AEA Energy & Environment
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# QA/QC Data Ratification Report for the Automatic Urban and Rural Network, April-June 2007

**Report produced for the Department for Environment, Food and Rural Affairs, Scottish Government, Welsh Assembly Government and the DoE in Northern Ireland**

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# Executive Summary

AEA carries out the quality assurance and control (QA/QC) activities for the Automatic Urban and Rural Monitoring Network (AURN) on behalf of the UK Department for Environment, Food and Rural Affairs (Defra), Scottish Government, Welsh Assembly Government and DoE in Northern Ireland.

Ratified hourly average data capture for the network averaged 94.0% for all pollutants ($O_3$, $NO_2$, $SO_2$, CO, $PM_{10}$ and $PM_{2.5}$) during the 3-month reporting period April-June 2007. Data capture rates for all pollutants were above 90%. There were 19 sites with data capture less than 90% for the period, of which 8 are classified as critical for the First, Second or Third Daughter Directives.

The number of monitoring sites in the AURN is now 130, of which 63 are Local Authority owned sites affiliated to the national network.

Although overall network data capture was reasonably high at 94.0%, there were a number of critical site/analysers that missed the 90% threshold. The main reasons for data loss at these sites have been provided and these were predominantly due to instrument faults, response instability or sites out of service for relocation or refurbishment. A summary of recommendations given in this report to help improve network performance is given in Appendix A4.

The first phase of conversion of TEOMs to FDMS is now complete, and there are now 23 FDMS TEOMs in the network. Performance has been good, and the QA/QC Unit has developed ratification and intercalibration tests to ensure high data quality. Two new BAM $PM_{10}$ analysers have been installed at Wrexham and Inverness.

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# 1 Introduction

This quarterly report covers the Quality Assurance and Control (QA/QC) activities undertaken by AEA to ratify automatic monitoring data from Defra and the Devolved Administrations' urban and rural air quality monitoring network (AURN) for the period April-June 2007. During this period there were 130 monitoring sites in the Network of which there are 91 urban sites, 25 rural sites and a further 14 sites in the London Air Quality Monitoring Network (LAQN) which are affiliated into the national network. There are currently 67 Defra-funded sites and 63 affiliate sites. Four sites (Belfast Clara Street, Northampton $PM_{10,}$ Wrexham $PM_{10}$ and Brighton Roadside $PM_{10}$) measure $PM_{10}$ only and are included as individual sites in the total of 130, although Northampton $PM_{10}$ is co-located with the Northampton AURN site, Wrexham $PM_{10}$ with the Wrexham AURN site, and Brighton Roadside $PM_{10}$ is close to the Brighton Roadside AURN site.

## 1.1 Recent Changes in the Network

This section gives an overview of the main changes that have recently taken place in the network, including site closures, relocations or the addition of any new sites to the network. A summary of changes in the AURN for the period is given in Table 1.1.

**Table 1.1 Changes in the Network, April-June 2007**

| Site | Date closed | Date commissioned | Comments |
|---|---|---|---|
| Inverness $PM_{10}$ | | 1 May 2007 | BAM analyser collocated with existing Partisol |

The QA/QC unit has also liased closely with the CMCU to update the LSO manual for Partisol and FDMS analysers and LSOs with these analysers at their sites should now follow these new procedures.

Further details of these network changes, which are undertaken in close co-operation with Bureau Veritas and the relevant Local Authorities, are given in the following sections.

## 1.2 TEOM Upgrades and BAM Installations

The upgrade of TEOM analysers to FDMS (Filter Dynamic Measurement System) has been taking place since the first quarter of 2007. The first such analysers were installed at the new affiliate site at Swansea Roadside during September 2006. In addition, two $PM_{10}$ BAM analysers have been installed at Inverness (April 2007) and Wrexham, which already have Partisol analysers.

As of 1 November, there are 23 FDMS units operating in the AURN; the installation dates are given in Table 1.2

**Table 1.2 List of FDMS Upgrades**

| Site Name | Defra / Affil | Installation date | Upgrade (U) or New (N) | Start of data on Archive |
|---|---|---|---|---|
| Birmingham Centre | Defra | 8 March | N | 08/03/2007 |
| Blackpool Marton | Defra | 5 June | U | 05/06/2007 |
| Bristol St Paul's | Defra | 13 Feb | U | 13/02/2007 |
| Cardiff Centre | Defra | 19 Feb | U | 19/02/2007 |
| Coventry Memorial Park | Defra | 7 March | U | 07/03/2007 |
| Hull Freetown | Defra | 20 Feb | U | 20/02/2007 |
| Leicester Centre | Defra | 28 March | U | 28/03/2007 |
| Liverpool Speke | Defra | 14 March | U | 14/03/2007 |
| Manchester Piccadilly | Defra | 15 March | N | 15/03/2007 |
| Newcastle Centre | Defra | 21 Feb | U | 21/02/2007 |
| Nottingham Centre | Defra | 27 March | N | 27/03/2007 |
| Plymouth Centre | Defra | 1 March | U | 01/03/2007 |
| Port Talbot | Affil | 13 Feb | U | 13/02/2007 |
| Preston | Defra | 5 June | U | 05/06/2007 |
| Reading New Town | Defra | 6 March | U | 06/03/2007 |
| Swansea Roadside | Affil | See Note 1 | N | 20/09/2006 |
| Southampton Centre | Defra | 2 April | U | 02/04/2007 |
| Southend-on-Sea | Defra | 4 April | U | 12/04/2007 (see Note 2) |
| Stoke-on-Trent Centre | Defra | 12 June | U | 12/06/2007 |
| Wolverhampton Centre | Defra | 13 June | N | 13/06/2007 |
| Sheffield Centre | Defra | 19 June | U | 19/06/2007 |
| Wirral Tranmere | Defra | 5 July | U | 16/07/2007 |
| Edinburgh St Leonards | Defra | 10 July | U | 10/07/2007 |

1] Swansea FDMS was installed by the authority on 20 September 2006. This was the first FMDS unit to be deployed in the network. Problems with the unit have persisted since its installation and questions surrounding the quality of data have arisen.
2] Commissioning audit completed in 12 April, which raised issues regarding noise of the data following LSO filter change. Additional problems encountered with regards to temperature instability. Data have been edited to reflect periods of uncertainty in quality of measurements.

A full description of the ratification procedures for FDMS data is given in the 2006 QA/QC Annual Report.

Table 1.3 provides a summary of the installation of two additional $PM_{10}$ Beta Attenuation Monitors (BAMs) into the network. The Wrexham BAM was installed during Q1 2007.

**Table 1.3 BAM Installations**

| Site Name | Defra / Affil | Installation date | Start of data on Archive |
|---|---|---|---|
| Inverness | Defra | 11 April | 01/05/2007 |

# 1.3 Overview of Network Performance

Ratified hourly average data capture for the network averaged 94.0% for all pollutants ($O_3$, $NO_2$, $SO_2$, CO, $PM_{10}$ and $PM_{2.5}$) during the 3-month reporting period April-June 2007 (see Table 1.4 below). All pollutants were 90% or higher data capture.

**Table 1.4 AURN Ratified Data Capture (%) by Quarter, 2007 (Using the start date of any new site)**

| Data Capture (%) | CO | $NO_2$ | $O_3$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | Network Average |
|---|---|---|---|---|---|---|---|
| Q1 Jan-Mar 2007 | 92.7 | 88.6 | 92.7 | 91.7 | 95.2 | 88.3 | 90.7 |
| Q2 Apr-June 2007 | 93.2 | 93.5 | 96.4 | 94.8 | 95.6 | 91.6 | 94.0 |

Overall, 376 out of the 436 analysers (79%) achieved data capture levels above the required 90% target during this reporting period (See Table 1.5).

**Table 1.5 Number of Analysers with Data Capture below 90%**

| Total Number Of Analysers | | Q1 Jan-Mar 2007 (No. below 90%) | Q2 Apr-Jun 2007 (No. below 90%) |
|---|---|---|---|
| CO | 78 | 16 | 14 |
| $NO_2$ | 111 | 23 | 16 |
| $O_3$ | 91 | 13 | 6 |
| $PM_{10}$ | 74* | 15 | 10 |
| $PM_{2.5}$ | 6* | 1 | 1 |
| $SO_2$ | 76 | 25 | 13 |
| Total <90% | 436 | 93 | 60 |

*Includes TEOM, TEOM FDMS, BAM and Partisol analysers

In total, 20 out of the 130 operational network sites in the quarter (15%) had an average data capture rate below the required 90% level for the April-June 2007 period. These sites are listed in Table 1.6. The main site operational and QA/QC issues giving rise to data capture below the required 90% level are summarised in Section 4. A summary of the main recommendations made in this report to help improve network performance is given in Appendix A4.

**Table 1.6 Sites with Average Data Capture < 90%, April-June 2007 (Data capture calculated from site start date)**

Just sites with average data capture < 90%

| Site | Owner | Site Average |
|---|---|---|
| **England** | | |
| Barnsley Gawber | Affiliate | 89.7 |
| Bolton | Affiliate | 55.6 |
| Bury Roadside | Affiliate | 32.3 |
| London Harlington | Affiliate | 89.7 |
| London Southwark | Affiliate | 89.4 |

| Site | Owner | Site Average |
|---|---|---|
| London Teddington | Affiliate | 88.3 |
| Manchester South | Affiliate | 87.9 |
| Oxford Centre Roadside | Affiliate | 83.6 |
| Redcar | Affiliate | 83.3 |
| Southwark Roadside | Affiliate | 0.0 |
| Tower Hamlets Roadside | Affiliate | 62.9 |
| Walsall Willenhall | Affiliate | 88.5 |
| West London | DEFRA | 89.7 |
| **Ireland** | | |
| **N Ireland** | | |
| **Scotland** | | |
| Auchencorth Moss | DEFRA | 49.9 |
| Fort William | DEFRA | 83.2 |
| Inverness $PM_{10}$ | DEFRA | 88.9 |
| Strath Vaich | DEFRA | 80.2 |
| **Wales** | | |
| Cwmbran | Affiliate | 83.1 |
| Wrexham | DEFRA | 86.1 |
| Wrexham $PM_{10}$ | DEFRA | 82.9 |

## 1.4 LSO Manual

As noted in Section 1.1, the LSO Manual has been updated to include a section on the TEOM FDMS analysers. In addition, the Partisol section of the manual has been updated. LSOs with these analysers at their site should now use the new version of the manual.

Copies of the original Local Site Operator's manual on disc (CD) were distributed to the network participants at the annual LSO meeting in December 2004. Copies of the new TEOM FDMS and Partisol sections will be distributed to the relevant LSOs as these analysers are installed into the network. If LSOs have not received a copy of the manual or further copies are required please contact Andy.Cook@aeat.co.uk. The manual, including the new TEOM and FDMS sections is available electronically on the following web sites:
**AURN Hub** http://www.aeat.co.uk/com/AURNHUB/lsoman.html
**Air Quality Archive** http://www.aeat.co.uk/netcen/airqual/reports/lsoman/lsoman.html

## 1.5 AURN Hub Updates

The AURN project information hub website is located at[1]:
http://www.aeat.co.uk/com/AURNHUB/index.html.

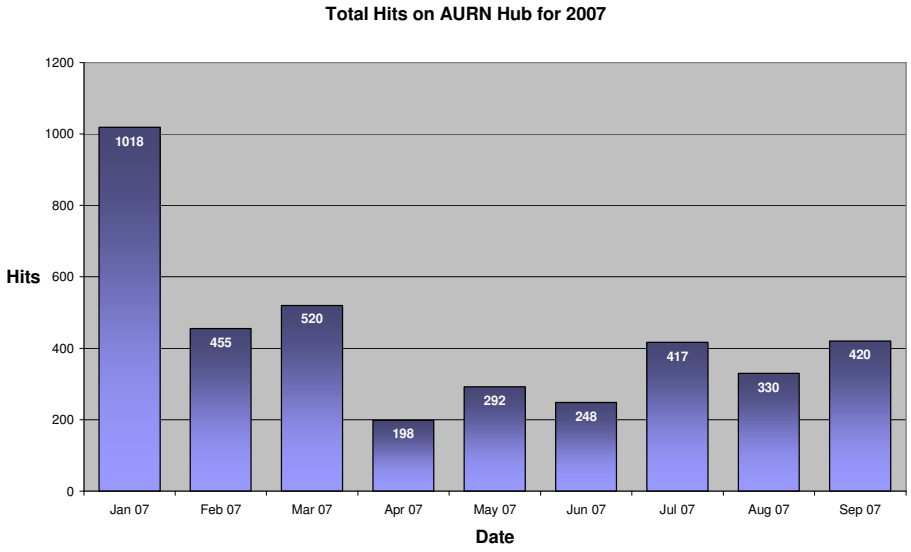
The site is regularly up-dated and some of the more recent information includes:

- Up-dated site lists and critical site list (September 2007)
- Monthly $PM_{10}$ (Gravimetric) exceedences up to September 2007
- QA/QC Unit's Data Ratification and Intercalibration Report, January-March 2007
- Recent Management Unit reports (April-June 2007)
- Updated version of the LSO manual

The Hub has continued to provide a valuable source of information for interested organisations-see Figure 1.4

[1] Password protected site: username and password available from stephen.bird@aeat.co.uk

**Figure 1.4 AURN Hub Monthly Usage Statistics January-September 2007**




# 2 Generic Data Quality Issues

## 2.1 Data Capture for Critical Sites in Zones and Agglomerations

In order to meet the requirements of the Daughter Directives, any zone or agglomeration[2] with an exceedence of the limit value must be formally reported to the Commission. The critical sites are those which, if data capture falls below 90%, there will be insufficient data for the whole zone or agglomeration. In most cases the critical sites are those where there is only one site in the zone or agglomeration. However, for some pollutants (especially ozone) monitoring is required at several sites in each zone or agglomeration and hence these may all need to be classified as critical sites for that pollutant. The list of the critical sites in the Network necessary to meet the requirements of the first, second and third Daughter Directives is given in Appendix A2. In total 63 sites (195 analysers) have been identified as critical for DD1, DD2 or DD3 (25 sites in agglomerations and 37 in zones).

Data capture for all 63 of the critical sites during the 3-month period April-June 2007 is given in Section 5, Table 5.2. The critical sites with less than 90% total data capture and the main reasons for data loss at these sites are given in Table 2.1 below. In total, 27 out of the 196 critical site analysers (15%) did not meet the required 90% data capture during the period April-June 2007. Note that some critical sites also measure other pollutants, which are not themselves critical.

[2] A definition of zones and agglomerations can be found under "Article 5 Assessment Zones and Agglomerations Monitoring Maps" at http://www.defra.gov.uk/environment/airquality/index.htm

**Table 2.1 Critical sites with <90% data capture, April-June 2007**

Network Data Capture for 01/04/2007 to 30/06/2007 from start date of any new site
sites with average data capture < 90%

| Site | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $SO_2$ | Site Average | Principal reason for data loss |
|---|---|---|---|---|---|---|---|
| **England** | | | | | | | |
| Barnsley Gawber | **89.3** | - | **85.8** | **94.1** | 89.8 | **89.7** | Flow sensor and logger faults |
| Oxford Centre Roadside | **53.5** | - | 98.2 | - | **99.3** | **83.6** | Poor quality CO data following service |
| **Scotland** | | | | | | | |
| Fort William | - | - | **87.0** | **79.4** | - | **83.2** | Frequent power failures |
| Inverness $PM_{10}$ | - | **88.9** | - | - | - | **88.9** | Instrument installed 1 May 2007 |
| Strath Vaich | - | - | - | **80.2** | - | **80.2** | Frequent analyser failures and replacements |
| **Wales** | | | | | | | |
| Cwmbran | **100.0** | **99.8** | **96.7** | **100.0** | **19.1** | **83.1** | Unstable $SO_2$ analyser |
| Wrexham | **86.5** | **90.1** | **82.7** | - | **85.2** | **86.1** | Power cut |
| Wrexham $PM_{10}$ | - | **82.9** | - | - | - | **82.9** | BAM tape fault |

Shaded boxes are for data capture < 90%
Bold data captures are for critical instruments and sites

Recommendation

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|---|
| Every effort should be made to ensure that data capture is maximised for the critical sites. LSOs and ESUs should undertake call-outs and repairs as soon as possible to avoid unnecessary data loss at these sites. |

## 2.2 Gravimetric $PM_{10}$ and $PM_{2.5}$ Data Ratification

Gravimetric $PM_{10}$ analysers (Partisols) are located at eight sites in the network (Bournemouth, Northampton, Wrexham, Dumfries, Inverness, London Westminster, Auchencorth Moss ($PM_{10}$ and $PM_{2.5}$) and Brighton Roadside $PM_{10}$).

Data capture for the gravimetric $PM_{10}$ (Partisol) analysers for the period April-June 2007 is given in Table 2.3. Eight of the nine sites for which data are available reached or exceeded the 90% data capture target in this quarter, with average data capture over all eight analysers of 96%.

**Table 2.3 Gravimetric $PM_{10}$ Data Capture (%) April-June 2007**

| Site | 3-months Data Capture (%) April-June 2007 |
|---|---|
| Auchencorth Moss $PM_{10}$ | 0 |
| Auchencorth Moss $PM_{2.5}$ | 99 |
| Bournemouth | 100 |
| Brighton Roadside $PM_{10}$ | 100 |
| London Westminster | 100 |
| Northampton $PM_{10}$ | 90 |
| Dumfries | 95 |
| Inverness | 89 |
| Wrexham | 91 |

The reasons for data loss in the gravimetric analysers are given in Appendix A5. Auchencorth Moss $PM_{10}$ was erroneously configured to measure $PM_{2.5}$ since installation in 2006-see Section 3.3.

Bureau Veritas has supplied the measured data, undertaken the filter weighing and calculated the particulate concentrations; AEA has ratified the results.

Recommendation

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|---|
| The Partisol at Northampton requires attention to prevent frequent filter exchange failures |

## 2.3 Auto-Calibration Run-ons

Autocalibration ”run-on” is a generic problem affecting many analysers in the network and is due to autocalibration gas leaking into the sampling system during the ambient measurement period immediately after the autocalibration cycle. The problem can be identified by examining the diurnal variation of pollutant concentrations for the individual sites. Invalid measurements (usually between 01:30 and 02:00) have been removed during data ratification. This can be a serious source of data loss resulting in one hour out of twenty four being deleted, which is 4% of the annual data capture. At some sites significantly more data are being lost resulting in data capture below the 90% data capture target for the period.

The ESUs have investigated the autocalibration run-ons at many of the sites and tried different ways to resolve the problem including thorough cleaning of the solenoid valves and installation of Permapure or silica gel driers. In most cases this has improved the situation but it has not always eliminated the problem completely.

The 28 sites (29 analysers) showing continuing problems with the autocalibration run-on during April-June 2007 are given in Table 2.5. Any autocalibration run-on data that look visibly significant have been deleted from these data sets during ratification.

There has been a notable improvement in the number of sites adversely affected by autocalibration faults during this quarter, and the efforts of the ESUs to achieve this are acknowledged.

Table 2.5 Estimate of Spike or Dip due to Auto-calibration Run-on: April-June

| Site | Pollutant | Run-On Conc | Autocal Conc | Hours lost | |
|---|---|---|---|---|---|
| Aberdeen | $NO_2$ | 4 | 200 | 1 | Fixed 6 June |
| Aston Hill | $NO_2$ | 2.5 | 50 | 1 | |
| Barnsley Gawber | $NO_2$ | 2 | 200 | 1 | |
| Birmingham Centre | $NO_2$ | 3 | 450 | 1 | |
| Bolton | $NO_2$ | 8 | 600 | 1 | |
| Bournemouth | $NO_2$ | 2 | 600 | 1 | |
| Bury Roadside | $NO_2$ | 5 | 350 | 1 | |
| Eskdalemuir | $NO_2$ | 0.6 | 500 | 2 | |
| Fort William | $NO_2$ | 4 | 350 | 1 | |
| Harwell | $NO_2$ | 0.7 | 200 | 1 | |
| Hove Roadside | $NO_2$ | 3 | 450 | 1 | |
| Hull Freetown | $NO_2$ | 2 | 200 | 1 | |
| Inverness | $NO_2$ | 1 | 250 | 1 | |
| Liverpool Speke | $NO_2$ | 2 | 250 | 1 | |
| London Brent | $NO_2$ | 2 | 466 | 1 | |
| London Eltham | $NO_2$ | 2 | 100 | 1 | |
| London Westminster | $NO_2$ | 3 | 412 | 1 | |
| Lullington Heath | $NO_2$ | 1.5 | 300 | 1 | |
| Newcastle Centre | $NO_2$ | 3 | 300 | 1 | |
| Redcar | $NO_2$ | 2 | 300 | 1 | |
| Somerton | $NO_2$ | 1 | 229 | 2 | |
| Southampton Centre | $NO_2$ | 9 | 210 | 1 | |
| Stockport Shaw Heath | $NO_2$ | 4 | 1100 | 1 | |
| Thurrock | $NO_2$ | 5 | 400 | 1 | |
| Walsall Willenhall | $NO_2$ | 2 | 550 | 1 | |
| Wrexham | $NO_2$ | 4 | 350 | 1 | |
| London Southwark | CO | -2 | | **4** | |
| Aberdeen | $SO_2$ | 0 | 500 | 1 | |
| Barnsley Gawber | $SO_2$ | -1 | 250 | 1 | Timing issue. Still problem after Aug service |
| Blackpool Marton | $SO_2$ | 0 | 250 | 1 | |
| Bradford Centre | $SO_2$ | -1 | 500 | 1 | Timing issue. Still problem after Aug service |
| London Southwark | $SO_2$ | 0 | 800 | **4** | |
| London Westminster | $SO_2$ | 0 | 450 | 1 | |
| Preston | $SO_2$ | -1 | 500 | 1 | Timing issue. Still problem after Aug service |
| Thurrock | $SO_2$ | 0 | 500 | 1 | |
| Wirral Tranmere | $SO_2$ | -1 | 500 | 1 | Timing issue. OK in Sept |

**Recommendations**

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| ESU to investigate and minimise effect where possible, especially at sites with large autocalibration run-ons or where data loss is in excess of 1 hour.<br>QA/QC Unit and CMCU have held meetings with the Equipment Support Units to discuss the autocalibration run-ons and to identify ways to resolve the problem. Solutions to the problems have been identified in many cases, and the necessary hardware upgrades are being installed either at routine services, or through call-outs.<br><br>**London Southwark (CO and $SO_2$) and Eskdalemuir should be prioritised as at least 2 hours per day are being lost at these sites. These sites have been highlighted as a priority in previous reports.**<br><br>In the meantime, we recommend that the autocalibration devices be adjusted at the problem sites to reduce the concentration of the span gas. It is strongly advised that $NO_2$ autocalibration span concentrations of less than 200ppb (urban sites) and 100ppb (rural sites) are used throughout the network. |

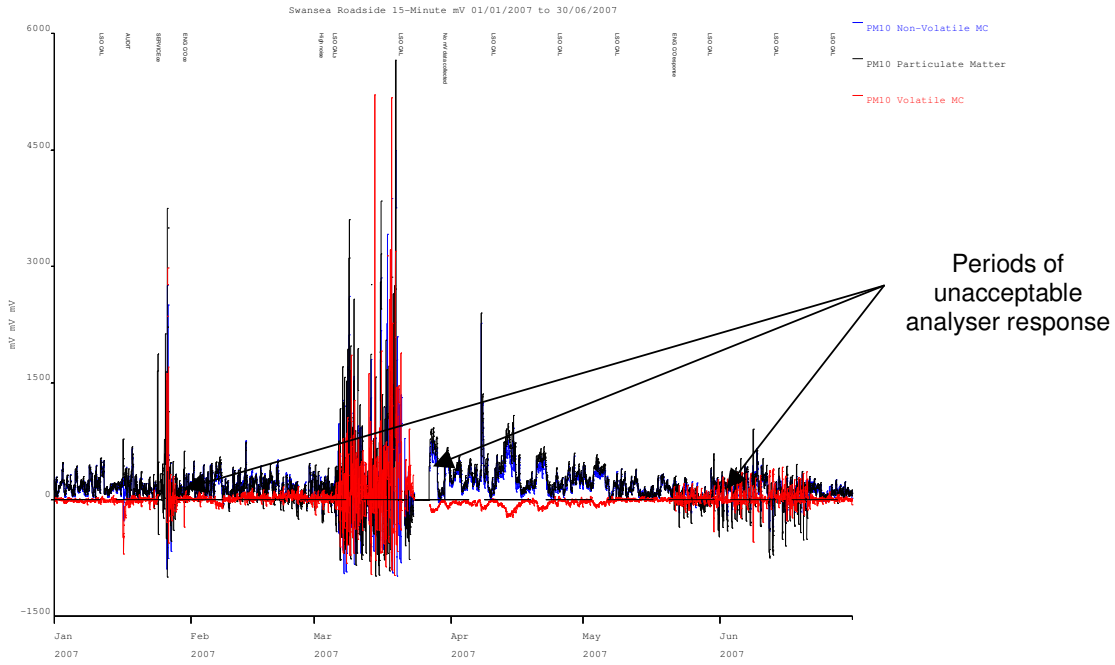
# 3 Site Specific Issues

## 3.1 Swansea Roadside $PM_{10}$

The Swansea Roadside site was the first in the network to receive FDMS analysers (for $PM_{10}$ and $PM_{2.5}$). The analysers have suffered from a variety of problems since installation, and some data have been lost as a result. The $PM_{10}$ has had most problems since 1 January, and is a critical site; data capture for the first 6 months of 2007 was 66%

The raw data for $PM_{10}$, volatile mass concentration and non-volatile mass concentration are shown in Figure 3.1 overleaf:

**Figure 3.1 Measured mass concentrations, Swansea Roadside**




The analyser has shown periods of very high noise, which have been deleted by the QA/QC Unit during ratification. The QA/QC unit is not in possession of documentation relating to the faults at this site.

## 3.2 Fort William

The Fort William site has suffered from numerous power failures, sometimes on just the NOx analyser. Data capture for NOx was 87%, with 14 separate power failures of 6 hours or more. The fault was traced to a loose connection in the cabin thermostat, and this was repaired on 10 September.

## 3.3 Auchencorth Moss

At a routine visit to the site on 13 August, it was noticed that both Partisols were measuring $PM_{2.5}$, rather than one each for $PM_{10}$ and $PM_{2.5}$. It is likely this has been the case since commencement of monitoring in 2006. All data from this analyser have now been deleted.

## 3.4 Other Analysers Highlighted in Recent Reports

Several analysers have been highlighted recently as being of concern to the QA/QC unit. An update is given in Table 3.3.

**Table 3.3 Status of Analysers Highlighted in Previous Reports**

| Site | Analyser | Fault | Current status |
|---|---|---|---|
| Bolton | NOx and SO2 | Various faults | Poor data capture in Q2. NOx converter setting in software incorrect; data deleted to September 2007. |
| Leamington Spa | NOx | Various faults | Now fixed |
| Narberth | All | PC logger failure | Now fixed |
| Weybourne | $O_3$ | No manual calibrations or IZS | No progress reported |
| Rural CO analysers | CO | Baseline drift | Drift still evident |
| Narberth | $O_3$ | Leak | Quality of $O_3$ data still uncertain; significant outlier at summer 2006 and winter 2007 audits. Installation of duplicate analyser still awaited. |
| Various | Rural ozone analysers | Temporary instruments installed some of which have no autocals | Two analysers have been upgraded by the manufacturer and are currently under test by the ESU. |

**Recommendation**

QA/QC Unit would like to seek clarification from the Equipment Support Unit/manufacturer as to the current situation regarding the reason for the problems and what plans are in place to resolve them. We recommend that immediate attention is given to the outstanding issues as the majority of these instruments are located at critical sites.

# 4 Sites with Data Capture Below 90%

## 4.1 Sites with Low Data Capture

The following section provides a summary of the main site analyser operational problems, which have resulted in data capture below the required 90% level during the reporting period April-June 2007 (Table 4.1). The number of days and hours of data lost for each cause is also given. In some cases the data gap extends beyond this three-month reporting period.

**Table 4.1 Sites with data capture below 90% April-June 2007**
(Using the start date of any new site or end date of site closed)

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| **England** | | | | | | | |
| Barnsley Gawber | | | | | | | |
| CO | 89.30% | 15-May-07 | 16-May-07 | Power cut | | 0.6 | 15 |
| | | 23-May-07 | 24-May-07 | Low flow rate | NOX flow sensor fault | 1 | 25 |
| | | 18-Jun-07 | 25-Jun-07 | Unstable response | ENG C/O | 7 | 168 |
| NO2 | 85.80% | 15-May-07 | 16-May-07 | Power cut | | 0.7 | 16 |
| | | 20-May-07 | 24-May-07 | Unstable response | Unstable prior to fault | 4.9 | 118 |

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| | | 22-Jun-07 | 25-Jun-07 | Logger fault | PC logger problems | 2.8 | 66 |
| SO2 | 89.80% | 15-May-07 | 16-May-07 | Power cut | | 0.8 | 19 |
| | | 23-May-07 | 24-May-07 | Low flow rate | flow sensor problems | 1 | 25 |
| | | 22-Jun-07 | 25-Jun-07 | Logger fault | PC logger replaced | 2.8 | 66 |
| Birmingham Centre | | | | | | | |
| SO2 | 82.80% | 3-Apr-07 | 4-Apr-07 | Instrument fault | Left on wrong range after visit | 1 | 25 |
| | | 15-May-07 | 29-May-07 | Sampling fault | ENG C/O No response. Fixed leaking filter holder | 14 | 336 |
| | | 30-May-07 | 30-May-07 | Power cut | | 0.4 | 9 |
| Birmingham Tyburn | | | | | | | |
| SO2 | 83.20% | 3-May-07 | 17-May-07 | Sampling fault | Suspected sampling issue | 14.1 | 339 |
| | | 3-Jun-07 | 4-Jun-07 | Power cut | | 0.9 | 22 |
| Bolton | | | | | | | |
| CO | 63.30% | 13-Apr-07 | 13-Apr-07 | Instrument fault | Unstable data | 0.3 | 7 |
| | | 14-May-07 | 15-May-07 | Unstable response | Large step change in data - sliding baseline | 0.8 | 18 |
| | | 1-Jun-07 | 1-Jun-07 | No mV data collected | PC Logger fault | 0.8 | 19 |
| | | 2-Jun-07 | 9-Aug-07 | No mV data collected | PC Logger fault | 68.7 | 1648 |
| NO2 | 34.20% | 1-Jan-07 | 1-May-07 | ESU service | | 120 | 2882 |
| | | 2-Jun-07 | 2-Jun-07 | No mV data collected | Logger fault | 0.3 | 7 |
| | | 3-Jun-07 | 9-Aug-07 | No mV data collected | PC Logger fault | 67.4 | 1618 |
| O3 | 66.40% | 13-Apr-07 | 13-Apr-07 | No mV data collected | No Data collected | 0.3 | 7 |
| | | 3-Jun-07 | 9-Aug-07 | No mV data collected | PC Logger fault | 67.4 | 1618 |
| PM10 | 66.50% | 13-Apr-07 | 13-Apr-07 | No mV data collected | PC Logger fault | 0.3 | 7 |
| | | 3-Jun-07 | 9-Aug-07 | No mV data collected | PC Logger fault | 67.4 | 1618 |
| SO2 | 47.40% | 1-Mar-07 | 20-Apr-07 | Instrument fault | Cooler problem | 50.5 | 1213 |
| | | 3-Jun-07 | 9-Aug-07 | No mV data collected | PC Logger fault | 67.4 | 1618 |
| Bury Roadside | | | | | | | |
| CO | 46.00% | 8-Apr-07 | 8-Apr-07 | No mV data collected | | 0.8 | 18 |
| | | 8-May-07 | 8-May-07 | No mV data collected | PC logger fault | 0.3 | 6 |
| | | 14-May-07 | 8-Jul-07 | Communication fault | PC logger fault | 55.3 | 1327 |
| NO2 | 44.00% | 8-Apr-07 | 8-Apr-07 | No mV data collected | PC logger fault | 0.8 | 18 |
| | | 8-May-07 | 8-May-07 | Communication fault | PC logger fault | 0.3 | 6 |
| | | 13-May-07 | 8-Jul-07 | Communication fault | PC logger fault | 55.6 | 1335 |
| O3 | 46.20% | 8-Apr-07 | 8-Apr-07 | No mV data collected | PC logger fault | 0.8 | 18 |
| | | 8-May-07 | 8-May-07 | Communication fault | PC logger fault | 0.3 | 6 |
| | | 14-May-07 | 8-Jul-07 | ESU service | PC logger fault | 55.3 | 1328 |
| PM10 | 25.50% | 8-Apr-07 | 8-Apr-07 | No mV data collected | PC logger fault | 0.8 | 18 |
| | | 25-Apr-07 | 8-Jul-07 | High noise | PC logger fault | 74.3 | 1782 |
| SO2 | 0.00% | 24-Mar-07 | 8-Jul-07 | Logger fault | PC logger fault | 106 | 2543 |
| Harwell | | | | | | | |
| O3 | 71.50% | 4-Mar-07 | 26-Apr-07 | Instrument fault | ENG C/O Replaced faulty switching valve | 53.5 | 1283 |
| Leicester Centre | | | | | | | |
| PM10 | 55.60% | 7-May-07 | 31-May-07 | High noise | Noisy data | 25 | 600 |
| | | 11-Jun-07 | 21-Jun-07 | High noise | Noisy data | 10 | 239 |
| | | 21-Jun-07 | 26-Jun-07 | Unstable response | Nulling of erratic data | 5.2 | 124 |

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| London Bloomsbury | | | | | | | |
| CO | 88.80% | 1-May-07 | 7-May-07 | Instrument fault | Eng c/o as analyser is unstable. | 7 | 168 |
| | | 28-Jun-07 | 31-Jul-07 | Monitoring suspended | ENG C/O Decommisioned site. No cals | 33.6 | 806 |
| London Eltham | | | | | | | |
| PM10 | 78.10% | 5-Feb-07 | 19-Apr-07 | Instrument fault | Water found inside sensor housing-roof leaking. | 72.8 | 1748 |
| London Harlington | | | | | | | |
| CO | 88.10% | 3-Jun-07 | 14-Jun-07 | Manifold fault | Blocked inlet manifold | 10.7 | 257 |
| NO2 | 87.90% | 3-Jun-07 | 14-Jun-07 | Manifold fault | Blocked inlet manifold | 10.7 | 257 |
| O3 | 84.40% | 3-Jun-07 | 14-Jun-07 | Manifold fault | Blocked inlet manifold | 10.7 | 257 |
| London Lewisham | | | | | | | |
| NO2 | 86.20% | 2-Apr-07 | 10-Apr-07 | Instrument fault | Converter temperature failure | 8.4 | 202 |
| | | 28-May-07 | 31-May-07 | Sampling fault | NO cylinder venting | 3.5 | 84 |
| London Southwark | | | | | | | |
| CO | 79.10% | 14-Apr-07 | 19-Apr-07 | Unstable response | Poor analyser response between LSO visits | 5 | 119 |
| SO2 | 80.10% | 14-Jun-07 | 18-Jun-07 | Pump fault | ENG C/O Pump seized. Replaced with external pump | 4 | 97 |
| London Teddington | | | | | | | |
| SO2 | 65.80% | 2-May-07 | 1-Jun-07 | Instrument fault | LSO turned instrument off because of noisy bearings | 30.6 | 735 |
| London Westminster | | | | | | | |
| CO | 84.10% | 22-May-07 | 5-Jun-07 | Air Conditioning fault | Deleted unstable data | 14.1 | 338 |
| NO2 | 86.60% | 25-May-07 | 4-Jun-07 | Air Conditioning fault | Air con fault | 9.7 | 232 |
| SO2 | 84.30% | 29-Mar-07 | 5-Apr-07 | Low flow rate | Unstable data deleted | 7.5 | 179 |
| | | 29-May-07 | 4-Jun-07 | Air Conditioning fault | Air con faults | 6.1 | 147 |
| Manchester South | | | | | | | |
| NO2 | 68.70% | 1-May-07 | 17-May-07 | Instrument fault | O3 generator replaced | 16.3 | 391 |
| | | 29-May-07 | 5-Jun-07 | NO2 converter fault | Converter leak | 7.3 | 175 |
| | | 26-Jun-07 | 11-Jul-07 | No calibrations | Analyser drifting | 15 | 360 |
| Oxford Centre Roadside | | | | | | | |
| CO | 53.50% | 2-Apr-07 | 14-May-07 | Instrument fault | Spurious increase in baseline. | 42.1 | 1011 |
| Plymouth Centre | | | | | | | |
| CO | 81.40% | 19-Mar-07 | 17-Apr-07 | Unstable response | NOx pump vibration causing CO to be noisy | 29 | 697 |
| Redcar | | | | | | | |
| CO | 46.30% | 2-Mar-07 | 17-May-07 | ESU service | SERVICE All instruments showing temp warnings. Turned everything off | 76.1 | 1826 |
| | | 2-Jun-07 | 3-Jun-07 | Air Conditioning fault | | 0.8 | 18 |
| | | 8-Jun-07 | 9-Jun-07 | Air Conditioning fault | | 0.6 | 14 |

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| | | 11-Jun-07 | 12-Jun-07 | Air Conditioning fault | | 0.9 | 21 |
| PM10 | 86.70% | 5-Mar-07 | 12-Apr-07 | Air Conditioning fault | | 38.2 | 917 |
| Southampton Centre | | | | | | | |
| NO2 | 87.40% | 15-Jun-07 | 18-Jun-07 | Instrument fault | ENG C/O Bad electrical connection | 3 | 73 |
| | | 26-Jun-07 | 31-Jul-07 | Instrument fault | Rejected by QA/QC unit. | 35.5 | 852 |
| Southwark Roadside | | | | | | | |
| CO | 0.00% | 1-Jan-07 | 25-Aug-07 | Monitoring suspended | Site closed awaiting relocation. | 237 | 5688 |
| NO2 | 0.00% | 1-Jan-07 | 25-Aug-07 | Monitoring suspended | Site closed awaiting relocation. | 237 | 5688 |
| SO2 | 0.00% | 1-Jan-07 | 25-Aug-07 | Monitoring suspended | Site closed awaiting relocation. | 237 | 5688 |
| Sunderland Silksworth | | | | | | | |
| NO2 | 82.80% | 21-May-07 | 6-Jun-07 | Instrument fault | Internal power supply fault | 15.5 | 372 |
| Tower Hamlets Roadside | | | | | | | |
| CO | 85.80% | 18-Jun-07 | 3-Aug-07 | Sampling fault | ENG C/O Found instrument not connected to sample line | 45.6 | 1094 |
| NO2 | 40.10% | 6-May-07 | 29-Jun-07 | Instrument fault | Multiple faults | 54.4 | 1306 |
| Walsall Willenhall | | | | | | | |
| NO2 | 88.50% | 21-Jun-07 | 29-Jun-07 | No mV data collected | No Data after LSO Cal | 8 | 191 |
| West London | | | | | | | |
| CO | 80.00% | 13-Jun-07 | 5-Jul-07 | Sampling fault | Sample line not connected | 21.9 | 525 |
| Wicken Fen | | | | | | | |
| NO2 | 82.40% | 7-Mar-07 | 16-Apr-07 | Unstable response | Analyser response drifting | 40.2 | 964 |
| **N Ireland** | | | | | | | |
| Belfast Centre | | | | | | | |
| SO2 | 76.40% | 3-Apr-07 | 5-Apr-07 | ESU service | | 2 | 49 |
| | | 3-Jun-07 | 22-Jun-07 | Instrument fault | Call out: Comms fault following power cut | 19.1 | 458 |
| Derry | | | | | | | |
| SO2 | 77.40% | 31-Mar-07 | 2-Apr-07 | No mV data collected | Possible power cut | 2.1 | 51 |
| | | 12-Jun-07 | 3-Aug-07 | Flat response | Probable analyser fault, data very low | 52.4 | 1258 |
| **Scotland** | | | | | | | |
| Fort William | | | | | | | |
| NO2 | 87.00% | 1-Apr-07 | 1-Apr-07 | Power cut | | 0.3 | 6 |
| | | 3-Apr-07 | 3-Apr-07 | Power cut | | 0.3 | 6 |
| | | 27-Apr-07 | 27-Apr-07 | Power cut | | 0.3 | 8 |
| | | 28-Apr-07 | 28-Apr-07 | Power cut | | 0.3 | 7 |
| | | 29-Apr-07 | 29-Apr-07 | Power cut | | 0.3 | 7 |
| | | 30-Apr-07 | 30-Apr-07 | Power cut | | 0.3 | 8 |
| | | 1-May-07 | 1-May-07 | Power cut | | 0.3 | 8 |
| | | 2-May-07 | 2-May-07 | Power cut | | 0.3 | 8 |

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| | | 3-May-07 | 3-May-07 | Power cut | | 0.4 | 9 |
| | | 4-May-07 | 4-May-07 | Power cut | | 0.3 | 8 |
| | | 15-May-07 | 16-May-07 | Power cut | | 1 | 24 |
| | | 5-Jun-07 | 5-Jun-07 | Power cut | | 0.3 | 8 |
| | | 6-Jun-07 | 6-Jun-07 | Power cut | | 0.3 | 8 |
| | | 9-Jun-07 | 9-Jun-07 | Power cut | | 0.3 | 7 |
| O3 | 79.40% | 5-Apr-07 | 6-Apr-07 | Power cut | | 1.4 | 33 |
| | | 11-Apr-07 | 23-Apr-07 | Unstable response | Eng c/o. Analyser unstable | 11.6 | 279 |
| | | 27-Apr-07 | 27-Apr-07 | Power cut | | 0.3 | 6 |
| | | 30-Apr-07 | 30-Apr-07 | Power cut | | 0.3 | 6 |
| | | 1-May-07 | 1-May-07 | Power cut | | 0.3 | 6 |
| | | 2-May-07 | 2-May-07 | Power cut | | 0.3 | 6 |
| | | 3-May-07 | 3-May-07 | Power cut | | 0.3 | 6 |
| | | 15-May-07 | 16-May-07 | Power cut | | 1 | 23 |
| | | 6-Jun-07 | 6-Jun-07 | Power cut | | 0.3 | 6 |
| Glasgow Centre | | | | | | | |
| NO2 | 87.00% | 17-Apr-07 | 28-Apr-07 | Unstable data | Rapid drift after LSO visit | 11.5 | 277 |
| Inverness PM10 | | | | | | | |
| PM10 | 88.90% | 1-Jan-07 | 1-May-07 | | Site started | 121 | 2904 |
| | | 15-Jun-07 | 21-Jun-07 | Instrument fault | Eng c/o. Tape had been installed wrong way around | 5.6 | 135 |
| Strath Vaich | | | | | | | |
| O3 | 80.20% | 31-Mar-07 | 17-Apr-07 | Unstable response | Eng c/o. Replaced very erratic instrument. | 17.4 | 418 |
| | | 21-Jun-07 | 21-Jun-07 | Instrument fault | | 0.4 | 9 |
| | | 27-Jun-07 | 28-Jun-07 | Instrument fault | Eng c/o. Erratic readings - mixing ppm and ppb. Reset instrument | 0.9 | 21 |
| **Wales** | | | | | | | |
| Cwmbran | | | | | | | |
| SO2 | 19.10% | 22-Jan-07 | 13-Jun-07 | Rapid zero or sensitivity drift | Baseline drift and erratic response | 142 | 3411 |
| Swansea Roadside | | | | | | | |
| PM10 | 65.70% | 21-May-07 | 21-Jun-07 | Unstable response | Erratic data following return of original sensor unit | 31.1 | 746 |
| PM25 | 83.90% | 7-May-07 | 21-May-07 | Unstable response | Erratic data nulled. | 14 | 337 |
| Wrexham | | | | | | | |
| CO | 86.50% | 4-Apr-07 | 16-Apr-07 | Power cut | Call out: Station power failure since QA/QC audit. | 11.9 | 285 |
| NO2 | 82.70% | 4-Apr-07 | 16-Apr-07 | Power cut | Call out: Station power failure since QA/QC audit. | 11.9 | 286 |
| SO2 | 85.20% | 4-Apr-07 | 16-Apr-07 | Power cut | Call out: Station power failure since QA/QC audit. | 12.1 | 291 |
| | | 12-Jun-07 | 12-Jun-07 | Operator error | Left in cal mode. | 0.3 | 6 |
| Wrexham PM10 | | | | | | | |
| PM10 | 82.90% | 4-Apr-07 | 16-Apr-07 | Power cut | Call out: Station power failure since QA/QC | 11.9 | 286 |

| Pollutant | Data Capture (%) | Start date | End date | Reason | Comments | Number of days | Number of hours |
|---|---|---|---|---|---|---|---|
| | | | | | audit. | | |
| | | 25-May-07 | 26-May-07 | No mV data collected | | 0.6 | 14 |
| | | 28-May-07 | 31-May-07 | No mV data collected | | 3 | 71 |

# 5 Ratified Data Capture Statistics

Table 5.1 provides the ratified data capture figures for each site for the 3-month period April-June 2007. Data capture values below 90% are shown in the shaded boxes.

**Table 5.1 Ratified Network Data Statistics: April-June 2007**

Network Data Capture for 01/04/2007 to 30/06/2007 from start date of any new site

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| **England** | | | | | | | | |
| Barnsley 12 | DEFRA | - | - | - | - | - | 97.7 | 97.7 |
| Barnsley Gawber | Affiliate | **89.3** | - | **85.8** | **94.1** | - | 89.8 | **89.7** |
| Bath Roadside | Affiliate | 95.4 | - | 97.8 | - | - | - | 96.6 |
| Billingham | DEFRA | - | - | 96.8 | - | - | - | 96.8 |
| Birmingham Centre | DEFRA | 99.4 | 98.9 | 96.5 | 99.5 | - | 82.8 | 95.4 |
| Birmingham Tyburn | Affiliate | 98.4 | 97.9 | 98.4 | 98.0 | - | 83.2 | 95.2 |
| Blackpool Marton | DEFRA | **98.8** | **98.2** | **98.6** | **98.8** | - | **94.4** | **97.8** |
| Bolton | Affiliate | 63.3 | 66.5 | 34.2 | 66.4 | - | 47.4 | 55.6 |
| Bottesford | Affiliate | - | - | - | 99.7 | - | - | 99.7 |
| Bournemouth | Affiliate | **99.6** | **100.0** | **95.2** | **100.0** | - | **99.7** | **98.9** |
| Bradford Centre | DEFRA | 98.5 | 99.1 | 98.4 | 97.7 | - | 95.6 | 97.9 |
| Brentford Roadside | Affiliate | 99.5 | - | 97.6 | - | - | - | 98.6 |
| Brighton Preston Park | DEFRA | - | - | **95.2** | **95.2** | - | - | **95.2** |
| Brighton Roadside | Affiliate | 99.4 | - | 99.4 | - | - | - | 99.4 |
| Brighton Roadside $PM_{10}$ | Affiliate | - | **100.0** | - | - | - | - | **100.0** |
| Bristol Old Market | Affiliate | 99.9 | - | 98.9 | - | - | - | 99.4 |
| Bristol St Paul's | DEFRA | 98.6 | 95.1 | 98.2 | 98.4 | - | 98.9 | 97.8 |
| Bury Roadside | Affiliate | 46.0 | 25.5 | 44.0 | 46.2 | - | 0.0 | 32.3 |
| Cambridge Roadside | Affiliate | - | - | 98.7 | - | - | - | 98.7 |
| Camden Kerbside | Affiliate | - | 99.5 | 94.0 | - | - | - | 96.8 |
| Canterbury | Affiliate | - | **99.3** | 99.7 | - | - | - | **99.5** |
| Coventry Memorial Park | DEFRA | **99.6** | **99.3** | **99.6** | **99.6** | - | **99.6** | **99.6** |
| Exeter Roadside | Affiliate | 99.5 | - | 99.5 | 99.5 | - | 99.5 | 99.5 |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Glazebury | DEFRA | - | - | **99.5** | **94.7** | - | - | **97.1** |
| Great Dun Fell | DEFRA | - | - | - | **97.8** | - | - | **97.8** |
| Haringey Roadside | Affiliate | - | 93.5 | 99.7 | - | - | - | 96.6 |
| Harwell | DEFRA | - | 99.5 | 96.5 | 71.5 | 99.5 | 93.7 | 92.2 |
| High Muffles | DEFRA | - | - | **99.0** | **99.3** | - | - | **99.2** |
| Hove Roadside | Affiliate | 99.5 | - | 96.7 | - | - | **99.5** | **98.6** |
| Hull Freetown | DEFRA | **93.1** | **99.7** | **95.4** | **99.6** | - | **99.6** | **97.5** |
| Ladybower | DEFRA | - | - | 99.5 | 99.5 | - | 98.7 | 99.2 |
| Leamington Spa | Affiliate | **98.4** | **99.6** | **94.6** | **98.3** | - | **97.2** | **97.6** |
| Leeds Centre | DEFRA | 98.6 | 99.6 | 98.7 | 99.5 | - | 98.7 | 99.0 |
| Leicester Centre | DEFRA | **99.5** | **55.6** | **99.3** | **99.4** | - | **99.6** | **90.7** |
| Leominster | DEFRA | - | - | **98.4** | **99.7** | - | - | **99.1** |
| Liverpool Speke | DEFRA | **99.5** | **99.8** | **95.2** | **99.5** | - | **99.5** | **98.7** |
| London A3 Roadside | DEFRA | 95.9 | 98.9 | 94.9 | - | - | - | 96.6 |
| London Bexley | Affiliate | 99.6 | 97.6 | 99.6 | 99.9 | - | 99.6 | 99.3 |
| London Bloomsbury | DEFRA | 88.8 | 96.5 | 96.3 | 95.9 | 96.5 | 96.6 | 95.1 |
| London Brent | Affiliate | 99.5 | 99.1 | 95.5 | 99.7 | - | 95.6 | 97.9 |
| London Bromley | Affiliate | - | - | 91.8 | - | - | - | 91.8 |
| London Cromwell Road 2 | DEFRA | 99.2 | - | 99.3 | - | - | 99.0 | 99.2 |
| London Eltham | Affiliate | - | 78.1 | 95.4 | 96.2 | - | 99.0 | 92.2 |
| London Hackney | Affiliate | 99.7 | - | 99.6 | 99.7 | - | - | 99.7 |
| London Haringey | Affiliate | - | - | - | 99.5 | - | - | 99.5 |
| London Harlington | Affiliate | 88.1 | 98.2 | 87.9 | 84.4 | - | - | 89.7 |
| London Hillingdon | DEFRA | 99.5 | 99.5 | 98.2 | 99.3 | - | 97.5 | 98.8 |
| London Lewisham | Affiliate | - | - | 86.2 | 99.6 | - | 99.6 | 95.1 |
| London Marylebone Road | Affiliate | 99.5 | 98.2 | 98.4 | 99.4 | 98.7 | 99.3 | 98.9 |
| London N. Kensington | Affiliate | 99.3 | 99.2 | 99.7 | 94.4 | - | 99.6 | 98.4 |
| London Southwark | Affiliate | 79.1 | - | 99.2 | 99.2 | - | 80.1 | 89.4 |
| London Teddington | Affiliate | - | - | 99.4 | 99.6 | - | 65.8 | 88.3 |
| London Wandsworth | Affiliate | - | - | 99.4 | 99.3 | - | - | 99.3 |
| London Westminster | DEFRA | 84.1 | 100.0 | 86.6 | 99.3 | - | 84.3 | 90.9 |
| Lullington Heath | DEFRA | - | - | 93.4 | 95.5 | - | 94.4 | 94.4 |
| Manchester | DEFRA | 96.5 | 99.6 | 99.5 | 99.5 | - | 96.1 | 98.2 |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Piccadilly | | | | | | | | |
| Manchester South | Affiliate | - | - | 68.7 | 97.1 | - | 98.0 | 87.9 |
| Manchester Town Hall | DEFRA | 98.5 | - | 98.4 | - | - | - | 98.4 |
| Market Harborough | DEFRA | 97.3 | - | 97.2 | 97.4 | - | - | 97.3 |
| Middlesbrough | Affiliate | 98.5 | 99.5 | 99.4 | 97.2 | - | 99.4 | 98.8 |
| Newcastle Centre | DEFRA | **99.5** | **100.0** | **95.6** | **99.8** | - | **99.8** | **98.9** |
| Northampton | Affiliate | **99.7** | **96.3** | **99.7** | **99.7** | - | **99.7** | **99.0** |
| Northampton $PM_{10}$ | Affiliate | - | **90.1** | - | - | - | - | **90.1** |
| Norwich Centre | DEFRA | 99.5 | 99.0 | **99.6** | **99.3** | - | 99.5 | **99.4** |
| Norwich Forum Roadside | Affiliate | - | - | 90.8 | - | - | - | 90.8 |
| Nottingham Centre | DEFRA | **99.6** | **99.1** | **98.6** | **99.6** | - | **99.5** | **99.3** |
| Oxford Centre Roadside | Affiliate | **53.5** | - | 98.2 | - | - | **99.3** | **83.6** |
| Plymouth Centre | DEFRA | 81.4 | **99.5** | 99.5 | 99.7 | - | 99.6 | **95.9** |
| Portsmouth | Affiliate | **99.5** | **99.3** | **99.5** | **99.4** | - | **99.5** | **99.4** |
| Preston | DEFRA | **93.5** | **99.1** | **92.8** | **93.5** | - | **90.7** | **93.9** |
| Reading New Town | DEFRA | **96.2** | **96.2** | **96.2** | **96.6** | - | **96.2** | **96.3** |
| Redcar | Affiliate | 46.3 | 86.7 | 95.0 | 97.4 | - | 90.9 | 83.3 |
| Rochester Stoke | Affiliate | - | 98.1 | 98.5 | 98.5 | 99.5 | 98.5 | 98.6 |
| Rotherham Centre | Affiliate | - | - | 97.5 | 97.3 | - | 97.5 | 97.5 |
| Salford Eccles | Affiliate | 96.8 | 96.9 | 96.8 | 96.8 | - | 96.6 | 96.8 |
| Sandwell West Bromwich | Affiliate | 99.5 | - | 99.5 | 98.0 | - | 99.4 | 99.1 |
| Scunthorpe Town | Affiliate | - | **99.5** | - | - | - | 99.5 | **99.5** |
| Sheffield Centre | DEFRA | 97.7 | **98.3** | 93.8 | 98.3 | - | 94.6 | **96.5** |
| Sheffield Tinsley | DEFRA | 97.8 | - | 97.8 | - | - | - | 97.8 |
| Sibton | DEFRA | - | - | - | **93.8** | - | - | **93.8** |
| Somerton | Affiliate | - | - | **93.9** | **99.5** | - | - | **96.7** |
| Southampton Centre | DEFRA | **99.6** | **99.1** | **87.4** | **96.1** | - | **99.5** | **96.3** |
| Southend-on-Sea | DEFRA | **99.2** | **99.1** | **99.5** | **99.0** | - | **99.5** | **99.3** |
| Southwark Roadside | Affiliate | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 |
| St Osyth | DEFRA | 99.8 | - | **98.2** | **99.8** | - | - | **99.3** |
| Stockport Shaw Heath | Affiliate | 95.8 | 99.5 | 95.5 | - | - | 100.0 | 97.7 |
| Stockton-on-Tees Yarm | Affiliate | **96.4** | **98.0** | **99.7** | - | - | - | **98.0** |
| Stoke-on-Trent Centre | DEFRA | **98.4** | **98.9** | **98.5** | **99.0** | - | **96.2** | **98.2** |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Sunderland | DEFRA | - | - | - | - | - | **98.4** | **98.4** |
| Sunderland Silksworth | Affiliate | - | - | **82.8** | **99.8** | - | - | **91.3** |
| Thurrock | Affiliate | 96.5 | 99.7 | **96.4** | **97.3** | - | 95.4 | **97.1** |
| Tower Hamlets Roadside | Affiliate | 85.8 | - | 40.1 | - | - | - | 62.9 |
| Walsall Alumwell | DEFRA | - | - | 100.0 | - | - | - | 100.0 |
| Walsall Willenhall | Affiliate | - | - | 88.5 | - | - | - | 88.5 |
| West London | DEFRA | 80.0 | - | 99.3 | - | - | - | 89.7 |
| Weybourne | Affiliate | - | - | - | 94.0 | - | - | 94.0 |
| Wicken Fen | DEFRA | - | - | **82.4** | **99.4** | - | 99.3 | **93.7** |
| Wigan Centre | Affiliate | **99.5** | **99.4** | **99.7** | **94.6** | - | **99.7** | **98.6** |
| Wirral Tranmere | DEFRA | **95.7** | **98.4** | **95.2** | **93.2** | - | **92.9** | **95.1** |
| W'hampton Centre | DEFRA | 96.6 | 99.3 | 99.4 | 99.5 | - | 99.4 | 98.8 |
| Yarner Wood | DEFRA | - | - | **90.5** | **92.5** | - | - | **91.5** |
| **Ireland** | | | | | | | | |
| Mace Head | Affiliate | - | - | - | 96.0 | - | - | 96.0 |
| **N Ireland** | | | | | | | | |
| Belfast Centre | DEFRA | **93.7** | 93.5 | **93.5** | **93.6** | - | 76.4 | **90.1** |
| Belfast Clara St | Affiliate | - | 99.4 | - | - | - | - | 99.4 |
| Belfast East | DEFRA | - | - | - | - | - | 99.5 | 99.5 |
| Derry | Affiliate | **98.3** | **98.4** | **98.1** | **98.4** | - | **77.4** | **94.1** |
| Lough Navar | DEFRA | - | 97.8 | - | **97.8** | - | - | **97.8** |
| **Scotland** | | | | | | | | |
| Aberdeen | Affiliate | **99.9** | **97.2** | **96.0** | **99.7** | - | **97.1** | **98.0** |
| Auchencorth Moss | DEFRA | - | 0 | - | 100.0 | - | - | 49.9 |
| Bush Estate | DEFRA | - | - | **93.4** | **99.3** | - | - | **96.4** |
| Dumfries | DEFRA | **99.8** | **94.5** | **99.8** | - | - | - | **98.0** |
| Edinburgh St Leonards | DEFRA | **99.2** | **96.7** | **99.2** | **98.8** | - | **98.9** | **98.6** |
| Eskdalemuir | DEFRA | - | - | **95.5** | **99.6** | - | - | **97.6** |
| Fort William | DEFRA | - | - | **87.0** | **79.4** | - | - | **83.2** |
| Glasgow Centre | DEFRA | 99.6 | 99.7 | **87.0** | **99.6** | - | **99.6** | **97.1** |
| Glasgow City Chambers | DEFRA | 99.9 | - | 99.5 | - | - | - | 99.7 |
| Glasgow Kerbside | DEFRA | 99.6 | 94.1 | 90.6 | - | - | - | 94.8 |
| Grangemouth | Affiliate | **99.0** | **99.1** | **99.1** | - | - | **99.1** | **99.1** |
| Inverness | DEFRA | 98.9 | **89.0** | **96.1** | - | - | - | **94.7** |
| Inverness $PM_{10}$ | DEFRA | - | **88.9** | - | - | - | - | **88.9** |
| Lerwick | DEFRA | - | - | - | 98.9 | - | - | 98.9 |
| Strath Vaich | DEFRA | - | - | - | **80.2** | - | - | **80.2** |
| **Wales** | | | | | | | | |
| Aston Hill | DEFRA | - | - | **94.0** | **98.2** | - | - | **96.1** |
| Cardiff Centre | DEFRA | **97.0** | **99.5** | **99.5** | **99.8** | - | **99.7** | **99.1** |
| Cwmbran | Affiliate | **100.0** | **99.8** | **96.7** | **100.0** | - | **19.1** | **83.1** |
| Narberth | DEFRA | - | 94.3 | 95.6 | **95.2** | - | 95.6 | **95.2** |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Port Talbot | Affiliate | - | 99.5 | 99.0 | 99.0 | - | 94.1 | 97.9 |
| Swansea Roadside | Affiliate | **99.6** | 65.7 | 99.6 | 99.5 | 83.9 | 99.6 | **91.3** |
| Wrexham | DEFRA | **86.5** | **90.1** | **82.7** | - | - | **85.2** | **86.1** |
| Wrexham $PM_{10}$ | DEFRA | - | **82.9** | - | - | - | - | **82.9** |
| | | | | | | | | |
| **Number of sites** | | 78 | 74 | 111 | 91 | 5 | 76 | 130 |
| **Number of sites < 90%** | | 14 | 9 | 16 | 6 | 1 | 13 | 19 |
| **Network Mean (%)** | | 93.2 | 94.8 | 93.5 | 96.4 | 95.6 | 91.6 | 94.0 |

Shaded boxes are for data capture < 90%
Bold data captures are for critical instruments and sites

Table 5.2 shows the ratified data capture figures for the 6-month period January-June 2007.

**Table 5.2 Ratified Network Data Statistics: January-June 2007**

Network Data Capture for 01/01/2007 to 30/06/2007 from start date of any new site

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| **England** | | | | | | | | |
| Barnsley 12 | DEFRA | - | - | - | - | - | 92.5 | 92.5 |
| Barnsley Gawber | Affiliate | **90.9** | - | **89.2** | **93.6** | - | 89.8 | **90.9** |
| Bath Roadside | Affiliate | 92.0 | - | 97.9 | - | - | - | 94.9 |
| Billingham | DEFRA | - | - | 96.3 | - | - | - | 96.3 |
| Birmingham Centre | DEFRA | 97.6 | 97.2 | 94.9 | 96.5 | - | 84.3 | 94.1 |
| Birmingham Tyburn | Affiliate | 93.1 | 98.3 | 98.9 | 98.6 | - | 91.2 | 96.0 |
| Blackpool Marton | DEFRA | **97.6** | **91.1** | **96.6** | **97.3** | - | **91.7** | **94.9** |
| Bolton | Affiliate | 79.9 | 81.7 | 17.2 | 81.7 | - | 53.4 | 62.8 |
| Bottesford | Affiliate | - | - | - | 99.5 | - | - | 99.5 |
| Bournemouth | Affiliate | **98.6** | **98.3** | **95.0** | **98.9** | - | **98.6** | **97.9** |
| Bradford Centre | DEFRA | 94.4 | 92.6 | 70.3 | 94.0 | - | 85.4 | 87.3 |
| Brentford Roadside | Affiliate | 99.3 | - | 98.3 | - | - | - | 98.8 |
| Brighton Preston Park | DEFRA | - | - | **94.3** | **94.2** | - | - | **94.2** |
| Brighton Roadside | Affiliate | 99.2 | - | 98.1 | - | - | - | 98.6 |
| Brighton Roadside PM10 | Affiliate | - | **98.9** | - | - | - | - | **98.9** |
| Bristol Old Market | Affiliate | 97.8 | - | 96.4 | - | - | - | 97.1 |
| Bristol St Paul's | DEFRA | 97.8 | 96.8 | 88.1 | 97.8 | - | 98.1 | 95.7 |
| Bury Roadside | Affiliate | 70.9 | 61.9 | 69.8 | 68.9 | - | 44.7 | 63.2 |
| Cambridge Roadside | Affiliate | - | - | 95.4 | - | - | - | 95.4 |
| Camden Kerbside | Affiliate | - | 99.4 | 96.7 | - | - | - | 98.1 |
| Canterbury | Affiliate | - | **98.9** | 98.9 | - | - | - | **98.9** |
| Coventry Memorial Park | DEFRA | **99.5** | **99.2** | **99.4** | **99.4** | - | **99.5** | **99.4** |
| Exeter Roadside | Affiliate | 98.8 | - | 98.8 | 98.8 | - | 98.8 | 98.8 |
| Glazebury | DEFRA | - | - | **95.2** | **47.6** | - | - | **71.4** |
| Great Dun Fell | DEFRA | - | - | - | **95.2** | - | - | **95.2** |
| Haringey Roadside | Affiliate | - | 87.0 | 93.3 | - | - | - | 90.2 |
| Harwell | DEFRA | - | 97.1 | 95.5 | 68.0 | 97.1 | 82.7 | 88.1 |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| High Muffles | DEFRA | - | - | **97.4** | **98.5** | - | - | **98.0** |
| Hove Roadside | Affiliate | 99.4 | - | 95.9 | - | - | **99.2** | **98.2** |
| Hull Freetown | DEFRA | **88.9** | **98.3** | **95.2** | **98.5** | - | **97.0** | **95.6** |
| Ladybower | DEFRA | - | - | 80.6 | 97.9 | - | 87.5 | 88.6 |
| Leamington Spa | Affiliate | **98.6** | **99.3** | **47.5** | **98.1** | - | **98.0** | **88.3** |
| Leeds Centre | DEFRA | 98.4 | 99.0 | 98.5 | 98.8 | - | 98.5 | 98.6 |
| Leicester Centre | DEFRA | **99.3** | **76.9** | **99.2** | **99.1** | - | **99.3** | **94.8** |
| Leominster | DEFRA | - | - | **93.6** | **99.1** | - | - | **96.3** |
| Liverpool Speke | DEFRA | **98.2** | **97.4** | **96.0** | **98.2** | - | **98.1** | **97.6** |
| London A3 Roadside | DEFRA | 96.6 | 97.9 | 96.0 | - | - | - | 96.8 |
| London Bexley | Affiliate | 98.9 | 97.9 | 98.8 | 99.1 | - | 98.9 | 98.7 |
| London Bloomsbury | DEFRA | 85.7 | 96.7 | 89.5 | 89.2 | 96.5 | 82.2 | 90.0 |
| London Brent | Affiliate | 98.9 | 94.8 | 94.7 | 99.0 | - | 94.8 | 96.4 |
| London Bromley | Affiliate | - | - | 94.4 | - | - | - | 94.4 |
| London Cromwell Road 2 | DEFRA | 96.2 | - | 95.3 | - | - | 93.4 | 95.0 |
| London Eltham | Affiliate | - | 58.0 | 94.7 | 96.6 | - | 86.9 | 84.1 |
| London Hackney | Affiliate | 99.5 | - | 99.5 | 99.5 | - | - | 99.5 |
| London Haringey | Affiliate | - | - | - | 70.1 | - | - | 70.1 |
| London Harlington | Affiliate | 94.0 | 65.9 | 89.1 | 84.9 | - | - | 83.5 |
| London Hillingdon | DEFRA | 97.4 | 98.0 | 97.4 | 98.0 | - | 97.2 | 97.6 |
| London Lewisham | Affiliate | - | - | 88.8 | 99.5 | - | 97.8 | 95.3 |
| London Marylebone Road | Affiliate | 93.4 | 98.2 | 98.7 | 99.2 | 98.7 | 99.1 | 97.9 |
| London N. Kensington | Affiliate | 99.3 | 98.1 | 99.4 | 94.8 | - | 93.7 | 97.1 |
| London Southwark | Affiliate | 80.9 | - | 98.6 | 98.6 | - | 80.8 | 89.7 |
| London Teddington | Affiliate | - | - | 98.3 | 99.0 | - | 81.9 | 93.1 |
| London Wandsworth | Affiliate | - | - | 95.1 | 99.2 | - | - | 97.1 |
| London Westminster | DEFRA | 91.1 | 91.7 | 64.6 | 98.7 | - | 89.5 | 87.1 |
| Lullington Heath | DEFRA | - | - | 94.2 | 95.9 | - | 95.4 | 95.2 |
| Manchester Piccadilly | DEFRA | 96.3 | 98.0 | 96.1 | 98.2 | - | 96.5 | 97.0 |
| Manchester South | Affiliate | - | - | 82.9 | 91.6 | - | 97.3 | 90.6 |
| Manchester Town Hall | DEFRA | 81.1 | - | 94.4 | - | - | - | 87.8 |
| Market Harborough | DEFRA | 97.6 | - | 97.5 | 97.7 | - | - | 97.6 |
| Middlesbrough | Affiliate | 93.9 | 98.7 | 98.8 | 97.9 | - | 98.8 | 97.6 |
| Newcastle Centre | DEFRA | **98.2** | **99.0** | **94.2** | **98.4** | - | **98.3** | **97.6** |
| Northampton | Affiliate | **99.5** | **97.8** | **99.5** | **98.9** | - | **99.5** | **99.1** |
| Northampton PM10 | Affiliate | - | **80.1** | - | - | - | - | **80.1** |
| Norwich Centre | DEFRA | 99.3 | 98.5 | **99.2** | **99.2** | - | 82.4 | **95.7** |
| Norwich Forum Roadside | Affiliate | - | - | 94.3 | - | - | - | 94.3 |
| Nottingham Centre | DEFRA | **97.9** | **91.8** | **97.4** | **98.3** | - | **98.2** | **96.7** |
| Oxford Centre Roadside | Affiliate | **75.0** | - | 97.5 | - | - | **98.1** | **90.2** |
| Plymouth Centre | DEFRA | 61.8 | **77.5** | 70.6 | 77.9 | - | 77.8 | **73.1** |
| Portsmouth | Affiliate | **98.7** | **97.6** | **98.4** | **98.7** | - | **98.5** | **98.4** |
| Preston | DEFRA | **95.1** | **98.2** | **95.0** | **92.9** | - | **94.1** | **95.1** |
| Reading New Town | DEFRA | **96.6** | **93.0** | **96.3** | **96.6** | - | **93.1** | **95.1** |
| Redcar | Affiliate | 56.5 | 78.1 | 82.3 | 77.2 | - | 80.6 | 75.0 |
| Rochester Stoke | Affiliate | - | 97.9 | 98.1 | 98.1 | 98.7 | 98.1 | 98.2 |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Rotherham Centre | Affiliate | - | - | 97.4 | 97.2 | - | 97.4 | 97.3 |
| Salford Eccles | Affiliate | 95.9 | 94.3 | 97.1 | 97.2 | - | 94.3 | 95.8 |
| Sandwell West Bromwich | Affiliate | 93.3 | - | 97.9 | 96.9 | - | 97.8 | 96.5 |
| Scunthorpe Town | Affiliate | - | **98.8** | - | - | - | 98.8 | **98.8** |
| Sheffield Centre | DEFRA | 92.2 | **97.8** | 90.3 | 92.6 | - | 90.5 | **92.7** |
| Sheffield Tinsley | DEFRA | 98.0 | - | 97.8 | - | - | - | 97.9 |
| Sibton | DEFRA | - | - | - | **96.1** | - | - | **96.1** |
| Somerton | Affiliate | - | - | **96.0** | **98.9** | - | - | **97.4** |
| Southampton Centre | DEFRA | **98.4** | **98.1** | **90.1** | **96.6** | - | **98.4** | **96.3** |
| Southend-on-Sea | DEFRA | **99.1** | **98.8** | **99.1** | **98.9** | - | **99.2** | **99.0** |
| Southwark Roadside | Affiliate | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 |
| St Osyth | DEFRA | 98.9 | - | **96.8** | **97.8** | - | - | **97.8** |
| Stockport Shaw Heath | Affiliate | 96.4 | 98.0 | 71.9 | - | - | 99.0 | 91.3 |
| Stockton-on-Tees Yarm | Affiliate | **97.4** | **97.7** | **99.1** | - | - | - | **98.1** |
| Stoke-on-Trent Centre | DEFRA | **97.9** | **98.2** | **97.7** | **96.1** | - | **94.2** | **96.8** |
| Sunderland | DEFRA | - | - | - | - | - | **92.8** | **92.8** |
| Sunderland Silksworth | Affiliate | - | - | **85.9** | **97.0** | - | - | **91.5** |
| Thurrock | Affiliate | 91.8 | 98.9 | **75.6** | **97.7** | - | 96.7 | **92.1** |
| Tower Hamlets Roadside | Affiliate | 92.4 | - | 69.5 | - | - | - | 80.9 |
| Walsall Alumwell | DEFRA | - | - | 99.0 | - | - | - | 99.0 |
| Walsall Willenhall | Affiliate | - | - | 93.9 | - | - | - | 93.9 |
| West London | DEFRA | 85.0 | - | 98.1 | - | - | - | 91.6 |
| Weybourne | Affiliate | - | - | - | 96.9 | - | - | 96.9 |
| Wicken Fen | DEFRA | - | - | **75.7** | **98.2** | - | 98.1 | **90.7** |
| Wigan Centre | Affiliate | **97.7** | **99.4** | **93.0** | **96.9** | - | **96.5** | **96.7** |
| Wirral Tranmere | DEFRA | **87.9** | **97.6** | **96.2** | **95.3** | - | **52.0** | **85.8** |
| Wolverhampton Centre | DEFRA | 96.8 | 96.4 | 98.0 | 98.1 | - | 98.2 | 97.5 |
| Yarner Wood | DEFRA | - | - | **93.2** | **94.5** | - | - | **93.8** |
| **Ireland** | | | | | | | | |
| Mace Head | Affiliate | - | - | - | 97.1 | - | - | 97.1 |
| **N Ireland** | | | | | | | | |
| Belfast Centre | DEFRA | **95.8** | 95.2 | **95.3** | **95.9** | - | 81.5 | **92.7** |
| Belfast Clara St | Affiliate | - | 99.2 | - | - | - | - | 99.2 |
| Belfast East | DEFRA | - | - | - | - | - | 99.1 | 99.1 |
| Derry | Affiliate | **96.2** | **96.3** | **81.5** | **96.3** | - | **85.6** | **91.2** |
| Lough Navar | DEFRA | - | 97.7 | - | **97.7** | - | - | **97.7** |
| **Scotland** | | | | | | | | |
| Aberdeen | Affiliate | **98.8** | **98.3** | **95.1** | **98.8** | - | **97.4** | **97.7** |
| Auchencorth Moss | DEFRA | - | 0 | - | 99.3 | - | - | 49.7 |
| Bush Estate | DEFRA | - | - | **95.5** | **98.4** | - | - | **96.9** |
| Dumfries | DEFRA | **92.2** | **93.9** | **98.5** | - | - | - | **94.9** |
| Edinburgh St Leonards | DEFRA | **98.7** | **97.1** | **95.9** | **96.7** | - | **98.4** | **97.4** |
| Eskdalemuir | DEFRA | - | - | **64.7** | **98.3** | - | - | **81.5** |
| Fort William | DEFRA | - | - | **88.4** | **77.0** | - | - | **82.7** |
| Glasgow Centre | DEFRA | 98.3 | 97.7 | **85.5** | **98.3** | - | **94.0** | **94.8** |
| Glasgow City | DEFRA | 99.1 | - | 98.5 | - | - | - | 98.8 |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Chambers | | | | | | | | |
| Glasgow Kerbside | DEFRA | 99.0 | 95.3 | 90.5 | - | - | - | 94.9 |
| Grangemouth | Affiliate | **98.1** | **98.2** | **98.2** | - | - | **98.3** | **98.2** |
| Inverness | DEFRA | 98.5 | **86.2** | **97.1** | - | - | - | **93.9** |
| Inverness PM10 | DEFRA | - | **88.9** | - | - | - | - | **88.9** |
| Lerwick | DEFRA | - | - | - | 91.4 | - | - | 91.4 |
| Strath Vaich | DEFRA | - | - | - | **81.8** | - | - | **81.8** |
| **Wales** | | | | | | | | |
| Aston Hill | DEFRA | - | - | **94.5** | **95.9** | - | - | **95.2** |
| Cardiff Centre | DEFRA | **95.2** | **92.1** | **97.9** | **98.5** | - | **98.3** | **96.4** |
| Cwmbran | Affiliate | **99.3** | **99.1** | **97.7** | **99.3** | - | **21.4** | **83.4** |
| Narberth | DEFRA | - | 82.8 | 84.0 | **84.0** | - | 84.2 | **83.8** |
| Port Talbot | Affiliate | - | 96.1 | 98.0 | 98.0 | - | 95.5 | 96.9 |
| Swansea Roadside | Affiliate | **98.3** | 66.6 | 98.3 | 97.8 | 86.0 | 98.3 | **90.9** |
| Wrexham | DEFRA | **92.4** | **92.8** | **88.3** | - | - | **91.6** | **91.3** |
| Wrexham PM10 | DEFRA | - | **84.3** | - | - | - | - | **84.3** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Number of sites** | | 78 | 74 | 111 | 91 | 5 | 76 | 130 |
| **Number of sites < 90%** | | 12 | 14 | 26 | 12 | 1 | 21 | 27 |
| **Network Mean (%)** | | 92.9 | 93.2 | 91.1 | 94.6 | 95.4 | 90.0 | 92.4 |

Shaded boxes are for data capture < 90%
Bold data captures are for critical instruments and sites

Table 5.3 shows the ratified AURN data capture for the 63 operational **critical sites** in the network for the 6-month period January-June 2007. Sites with less than 90% data capture are shaded. This table contains the overall data capture for 6 months, regardless of when sites started or finished monitoring. A total of 12 critical sites had a data capture of less than 90%.

**Table 5.3 AURN Ratified Data Capture (%) for Critical Sites January to June 2007**

Network Data Capture for 01/01/2007 to 30/06/2007 from start date of any new site

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| **England** | | | | | | | | |
| Barnsley Gawber | Affiliate | **90.9** | - | **89.2** | **93.6** | - | 89.8 | **90.9** |
| Blackpool Marton | DEFRA | **97.6** | **91.1** | **96.6** | **97.3** | - | **91.7** | **94.9** |
| Bournemouth | Affiliate | **98.6** | **98.3** | **95.0** | **98.9** | - | **98.6** | **97.9** |
| Brighton Preston Park | DEFRA | - | - | **94.3** | **94.2** | - | - | **94.2** |
| Brighton Roadside $PM_{10}$ | Affiliate | - | **98.9** | - | - | - | - | **98.9** |
| Canterbury | Affiliate | - | **98.9** | 98.9 | - | - | - | **98.9** |
| Coventry Memorial Park | DEFRA | **99.5** | **99.2** | **99.4** | **99.4** | - | **99.5** | **99.4** |
| Glazebury | DEFRA | - | - | **95.2** | **47.6** | - | - | **71.4** |
| Great Dun Fell | DEFRA | - | - | - | **95.2** | - | - | **95.2** |
| High Muffles | DEFRA | - | - | **97.4** | **98.5** | - | - | **98.0** |
| Hove Roadside | Affiliate | 99.4 | - | 95.9 | - | - | **99.2** | **98.2** |
| Hull Freetown | DEFRA | **88.9** | **98.3** | **95.2** | **98.5** | - | **97.0** | **95.6** |
| Leamington Spa | Affiliate | **98.6** | **99.3** | **47.5** | **98.1** | - | **98.0** | **88.3** |
| Leicester Centre | DEFRA | **99.3** | **76.9** | **99.2** | **99.1** | - | **99.3** | **94.8** |
| Leominster | DEFRA | - | - | **93.6** | **99.1** | - | - | **96.3** |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Liverpool Speke | DEFRA | **98.2** | **97.4** | **96.0** | **98.2** | - | **98.1** | **97.6** |
| Newcastle Centre | DEFRA | **98.2** | **99.0** | **94.2** | **98.4** | - | **98.3** | **97.6** |
| Northampton | Affiliate | **99.5** | **97.8** | **99.5** | **98.9** | - | **99.5** | **99.1** |
| Northampton $PM_{10}$ | Affiliate | - | **80.1** | - | - | - | - | **80.1** |
| Norwich Centre | DEFRA | 99.3 | 98.5 | **99.2** | **99.2** | - | 82.4 | **95.7** |
| Nottingham Centre | DEFRA | **97.9** | **91.8** | **97.4** | **98.3** | - | **98.2** | **96.7** |
| Oxford Centre Roadside | Affiliate | **75.0** | - | 97.5 | - | - | **98.1** | **90.2** |
| Plymouth Centre | DEFRA | 61.8 | **77.5** | 70.6 | 77.9 | - | 77.8 | **73.1** |
| Portsmouth | Affiliate | **98.7** | **97.6** | **98.4** | **98.7** | - | **98.5** | **98.4** |
| Preston | DEFRA | **95.1** | **98.2** | **95.0** | **92.9** | - | **94.1** | **95.1** |
| Reading New Town | DEFRA | **96.6** | **93.0** | **96.3** | **96.6** | - | **93.1** | **95.1** |
| Scunthorpe Town | Affiliate | - | **98.8** | - | - | - | 98.8 | **98.8** |
| Sheffield Centre | DEFRA | 92.2 | **97.8** | 90.3 | 92.6 | - | 90.5 | **92.7** |
| Sibton | DEFRA | - | - | - | **96.1** | - | - | **96.1** |
| Somerton | Affiliate | - | - | **96.0** | **98.9** | - | - | **97.4** |
| Southampton Centre | DEFRA | **98.4** | **98.1** | **90.1** | **96.6** | - | **98.4** | **96.3** |
| Southend-on-Sea | DEFRA | **99.1** | **98.8** | **99.1** | **98.9** | - | **99.2** | **99.0** |
| St Osyth | DEFRA | 98.9 | - | **96.8** | **97.8** | - | - | **97.8** |
| Stockton-on-Tees Yarm | Affiliate | **97.4** | **97.7** | **99.1** | - | - | - | **98.1** |
| Stoke-on-Trent Centre | DEFRA | **97.9** | **98.2** | **97.7** | **96.1** | - | **94.2** | **96.8** |
| Sunderland | DEFRA | - | - | - | - | - | **92.8** | **92.8** |
| Sunderland Silksworth | Affiliate | - | - | **85.9** | **97.0** | - | - | **91.5** |
| Thurrock | Affiliate | 91.8 | 98.9 | **75.6** | **97.7** | - | 96.7 | **92.1** |
| Wicken Fen | DEFRA | - | - | **75.7** | **98.2** | - | 98.1 | **90.7** |
| Wigan Centre | Affiliate | **97.7** | **99.4** | **93.0** | **96.9** | - | **96.5** | **96.7** |
| Wirral Tranmere | DEFRA | **87.9** | **97.6** | **96.2** | **95.3** | - | **52.0** | **85.8** |
| Yarner Wood | DEFRA | - | - | **93.2** | **94.5** | - | - | **93.8** |
| **N Ireland** | | | | | | | | |
| Belfast Centre | DEFRA | **95.8** | 95.2 | **95.3** | **95.9** | - | 81.5 | **92.7** |
| Derry | Affiliate | **96.2** | **96.3** | **81.5** | **96.3** | - | **85.6** | **91.2** |
| Lough Navar | DEFRA | - | 97.7 | - | **97.7** | - | - | **97.7** |
| **Scotland** | | | | | | | | |
| Aberdeen | Affiliate | **98.8** | **98.3** | **95.1** | **98.8** | - | **97.4** | **97.7** |
| Bush Estate | DEFRA | - | - | **95.5** | **98.4** | - | - | **96.9** |
| Dumfries | DEFRA | **92.2** | **93.9** | **98.5** | - | - | - | **94.9** |
| Edinburgh St Leonards | DEFRA | **98.7** | **97.1** | **95.9** | **96.7** | - | **98.4** | **97.4** |
| Eskdalemuir | DEFRA | - | - | **64.7** | **98.3** | - | - | **81.5** |
| Fort William | DEFRA | - | - | **88.4** | **77.0** | - | - | **82.7** |
| Glasgow Centre | DEFRA | 98.3 | 97.7 | **85.5** | **98.3** | - | **94.0** | **94.8** |
| Grangemouth | Affiliate | **98.1** | **98.2** | **98.2** | - | - | **98.3** | **98.2** |
| Inverness | DEFRA | 98.5 | **86.2** | **97.1** | - | - | - | **93.9** |
| Inverness $PM_{10}$ | DEFRA | - | **88.9** | - | - | - | - | **88.9** |
| Strath Vaich | DEFRA | - | - | - | **81.8** | - | - | **81.8** |
| **Wales** | | | | | | | | |
| Aston Hill | DEFRA | - | - | **94.5** | **95.9** | - | - | **95.2** |
| Cardiff Centre | DEFRA | **95.2** | **92.1** | **97.9** | **98.5** | - | **98.3** | **96.4** |
| Cwmbran | Affiliate | **99.3** | **99.1** | **97.7** | **99.3** | - | **21.4** | **83.4** |
| Narberth | DEFRA | - | 82.8 | 84.0 | **84.0** | - | 84.2 | **83.8** |
| Swansea | Affiliate | **98.3** | 66.6 | 98.3 | 97.8 | 86.0 | 98.3 | **90.9** |

| Site | Owner | CO | $PM_{10}$ | $NO_2$ | $O_3$ | $PM_{25}$ | $SO_2$ | Site Average |
|---|---|---|---|---|---|---|---|---|
| Roadside | | | | | | | | |
| Wrexham | DEFRA | **92.4** | **92.8** | **88.3** | - | - | **91.6** | **91.3** |
| Wrexham $PM_{10}$ | DEFRA | - | **84.3** | - | - | - | - | **84.3** |

Shaded boxes are for data capture < 90%
Bold data captures are for critical instruments and sites

**RECOMMENDATION**
Every effort should be made to ensure that data capture is maximised for the critical sites. LSOs and ESUs should undertake call-outs and repairs as soon as possible to avoid unnecessary data loss at these sites.

# Appendices

Appendix A1: Recommendations for Upgrade or Replacement of Equipment

Appendix A2: Critical Sites in the AURN (January 2007)

Appendix A3: Inventory of Defra-Owned Equipment

Appendix A4: Summary of Recommendations

Appendix A5: Partisol Data Ratification Report

# Appendix A1

**Recommendations for Upgrade or Replacement of Equipment**

As requested by the Department, QA/QC Unit has provided a list of suggestions for equipment that may need replacing or upgrading in the network. The following provides a summary of the outstanding issues to date since July 2005. Recommendations have been prioritised as follows:

| Priority | Definition | Time-scale |
|---|---|---|
| High* | Immediate action necessary to avoid compromising data capture/quality or safety. Critical sites should be treated as high priority. | Within 2 weeks |
| Medium | Essential but not immediate | 3-6 months |
| Low | Desirable but not essential | As appropriate |

*Note – QA/QC Unit's practice is to notify CMCU immediately of any high priority issues at the time of the event.

| | Recommendations August 2007 | Priority | Action |
|---|---|---|---|
| 23 | The Northampton $PM_{10}$ Partisol analyser shows significant data loss as a result of faults, and should be repaired or replaced as appropriate | Medium | ESU/CMCU |
| | **Recommendations April 2007** | | |
| 22 | Safe roof access needs to be provided for sites where FDMS TEOMs are to be deployed | High | ESU/CMCU |
| | **Recommendations January 2007** | | |
| 22 | ESUs to ensure all NOx converter software settings to be 100%. The Bolton NOx analyser was found to be set to 90% in September 2007 | High | ESUs to check at service |
| | **Recommendations October 2006** | | |
| 20 | The poorly performing analyser at Bolton (NOx) should be repaired or replaced at the earliest opportunity-see Action 22 | High | ESUs to repair or replace as appropriate |
| | **Recommendations July 2006** | | |
| 19 | Weybourne $O_3$ analyser should be upgraded to allow monthly LSO calibrations and daily autocalibrations | Medium | ESU to provide CMCU with quotation for necessary work |
| | **Recommendations April 2006** | | |
| | None | | |
| | **Recommendations January 2006** | | |
| 17 | The performance of CO analysers needs close attention by all parties, and poorly performing analysers replaced or upgraded | High | LSOs and CMCU to check performance carefully; ESU's to action repairs promptly |
| | **Recommendations July 2005** | | |
| 13 | Continuing problems with some autocal run-ons causing loss of up to 2 hours per day-see Section 2.4 | High | Many sites now cured, but some need attention at next ESU visit |

# Appendix A2

**Critical Sites In The AURN (January 2007)**

## Table A1 Critical Sites in Agglomerations

| Site Name | Agglomeration | Critical Pollutants | | |
|---|---|---|---|---|
| | | DD1 | DD2[7] | DD3 |
| Belfast Centre | Belfast Urban Area | $NO_2$ | CO | $NO_2$ $O_3$ |
| Blackpool Marton | Blackpool Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Bournemouth+ | Bournemouth Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Brighton Preston Park | Brighton/Worthing/Littlehampton | | | $NO_2$ $O_3$ |
| Brighton Roadside $PM_{10}$ | Brighton/Worthing/Littlehampton | $PM_{10}$ | | |
| Bristol St Pauls | Bristol Urban Area | $PM_{10}$ $SO_2$ | | $NO_2$ $O_3$ |
| Cardiff Centre | Cardiff Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Coventry Memorial Park+ | Coventry/Bedworth | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Edinburgh St Leonards | Edinburgh Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Glasgow Centre | Glasgow Urban Area | $SO_2$ | | $NO_2$ $O_3$ |
| Hove Roadside+ | Brighton/Worthing/Littlehampton | $SO_2$ | | |
| Hull Freetown | Kingston upon Hull | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Leicester Centre | Leicester Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Liverpool Speke | Liverpool Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Newcastle Centre | Tyneside | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Nottingham Centre | Nottingham Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Portsmouth+ | Portsmouth Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Preston | Preston Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Reading New Town | Reading/Wokingham Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Sheffield Centre | Sheffield Urban Area | $PM_{10}$ | | |
| Southampton Centre | Southampton Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Southend-on-Sea | Southend Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Stoke-on-Trent Centre | The Potteries | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Swansea Roadside+ | Swansea Urban Area | | CO | |
| Wirral Tranmere | Birkenhead Urban Area | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |

"+ indicates Affiliate site"

Note 7: Addresses CO, Benzene not included here

## Table A2 Critical Sites in Zones

| Site Name | Zone | Critical Pollutant | | |
|---|---|---|---|---|
| | | DD1 | DD2[7] | DD3 |
| Aberdeen+ | North East Scotland | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Aston Hill | North Wales | | | $NO_2$ $O_3$ |
| Barnsley Gawber+ | Yorkshire & Humberside | $NO_2$ | CO | $NO_2$ $O_3$ |
| Bush Estate | Central Scotland | | | $NO_2$ $O_3$ |
| Canterbury+ | South East | $PM_{10}$ | | |
| Cwmbran+ | South Wales | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Derry+ | Northern Ireland | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Dumfries | Scottish Borders | $NO_2$ $PM_{10}$ | CO | |
| Eskdalemuir | Scottish Borders | | | $NO_2$ $O_3$ |
| Fort William | Highland | | | $NO_2$ $O_3$ |
| Glazebury | North West & Merseyside | | | $NO_2$ $O_3$ |
| Grangemouth+ | Central Scotland | $NO_2$ $PM_{10}$ $SO_2$ | CO | |
| Great Dun Fell | North West & Merseyside | | | $O_3$[3] |
| High Muffles | Yorkshire & Humberside | | | $NO_2$ $O_3$ |
| Inverness | Highland | $NO_2$ $PM_{10}$ | | |
| Leamington Spa+ | West Midlands | $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Leominster | West Midlands | | | $NO_2$ $O_3$ |
| Lough Navar | Northern Ireland | | | $O_3$[3] |
| Narberth | South Wales | | | $O_3$[3] |
| Northampton+ | East Midlands | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Northampton $PM_{10}$ | East Midlands | $PM_{10}$ | | |
| Norwich Centre | Eastern | | | $NO_2$ $O_3$ |
| Oxford Centre Roadside+ | South East | $SO_2$ | CO | |
| Plymouth Centre | South West | $PM_{10}$ | | |
| Scunthorpe Town+ | Yorkshire & Humberside | $PM_{10}$ | | |
| Sibton | Eastern | | | $O_3$[3] |
| Somerton | South West | | | $NO_2$ $O_3$ |
| St Osyth | Eastern | | | $NO_2$ $O_3$ |
| Stockton-on-Tees Yarm+ | North East | $NO_2$ $PM_{10}$ | CO | |
| Strath Vaich | Highland | | | $O_3$[3] |
| Sunderland | North East | $SO_2$ | | |
| Sunderland Silkworth+ | North East | | | $NO_2$ $O_3$ |
| Thurrock | Eastern | | | $NO_2$ $O_3$ |
| Wicken Fen | Eastern | | | $NO_2$ $O_3$ |
| Wigan Centre+ | North West & Merseyside | $NO_2$ $PM_{10}$ $SO_2$ | CO | $NO_2$ $O_3$ |
| Wrexham | North Wales | $NO_2$ $PM_{10}$ $SO_2$ | CO | |
| Yarner Wood | South West | | | $NO_2$ $O_3$ |

Total of 62 Critical Sites (25 in Agglomerations and 37 in Zones)
51% of network stations critical under one or more Daughter Directives
"+ indicates Affiliate site"

Note 3: DD3 Critical as Rural Background station
Note 7: Addresses CO, Benzene not included here

# Appendix A3

## Inventory of Defra owned Equipment

An up-to-date inventory of Department-owned equipment used by the QA/QC Unit is provided below:

**QA/QC Unit's inventory of Department-owned equipment, August 2007**

| | |
|---|---|
| Computer software | The HIS (Heuristic Information System) software suite used for all data management. A few specific capabilities of HIS were developed in order to meet specific Department deliverables or requirements (examples include software for annual report analysis/compilation, for formatting/transmitting network data to archive or DDU and for reporting Directive compliance data to the EC). |
| Field support equipment | Field support equipment: 1 intercalibration equipment set (includes mass flow controllers and read-out unit)<br>A second intercalibration (commissioned January 2001)<br>UV photometers:<br>API model M401 s/n 123- purchased April 1999<br>API model 401 s/n 151 - purchased October 2000<br>API model 401 s/n 176 – purchased December 2002<br>API model 401 s/n 290 – purchased May 2004<br>API model 401 s/n 291 – purchased May 2004<br>API model 401 s/n 292 purchased May 2004<br>API model 401 s/n 293 purchased May 2004<br>Mass flow controllers - purchased April 2002 (incorporated into existing audit dilution apparatus)<br>3 Drycal flow meters - purchased September 2002<br>1 Mass flow controller read-out unit to be incorporated in the audit dilution apparatus – purchased September 2002.<br>A third intercalibration kit (commissioned May 2004)<br>Drycal flow meter – purchased March 2004<br>Sabio 2010 dilution calibrator – purchased February 2005<br>Sabio 2020 zero air generator – purchased February 2005<br>Sabio 2030 ozone photometer – purchased February 2005<br>Sabio 2010 dilution calibrator – purchased June 2006<br>Sabio 2020 zero air generator – purchased June 2006<br>Sabio 2030 ozone photometer – purchased June 2006 |
| Zero air pumps | 6 spare zero air pumps for routine maintenance/repair of zero air generators in the AURN. |
| Analysers | AC31 dual chamber $NO_x$ analyser<br>TEI 43C $SO_2$ analyser<br>TEI 48C CO analyser<br>M265 chemiluminescent ozone analyser<br>(All of the above purchased on behalf of Defra by Casella Stanger in March 2003 and transferred to QA/QC Unit) |

# Appendix A4

## Summary of recommendations

This appendix provides a summary of all the recommendations given in this report.

| | Need | Recommendation | Section | FAO |
|---|---|---|---|---|
| 1 | Improve data capture at critical sites | LSOs and ESUs should undertake call-outs as soon as possible at these sites | 2.1 and 5 | LSOs and ESUs |
| 2 | Data loss at Northampton (Partisol) | The Northampton PM10 Partisol analyser shows significant data loss as a result of faults, and should be repaired or replaced as appropriate | 2.2 | ESU |
| 3 | Autocalibration run-on | ESU to investigate and minimise effect where possible, especially at sites with large autocalibration run-ons or where data loss is in excess of 1 hour.<br><br>**London Southwark (CO and $SO_2$ and Eskdalemuir (NOx) , should be prioritised as at least 2 hours per day are being lost at these sites.**<br><br>In the meantime, we recommend that the autocalibration devices be adjusted at the problem sites to reduce the concentration of the span gas. It is strongly advised that $NO_2$ autocalibration span concentrations of less than 200ppb (urban sites) and 100ppb (rural sites) are used throughout the network. | 2.3 | ESUs |
| 4 | Poor performance of analysers-see Section 3.6 | QA/QC Unit would like to seek clarification from the Equipment Support Unit/manufacturer as to the current situation regarding the reason for the problems and what plans are in place to resolve them. We recommend that immediate attention is given to this issue as the majority of these instruments are located at critical sites. | 3.4 | ESU |

# Appendix A5

## Partisol Data Ratification

Partisol data were ratified for the following sites and measurement periods.

| Site | Start date | End date | Ratified Data Capture, % |
|---|---|---|---|
| Auchencorth Moss $PM_{10}$ | 1st April | 30th June | 0% |
| Auchencorth Moss $PM_{2.5}$ | 1st April | 30th June | 99% |
| Bournemouth $PM_{10}$ | 1st April | 30th June | 100% |
| Brighton Roadside $PM_{10}$ | 1st April | 30th June | 100% |
| Dumfries $PM_{10}$ | 1st April | 30th June | 95% |
| Inverness $PM_{10}$ | 1st April | 30th June | 89% |
| London Westminster | 1st April | 30th June | 100% |
| Northampton | 1st April | 30th June | 90% |
| Wrexham | 1st April | 30th June | 91% |

Measured data and ambient concentrations are supplied by Bureau Veritas. Data are now ratified using the Foxpro-based HIS system. The ratification process includes checking of BV's calculated ambient $PM_{10}$ concentration. It is noted that BV now carry out more detailed checks on the data, including checking for matching of filter numbers, dates and weights, also comparison of data with that from other nearby sites.

**Data Rejection**
Data codes are recorded during ambient measurement, and filter faults are recorded during filter weighings. Some codes indicate a fatal fault and are used to automatically reject data during ratification.

**Measurement codes are shown below.**

The measurement codes reported by BV are as follows:

| New Code | Meaning | Reject |
|---|---|---|
| 0 | OK | No |
| 8 | Power Failure | Yes |
| 4 | System re-set | Only if < 18h data. |
| 10 | Flow 1out of range | Yes |
| 20 | Flow 2 out of range | Yes |
| 40 | Flow 3 out of range | Yes |
| 2000 | Difference between ambient T and filter T > $\pm 5^{o}C$ | No |
| 10000 | Elapsed sample period out of range/out of filters | Reject if < 18h data. |
| 40000 | Coefficient of variation of average flow too high (i.e. too much variation in flow) | If not caused by "audit" status e.g. inlet cleaning. Or if < 18h data. |
| 100000 | Elapsed Sample Period out of range (< 23 hours or >25 hours). | Reject if < 18h data. |

| | | |
|---|---|---|
| 102000 | Difference between ambient T and filter T > $\pm 5^{o}$C, causing Elapsed Sample Period out of range (< 23 hours or >25 hours). | Reject only if < 18h valid data or vol < 18 m3. |
| 100008 | Elapsed Sample Period out of range (< 23 hours or >25 hours), *and* Power Failure. | Yes (power failure) |

The following faults should also be recorded during filter weighings and should be indicated by BV in their spreadsheet under "Lab Comments". All are fatal except "filter inverted".

**Filter faults**

| |
|---|
| Filter exposed inverted |
| Filter cut inside edge |
| Filter damaged some missing |
| Filter appears unexposed |
| Filter not returned |
| Filter inverted and in reverse order in canister |

All sites are now on telemetry.

**Auchencorth Moss**
Concerns had been raised previously that the $PM_{10}$ was sometimes less than $PM_{2.5}$ data. It was discovered that the PM10 Partisol had been fitted with a PM2.5 sharp cut cyclone. This was replaced with a straight-through tube on 13 August.

$PM_{10}$: Data capture was 0%.

$PM_{2.5}$: Data capture 99%.

**Bournemouth**
Data capture in this quarter was 100%.
A $PM_{10}$ episode occurred from 12th – 16th April, with concentrations above 50µg $m^{-3}$, reaching a maximum of 94µg $m^{-3}$ on 13th April.

**Brighton Roadside**
Data capture in this quarter was 100%.
This site also recorded a $PM_{10}$ episode from 12th – 16th April, with concentrations above 50µg $m^{-3}$, reaching a maximum of 82µg $m^{-3}$ on 14th April.

**Dumfries**
$PM_{10}$: Data capture was 95%. Data losses:
- 8th May - < 18h sampling.
- 13th & 14th May $PM_{2.5} > PM_{10}$. Rejected by BV.
- 26th May: suspiciously high PM10 of 58µg $m^{-3}$. Rejected.
- 27th May: negative filter weight.

Relatively high $PM_{10}$ concentrations (> 50µg $m^{-3}$) recorded on 13th – 15th Apr.

**Inverness**
$PM_{10}$
Data capture 89%. Data losses as follows:
- 10th Apr – power failure. < 18h sampling.
- 11th Apr - < 18h sampling
- 17th – 19th Apr – filter exchange failure
- 26th – 27th Apr: < 18h sampling
- 1st May: < 18h sampling
- 13th May: negative filter weight
- 14th May: missing filter weight

This Partisol continues to have a lot of P & R1 status codes, although none cause data loss.

**London Westminster**
Data capture 100%. This Partisol continues to have a lot of P & R1 status codes, although none cause data loss.

**Northampton**
Data capture 90%. Data losses –

- 20th –24th Apr , 1st Jun, 14th Jun: filter exchange failures
- 18th & 31st May - no reason given, would appear to be more filter exchange failures

*Note: for the 3rd consecutive quarter, this Partisol has been having lots of filter exchange failures. A lot of data is being lost at this site, and this Partisol needs attention.*

Some high $PM_{10}$ concentrations were observed in the late March episode, with a peak of 107µg $m^{-3}$ on 29th March.

**Wrexham**
Data capture was 91%. Data losses as follows:

- 5th – 12th April, 29th May: power interruptions.

***Most sites this quarter achieved at least 90% data capture. However, Inverness and Northampton continue to have problems. In particular, the filter exchange problems at Northampton, reported in previous 2 sets of ratification notes, continue and have caused significant loss of data.***