 2001

Site	Hourly Data Capture % for Sep 2001				
	CO	PM_{10}	NO_x	O_3	SO_2
Bromley Central	99		100		
Camden Kerbside		100	100		
Eltham		99	100	100	100
Haringey Roadside		100	100		
London Haringey				100	
Hackney	100		100	96	
Hounslow Roadside	100		96		
London North Kensington	99	87	100	100	100
Lewisham			0	0	0
Marylebone Road	99	98	99	99	99
London Southwark	99		99	99	99
Southwark Roadside	93		93		93
Sutton Roadside	98	99	99		99
London Sutton			100	100	
Tower Hamlets Roadside	100		100		
London Wandsworth			99	99	

Table 4: Hourly Data Capture % for September 2001

Site	Hourly Data Capture % for July to September 2001				
	CO	PM_{10}	NO_x	O_3	SO_2
Bromley Central	99		83		
Camden Kerbside		100	100		
Eltham		99	98	99	99
Haringey Roadside		100	99		
London Haringey				100	
Hackney	87		88	81	
Hounslow Roadside	99		98		
London North Kensington	98	92	100	99	99
Lewisham			0	0	0
Marylebone Road	94	90	91	94	89
London Southwark	71		71	71	71
Southwark Roadside	93		94		94
Sutton Roadside	99	99	99		99
London Sutton			99	100	
Tower Hamlets Roadside	96		93		
London Wandsworth			99	99	

Table 5: Hourly Data Capture % for July to September 2001

4.1. Bromley

4.1.1. Nitrogen Oxides 83%

12th July – 19th July 2001(168 hours).
Sample inlet leak discovered at site visit and corrected by the LSO.

15th August - 17th August 2001(51 hours)
This period shows a high level of noise, probably due to the pump fault that occurred later in the month. The final decision on this data is a matter for the QA/QC unit.

24th August – 30th August 2001(153 hours)
The analyser pump malfunctioned leading the loss of all data from this period.

4.2. Hackney

4.2.1. Carbon Monoxide 83%

1st July – 30th September 2001 (92 hours).
Incompatibilities between the logger and auto-calibration system led to the loss of one hour of data from each day.

29th July – 8th August 2001 (251 hours)
The monitoring site had to be shut down due to an air conditioning fault. This was repaired by the ESU.

4.2.2. Nitrogen Oxides 87%

29th July – 8th August 2001 (251 hours)
The monitoring site had to be shut down due to an air conditioning fault. This was repaired by the ESU.

4.2.3. Ozone 81%

1st July – 30th September 2001 (92 hours).
Incompatibilities between the logger and auto-calibration system led to the loss of one hour of data from each day.

3rd July 2001 (11 hours)
A blocked sample inlet filter led to the loss of data, this was repaired by the LSO.

29th July – 8th August 2001 (251 hours)
The monitoring site had to be shut down due to an air conditioning fault. This was repaired by the ESU.

26th August – 27th August 2001 (12 hours)
A blocked sample inlet filter led to the loss of data, this was repaired by the LSO.

28th August – 30th August 2001 (50 hours)
A blocked sample inlet filter led to the loss of data, this was repaired by the LSO.

4.3. North Kensington

4.3.1. PM_{10} 92%

17th July – 20th July 2001 (77 hours)
The in-line filter became blocked leading to a flow fault and the subsequent loss of data.

3rd September – 7th September (89 hours)
The same in-line filter became blocked. An additional filter was installed to prevent any repeat of this problem.

4.4. Lewisham

All the analysers at this site were decommissioned due to construction work being undertaken in and around the room where the monitoring equipment is housed.

4.4.1. Nitrogen Oxides 0%

1st July – 30th September 2001 (2509 hours)

4.4.2. Ozone 0%

1st July – 30th September 2001 (2509 hours)

4.4.3. Sulphur Dioxide 0%

1st July – 30th September 2001 (2509 hours)

4.5. Marylebone Road

The air conditioning unit at Marylebone road suffered repeated breakdowns due to two factors. Firstly, the gradual additions to the monitoring equipment within the cabin led to an increase in heat production. Secondly, the high temperatures experienced during the summer caused the cabin temperatures to increase beyond the cooling capacity of the air conditioning unit. An additional unit was installed on 7th September 2001. The data loss due to air conditioning failures is detailed below.

1st July – 4th July 2001 (67 hours)

28th July – 29th July 2001 (11 hours)

29th July – 30th July 2001 (12 hours)

4.5.1. Carbon Monoxide 94%

16th August – 17th August 2001 (30 hours)
6-month service.

4.5.2. PM_{10} 90%

5th July – 6th July 2001 (26 hours)

Data was lost due to a flow fault; the ESU traced the leak to the bottom of the sensor unit.

18th August – 22nd August 2001 (129 hours)
A flow fault caused data loss, intermittently at first; the ESU serviced the mass flow controllers to prevent a repetition of this problem.

4.5.3. Nitrogen Dioxide 91%

16th August – 17th August 2001 (30 hours)
6-month service.

4.5.4. Ozone 94%

16th August – 17th August 2001 (30 hours)
6-month service.

4.5.5. Sulphur Dioxide 89%

16th August – 17th August 2001 (30 hours)
6-month service.

23rd August – 27th August 2001 (96)
Air conditioning unit failure led to overheating and a reduction in data quality.

4.6. Southwark Background

4.6.1. All Analysers 71%

1st July – 4th July 2001 (87 hours)
The site logger's programme corrupted causing it to stop logging.

17th July – 8th August 2001 (539 hours)
A flow fault was found in the manifold during the equipment audit. The ESU traced this to a faulty pump, however, parts were not immediately available and had to be sourced separately. The final decision on this data is a matter for the QA/QC unit.

4.7. Southwark Roadside

4.7.1. All Analysers 94%

8th August – 11th August 2001 (78 hours)
An air conditioning unit failure led to the loss of data from all analysers.

26th September – 28th September 2001 (49 hours)
6-month service.

4.8. Tower Hamlets Roadside

4.8.1. Nitrogen Oxides 93%

10th July – 16th July 2001 (150 hours)
A faulty chopper motor led to the loss of all data from this analyser.