



2013 Air Quality Progress Report for
Northumberland County Council

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

April 2013

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Executive Summary

None of the air quality monitoring locations in Northumberland has shown any exceedance of the national Air Quality Objectives (AQO).

Neither of the monitoring stations in Blyth town centre (library site) and Cowpen Road has shown an exceedance of the 1 hour mean or annual mean on either nitrogen dioxide (NO₂) or the 24 hour mean or annual mean exceedance limits for 10 micron particulate matter (PM₁₀) for 2012.

The Newbiggin sulphur dioxide (SO₂) monitor has also not shown any exceedance of the air quality objectives for this pollutant.

Data processing and ratification has been carried out by Air Quality Data Management (AQDM).

None of the diffusion tubes measuring NO₂ have shown any monthly exceedance (after bias adjustment) or an annual mean above the air quality objective. The benzene diffusion tubes which were decommissioned in April 2012 also indicated no exceedance of the objectives for that pollutant.

No further detailed assessment is required for any of the monitored pollutants within Northumberland.

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Appendices

- Appendix A: QA/QC Information
- Appendix B: Location Maps of Air Quality Monitoring Sites
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- Appendix E: Order to revoke an Air Quality Management Area Designation Order

1 Introduction

1.1 Description of Local Authority Area

Northumberland covers the area of England from the Tyne Valley and Tyneside to the Scottish borders in the North and North-West and to Cumbria in the West. It is the largest county in England by size at 5025 square kilometres and yet is one of the smallest by population (316,000 persons in the 2011 Census).

The county border with Scotland cuts through the Cheviot Hills to the west at a maximum height of 815 metres, several streams and rivers drain these hills and the moors of the Tyne Valley and enter the North Sea at the coast.

Forty-six per cent of the population live in the former districts of Blyth Valley and Wansbeck which cover only three per cent of the area of Northumberland and gives an urban concentration in the south east area of the County. This area is now within the South East sub-area of Northumberland County Council.

The principal towns of Northumberland are; Alnwick, Ashington, Berwick, Blyth, Cramlington, Hexham and Morpeth.

Several towns have industrial areas which generate various emissions from the completely innocuous to dusts, solvents, combustion fumes & particulates etc. These industrial areas are in the principal towns.

Cramlington and Blyth in particular have large industrial areas which contains a number of processes including a Part A2 which use and emit solvents mostly through printing/painting of final products. Hexham has a major Part A2 LA-IPPC process which also abstracts and discharges from and to the River Tyne. Hexham also has a major foundry. Morpeth and Alnwick both have industrial estates with a number of smaller businesses which will contribute to the air quality of the areas. Berwick / Tweedmouth has a few commercial sources of atmospheric pollutants on its industrial estate.

At present, Northumberland has one co-fuelled biomass power station at Lynemouth, majority coal but moving to majority biomass by the end of 2013.

There are a number of opencast coal sites (OCCS) within the county, currently operating are; Shotton, Delhi/Brenkley, Potland Burn, Butterwell DP Surface Mine Scheme.

Below is a map showing the Northumberland county area and the location of continuous and non-continuous monitoring sites within the county which are mentioned in the report.

Figure 1.1. Map of Northumberland County Showing Main Air Quality Monitoring Locations



1.2 Purpose of Progress Report

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

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

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

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

| Pollutant | Air Quality Objective | | Date to be achieved by |
|---|---|---------------------|------------------------|
| | Concentration | Measured as | |
| Benzene | 16.25 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2003 |
| | 5.00 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2010 |
| 1,3-Butadiene | 2.25 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2003 |
| Carbon monoxide | 10.0 mg/m^3 | Running 8-hour mean | 31.12.2003 |
| Lead | 0.5 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2004 |
| | 0.25 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2008 |
| Nitrogen dioxide | 200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| | 40 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2005 |
| Particles (PM ₁₀) (gravimetric) | 50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2004 |
| Sulphur dioxide | 350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| | 125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| | 266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |

1.4 Summary of Previous Review and Assessments

This is the third Progress Report produced by the unitary Northumberland County Council (formed in April 2009). There has been one previous Updating and Screening Assessment in 2010, two previous Progress Reports (2010 & 2011) and a Detailed Assessment (2011). The latter was produced because the 2010 Progress Report identified an exceedance of the annual mean objective for NO₂ at the Cowpen Road AQ station. The detailed assessment concluded that this was anomalous and was not substantiated by previous data at the site or co-located diffusion tubes. As such, no further action was planned although the site would continue to be monitored. The Detailed Assessment also identified that the AQMA declared by the former Blyth Valley Borough Council (see below) should be revoked because of a lack of substantive data, this was done after consultation. This was agreed by DEFRA in their Local Air Quality Management: Detailed Assessment of Air Quality letter dated 26 July 2012.

Table 1.2 Previous Air Quality Reports for Northumberland

| Progress Report 2011 | Date Produced | Outcomes |
|---------------------------------|------------------------------|---|
| Northumberland County Council | April 2011 | National Air Quality Objectives continue to be met and are likely to be met in the future |
| Detailed Assessment 2011 | Date Produced | Outcomes |
| Northumberland County Council | April 2011 | Previous NO ₂ annual mean exceedance at Cowpen appears to be anomalous and that no further action is needed at this site and that Blyth AQMA should be revoked after consultation. |
| Progress Report 2010 | Date Produced | Outcomes |
| Northumberland County Council | April 2010 | Exceedance of the annual mean objective at the Cowpen NO ₂ station. No other exceedance or issues with either passive or active monitoring |
| USA 2012 | | |
| Northumberland County Council | April 2012 | National Air Quality Objectives continue to be met and are likely to be met in the future. AQMA revoked. |
| USA 2009 | Date Produced | Outcomes |
| Alnwick DC | 21 st August 2009 | National Air Quality Objectives continue to be met in and are likely to be met in the future |
| Berwick DC | 2 nd October 2009 | National Air Quality Objectives continue to be met in and are likely to be met in the future |
| Blyth Valley BC | September 2009 | National Air Quality Objectives continue to be met. Review of AQMA |
| Castle Morpeth BC | June 2009 | Report does not show any exceedance of National Air Quality Objectives |
| Tynedale DC | July 2009 | Results do not show exceedance of National Air Quality Objectives |
| Wansbeck DC | July 2009 | National Air Quality Objectives continue to be met in and are likely to be met in the future |
| Northumberland County Council | September 2010 | Detailed assessment required for Blyth AQMA to review status and exceedance in Cowpen Road area |

Air Quality Management Areas

An Air Quality Management Area (AQMA) was declared in Blyth town by the former Blyth Valley Borough Council on 22 December 2004 for particulates (PM₁₀'s) as the national air quality objective of PM₁₀ was being exceeded. The AQMA reference is 211204. The order to revoke this AQMA declaration came into effect on 29 June 2012; Ref: NOU000554 (Appendix E).

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Nitrogen Dioxide (NO₂)

Northumberland currently operate two Teledyne/API 200E analysers in the town of Blyth measuring NO₂.

The necessity of continuing automatic NO₂ monitoring at both Blyth town centre and Cowpen Road has been reviewed during 2012/13. This is because no exceedance has been recorded, and the instruments are reaching the end of their operational life. The location of the Blyth town centre monitor is representative of public exposure but is adequately covered by diffusion tubes and current readings are well below AQOs.

Additionally, because of a redevelopment to the access and frontage to Blyth library, the existing enclosure needs to be removed by Easter 2013. Therefore, this station and the Teledyne/API instrument (and BAM) are going to be decommissioned by Easter 2013 and no automatic NO₂ monitoring will replace this, although the Council will continue to monitor NO₂ levels using diffusion tubes at this location.

Sulphur Dioxide (SO₂)

The monitoring site is located in an urban area and is operated alongside monitoring carried out by the operators of Lynemouth co-fired power station to assess any impacts of their emissions upon local air quality.

The need to continue automatic monitoring of SO₂ at Newbiggin will be reviewed during 2013/14. There has never been an exceedance of the AQO at this location. The power station is scheduled to convert substantially to biomass and is required to do so to meet the Large Combustion Plant Directive. The plant has planning permission to undertake this conversion which is due to take place late in 2013. It is expected that the Council will continue to monitor SO₂ for a period after this to confirm results.

Particulates (PM₁₀)

Northumberland currently operate two Met One BAM analysers in the town of Blyth measuring PM₁₀ co-located with real-time, continuous NO₂ analysers.

As mentioned above, because of the changes at the Blyth library site the Met One BAM will be decommissioned by Easter 2013. Because of the impending requirement for local authorities to monitor PM_{2.5} the Council has taken this opportunity to replace the monitoring at Blyth library with a Turnkey Osiris which will indicatively monitor a range of particulates including PM₁₀, PM_{2.5} and TSP.

The station at Cowpen Road will continue to operate and a Turnkey Osiris will be added to the arrangement of monitors to operate alongside the Teledyne/API and Met One BAM.

Quality assurance and quality control information are included in Appendix A.

Figure 2.1 Map(s) of Automatic Monitoring Sites

Location maps of the automatic monitoring locations are shown in Appendix B.

Table 2.1 Details of Automatic Monitoring Sites

| Site Name | Site Type | OS Grid Ref | | Pollutants Monitored | Monitoring Technique | In AQMA? | Relevant Exposure? (Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road (N/A if not applicable) | Does this location represent worst-case exposure? |
|-------------------------|-------------------------|-------------|---------|------------------------------------|----------------------|----------|---|--|---|
| Newbiggin Sports Centre | Urban background | X588085 | Y430864 | SO ₂ | CL | N | Y (10m) | 30m | Y |
| Blyth Town Centre | Urban Centre / Roadside | X431536 | Y581531 | NO ₂ , PM ₁₀ | CL, BAM | N | Y(3m) | 3m | Y |
| Cowpen Road | Roadside | X428817 | Y581815 | NO ₂ , PM ₁₀ | CL, BAM | N | Y(3m) | 3m | Y |

CL = chemiluminescent

NL = nephelometer

BAM = beta attenuation monitor

All monitors are maintained by SupportingU with a six-monthly service, all are calibrated either automatically or manually at least fortnightly. Data download/capture is done remotely using a mix of Windows HyperTerminal, Teledyne's APIComm and Enviro 2000. Data processing and ratification for this period of data was carried out by Air Quality Data Management.

2.1.2 Non-Automatic Monitoring Sites

The Council operate 39 NO₂ diffusion tubes at 36 locations in Cramlington, Blyth, Morpeth, Ponteland, Alnwick and Berwick. Three locations have duplicate tubes.

The 9 benzene diffusion tubes were decommissioned on the 1 April 2012 as stated in the 2012 Updating and Screening Assessment for Northumberland.

All diffusion tubes are prepared and analysed by Environmental Scientifics Group (named as Harwell Scientific Services), details of the laboratory, preparation methods, procedures followed, bias factors, laboratory precision, quality assurance and quality control information (including WASP ratings of the laboratories used) etc. are specified in Appendix A.

A new diffusion tube was sited at Station Road in Cramlington (Trebor), as there was a pre-planning application for a large bus depot near this site which would use Station Road for access to the development. It was envisaged that this tube would give some baseline levels for this road which would be independent to any assessment done by the developer. The applicant has since decided not to proceed with the development and this tube will be reviewed should it show that there is no apparent issue with NO₂ at this location. There is only one property which might be subject to any impact at this location.

Two additional tubes have located in Cramlington to monitor the impact of increased road use during the development of and during operation of a proposed new hospital.

A further review of NO₂ diffusion tubes will be carried out and those assessed as consistently below the air quality objective or not located near to any relevant receptors will be de-commissioned from 1st April 2013.

Figure 2.2 Map(s) of Non-Automatic Monitoring Sites

Location maps of the non-automatic monitoring locations are shown in Appendix B.

Table 2.2 Details of Non- Automatic Monitoring Sites

| Site Name | Site Type | OS Grid Ref | | Pollutants Monitored | In AQMA? | Relevant | Distance to kerb of nearest road | Worst-case Location? |
|--------------------------------------|------------------|-------------|----------|----------------------|----------|--|----------------------------------|----------------------|
| | | | | | | Exposure? | (N/A if not applicable) | |
| | | | | | | (Y/N with distance (m) to relevant exposure) | | |
| 1N - Northumberland Hall, Alnwick | Roadside | X 418600 | Y 613300 | NO ₂ | N | N – (10m) | 5m | Y |
| 7N – Greenwell Lane, Alnwick | Roadside | X 418800 | Y 613300 | NO ₂ | N | N – (20m) | 1m | Y |
| 8N – Bondgate Without, Alnwick | Roadside | X 419025 | Y 613074 | NO ₂ | N | N – (20m) | 1m | Y |
| Ber5 - Main Street, Tweedmouth | Roadside | X 399437 | Y 652022 | NO ₂ | N | Y – (1m) | 4m | Y |
| Ber7 - Castlegate, Berwick | Roadside | X 399595 | Y 653170 | NO ₂ | N | Y – (1m) | 2m | Y |
| B1 - Waterloo Road, Blyth (X2) | Urban Centre | X431537 | Y581537 | NO ₂ | N | Y – (5m) | 1m | Y |
| B3 - Cowpen Rd. West, Blyth | Roadside(1m) | X428815 | Y581813 | NO ₂ | N | Y – (6m) | 1m | Y |
| B5 - Cowpen Rd. East, Blyth | Roadside(1m) | X429850 | Y581947 | NO ₂ | N | Y – (25m) | 1m | Y |
| B6 - Blyth Civic Centre, Blyth | Urban Background | X430949 | Y581178 | NO ₂ | N | N – (40m) | 15m | N |
| B8 - Beaumont Manor, Blyth | Urban Background | X428688 | Y581193 | NO ₂ | N | Y – (16m) | 1m | N |
| B10 - Park Farm Villas, Blyth | Urban Background | X430287 | Y578942 | NO ₂ | N | Y (3m) | 1m | N |
| B11 - Blyth YMCA, Blyth | Urban Centre | X431160 | Y581415 | NO ₂ | N | Y - (2m) | 1m | Y |
| B12 - Bridge St, Blyth | Urban Centre | X431612 | Y581586 | NO ₂ | N | Y - (1m) | 1m | Y |
| B13 - Blyth Health Centre, Blyth | Urban Background | X431105 | Y581589 | NO ₂ | N | Y – (2m) | 2m | N |
| B15 - South Newsham Road | Roadside(1m) | X430552 | Y578950 | NO ₂ | N | Y (6m) | 2m | N |
| C1 - High Pit Road, Cramlington (X2) | Roadside(1m) | X427593 | Y576555 | NO ₂ | N | Y – (1m) | 1m | Y |
| C3 - Ruabon Close, Cramlington (X2) | Suburban | X426113 | Y575041 | NO ₂ | N | Y – (15m) | 1m | N |
| C4 - Rochford Gr, Cramlington | Suburban | X426020 | Y575057 | NO ₂ | N | Y – (15m) | 1m | N |
| C6 - Lancastrian Way, Cramlington | Suburban | X426047 | Y576139 | NO ₂ | N | Y – (30m) | 1m | N |
| C7 - Kielder Av, Cramlington | Rural | X424785 | Y576728 | NO ₂ | N | Y – (3m) | 1m | N |
| C8 - Manor Walks, Cramlington | Urban Centre | X426548 | Y576990 | NO ₂ | N | Y – (50m) | 1m | Y |
| C9 - Trebor, Cramlington | Roadside(1m) | X424456 | Y577173 | NO ₂ | N | Y - (30m) | 3m | Y |
| C10 – Bay Horse (B1505) | Roadside | X427527 | Y576145 | NO ₂ | N | Y – (13m) | 1m | N |
| C11 – Storey Street (B1505) | Roadside | X427214 | Y575361 | NO ₂ | N | Y – (10m) | 1m | N |
| 2 - Newgate St, Morpeth | Roadside | X 419525 | Y 586380 | NO ₂ | N | Y – (2m) | 2m | Y |
| 3 - Ponteland Rd, Morpeth | Roadside | X 416724 | Y 572853 | NO ₂ | N | Y – (2m) | 2m | Y |

| Site Name | Site Type | OS Grid Ref | | Pollutants Monitored | In AQMA? | Relevant | Distance to kerb of nearest road | Worst-case Location? |
|--------------------------------------|--------------|-------------|----------|----------------------|----------|--|----------------------------------|----------------------|
| | | | | | | Exposure? | (N/A if not applicable) | |
| | | | | | | (Y/N with distance (m) to relevant exposure) | | |
| 4 - Bridge St, Morpeth | Roadside | X 419947 | Y 585937 | NO ₂ | N | Y – (2m) | 2m | Y |
| 5 - Stobhill, Morpeth | Roadside | X 420769 | Y 584807 | NO ₂ | N | Y – (5m) | 5m | N |
| S4 - Station Road, Ashington | Urban Centre | X587746 | Y427031 | NO ₂ | N | Y – (25m) | 1m | Y |
| S7 - Front Street, Newbiggin | Urban Centre | X587918 | Y431110 | NO ₂ | N | Y - (8m) | 2m | Y |
| S11 - North Seaton (B1334) | Roadside | X586492 | Y429778 | NO ₂ | N | Y – (40m) | 5m | Y |
| S15 - Ravensworth Street, Bedlington | Urban Centre | X583137 | Y427554 | NO ₂ | N | Y – (2m) | 1m | N |
| S17 - Front Street, Bedlington | Urban Centre | X581879 | Y426014 | NO ₂ | N | N – (25m) | 1m | Y |
| S18 - Half Moon roundabout A196 | Roadside | X585691 | Y426860 | NO ₂ | N | Y – (5m) | 2M | Y |
| S20 - Portland Park (LP in Car Park) | Roadside | X587959 | Y427442 | NO ₂ | N | N – (75m) | 10M | N |
| SD1 - Salvation Army, Seaton Delaval | Roadside(1m) | X430387 | Y575433 | NO ₂ | N | Y – (1m) | 1m | Y |

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Neither monitors indicated any breach of the national air quality objectives for NO₂. Measured annual means were well within the objective and only the Cowpen monitor has shown any exceedance of the daily mean objective of 200µg/m³ - however, this is still below the limit of 18 times in a year.

Both the Blyth and Cowpen air quality stations are sited where they would represent “worst case scenario” being nearer to the pollution sources than receptors. Relevant public exposure, in terms of the proximity of permanent residential occupants is minimal. However, bus stops are located close to both stations and the Blyth site has constant pedestrian traffic in this town centre location.

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

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2012 ^b % | Annual mean concentrations (µg/m ³) | | |
|---------|--------------------|--------------|--|--|---|----------------------|-------------------|
| | | | | | 2010 ^{c,d} | 2011 ^{c, d} | 2012 ^c |
| | Blyth Library Site | No | N/A | 94.6 | 28 | 26 (27) | 25 |
| | Cowpen Road Site | No | N/A | 97.7 | 33 | 29 | 28 |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year. Displayed in parentheses.

*Annual mean concentrations for previous years are optional.

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

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2012 ^b % | Number of Exceedence of hourly mean (200 µg/m ³) If the period of valid data is less than 90% of a full year, include the 99.8 th percentile of hourly means in brackets. | | |
|---------|--------------------|--------------|---|---|---|-------------------|------|
| | | | | | 2010 ^c | 2011 ^c | 2012 |
| | Blyth Library Site | Yes | N/A | 94.6 | 0 (84*) | 0 (90*) | 0 |
| | Cowpen Road Site | No | N/A | 97.7 | 0 (126*) | 0 | 3 |

* Below the 90% data capture therefore 99.8th Per centile = 90 µg/m³ (below the 200 µg/m³ guideline value) Percentile displayed in parentheses.

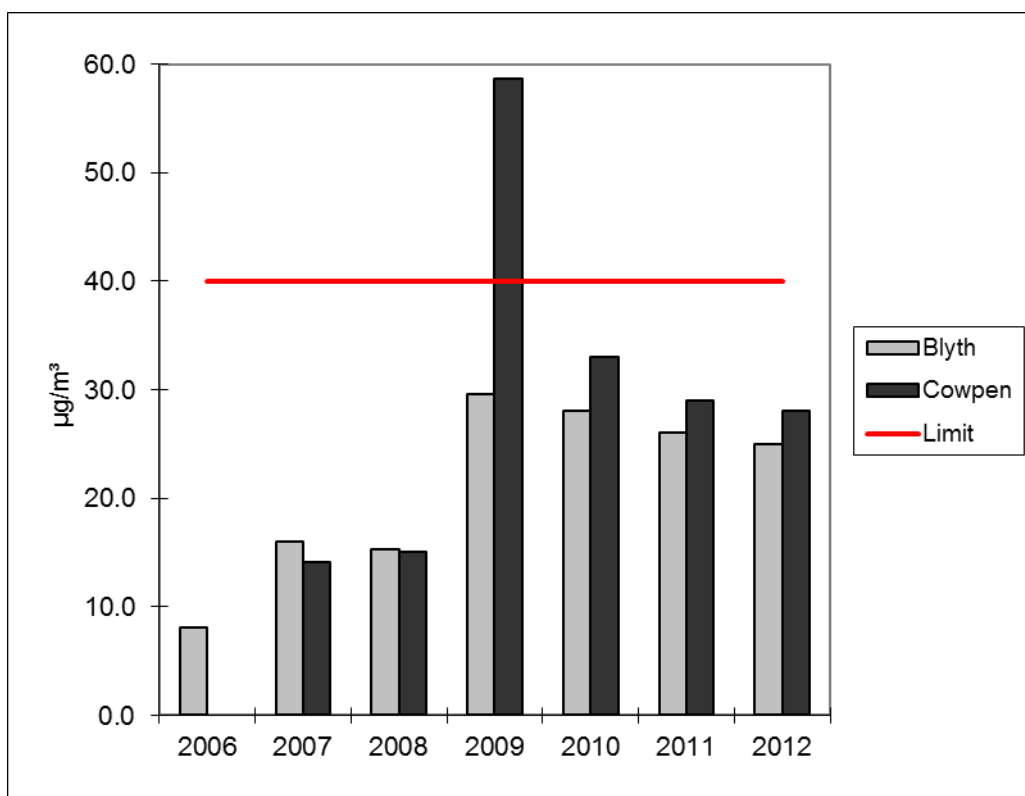
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Numbers of exceedences for previous years are optional.

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Automatic Monitoring Sites – 2006 to 2012

With the exception of the anomalous annual mean result for Cowpen in 2009, both stations show a continual reduction in the measured annual mean for NO₂.



Diffusion Tube Monitoring Data

Results for all nitrogen dioxide diffusion tube annual averages for 2012 are below the national air quality objective for NO₂ (after bias adjustment).

Twenty one NO₂ diffusion tubes were decommissioned on the 1 April 2012 because they were either not representative of a relevant receptor or gave consistently low results. These decommissioned tubes were listed in the 2012 Updating and Screening Assessment.

Since these tubes were decommissioned with only three monthly results (25 per cent data capture) they have been annualised using local real-time, continuous data (Blyth and Cowpen) and another four of the nearest monitors on the AURN network within 80 km of the sites (see Appendix A for annualising procedure and results).

The data for the 9 benzene diffusion tubes could not be annualised as there is no real-time, continuous monitoring for benzene anywhere within 80 km of the sites. The only data available is from the non-automatic hydrocarbon network but it would have been impossible to match exposure dates from these to Northumberland's tubes. Therefore only the annual means (based upon three months data – 25 per cent data capture) and the rolling means using this have been presented.

Table 2.5 Results of NO₂ Diffusion Tubes 2012

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2012 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.79) |
|---------|--|------------------|--------------|-------------------------------|---|--|---|---|
| | | | | | | | | 2012 (µg/m ³) |
| 1N | Northumberland Hall, Alnwick | Road/Urban | N | | 25.0 | Y | N | 15 (14) |
| 7N | Greenwell Lane, Alnwick | Road/Urban | N | | 25.0 | Y | N | 23 (24) |
| 8N | Bondgate Without, Alnwick | Road/Urban | N | | 100.0 | N | N | 30 |
| Ber5 | Main Street, Tweedmouth | Road/Urban | N | | 91.7 | N | N | 24 |
| Ber7 | Castlegate | Road/Urban | N | | 100.0 | N | N | 25 |
| B1 | Waterloo Road, opp bus station LP (X2) | Road/Urban | N | Y | 100.0 | N | N | 31 |
| B1(2) | Waterloo Road, opp bus station LP (X2) | Road/Urban | N | | 91.7 | N | N | 32 |
| B3 | Cowpen Road, west end monitoring station LP | Road/Urban | N | Y | 100.0 | N | N | 28 |
| B5 | Cowpen Road, east end nr Lord Tool Hire LP | Road/Urban | N | | 100.0 | N | N | 20 |
| B6 | Blyth Civic Centre, flagpole LP | Urban Background | N | | 25.0 | Y | N | 22 (21) |
| B8 | Beaumont Manor (ASDA) LP & V6 | Residential | N | | 25.0 | Y | N | 19 (18) |
| B10 | Park Farm Villas, Newsham LP | Residential | N | | 25.0 | Y | N | 23 (22) |
| B11 | Blyth YMCA LP | Road/Urban | N | | 100.0 | N | N | 27 |
| B12 | Bridge Street, opp Job Centre LP | Road/Urban | N | | 100.0 | N | N | 27 |
| B13 | Health Centre car park LP | Urban | N | | 16.7 | Y | N | 26 (25) |
| B15 | South Newsham Road | Road/Arterial | N | | 100.0 | N | N | 20 |
| C1 | High Pit Road, Burton House car park LP (X2) | Road/Urban | N | | 100.0 | N | N | 25 |
| C1(2) | High Pit Road, Burton House car park LP (X2) | Road/Urban | N | | 100.0 | N | N | 27 |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2012 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.79) |
|---------|--|---------------|--------------|-------------------------------|---|--|---|---|
| | | | | | | | | 2012 ($\mu\text{g}/\text{m}^3$) |
| C3 | Ruabon Close, Barns Park LP (X2) | Residential | N | | 25.0 | Y | N | 18 (17) |
| C3(2) | Ruabon Close, Barns Park LP (X2) | Residential | N | | 25.0 | Y | N | 20 (19) |
| C4 | Rochford Grove, Barns Park & V5 | Residential | N | | 25.0 | Y | N | 22 (20) |
| C6 | Lancastrian Drive, dead end & V9 | Residential | N | | 25.0 | Y | N | 20 (19) |
| C7 | Kielder Avenue, Beacon Lane LP | Residential | N | | 25.0 | Y | N | 19 (18) |
| C8 | Manor Walks, BT Sainsbury's and Travellers | Road/Urban | N | | 25.0 | Y | N | 27 (25) |
| C9 | Trebor, A1172 Station Road, Cramlington | Road/Arterial | N | | 100.0 | N | N | 21 |
| C10 | Bay Horse, Cramlington | Road/Urban | N | | 25.0 | Y | N | 20 (23) |
| C11 | Storey Street, Cramlington | Road/Urban | N | | 25.0 | Y | N | 18 (21) |
| 2 | Newgate Street/Bullers Green, Morpeth | Road/Urban | N | | 100.0 | N | N | 22 |
| 3 | Police Station, Ponteland | Road/Urban | N | | 83.3 | N | N | 27 |
| 4 | Northern Rock, Bridge Street, Morpeth | Road/Urban | N | | 100.0 | N | N | 28 |
| 5 | Stobhill Social Club, Morpeth | Road/Arterial | N | | 25.0 | Y | N | 17 (16) |
| 4 | Station Road, Ashington (LP D127 outside of Heron Garage) | Road/Urban | N | | 25.0 | Y | N | 23 (22) |
| 7 | Front St, Newbiggin (LP on steps next to Methodist Church) | Road/Urban | N | | 25.0 | Y | N | 21 (20) |
| 11 | North Seaton Roundabout (Sign post off roundabout B1334) | Road/Arterial | N | | 25.0 | Y | N | 28 (27) |
| 15 | Ravensworth Car Park, Bedlington (LP on opposite site of the road) | Residential | N | | 25.0 | Y | N | 25 (24) |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2012 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.79) |
|---------|--|-------------|--------------|-------------------------------|---|--|---|---|
| | | | | | | | | 2012 ($\mu\text{g}/\text{m}^3$) |
| 17 | Front Street East, Bedlington (LP next to shelter at junction of Church Ave) | Road/Urban | N | | 100.0 | N | N | 24 |
| 18 | Wansbeck Bridge (LP on roundabout) | Residential | N | | 25.0 | Y | N | 27 (25) |
| 20 | Portland Park (LP in Car Park) | Road/Urban | N | | 25.0 | Y | N | 24 (23) |
| SD1 | Seaton Delaval, Salvation Army LP | Road/Urban | N | | 100.0 | N | N | 34 |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year. Measured means shown in parentheses.

*Annual mean concentrations for previous years are optional.

In bold, exceedance of the NO₂ annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ hourly mean AQS objective

^a Means should be “annualised” as in Box 3.2 of TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%

^b If an exceedance is measured at a monitoring site not representative of public exposure, NO₂ concentration at the nearest relevant exposure should be estimated based on the “NO₂ fall-off with distance” calculator (<http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>), and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=30>).

Table 2.6 Results of NO₂ Diffusion Tubes (2009 to 2012)

| Site ID | Location | Type | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2012 ^b % | Annual mean concentrations (mg/m ³) | | | |
|---------|---|-------------|--------------|---|---|---|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | | 2009 ^c (bias adjustment factor = 1.03 & 0.81‡) | 2010 (bias adjustment factor = 1.08) | 2011 (bias adjustment factor = 0.84) | 2012 (bias adjustment factor = 0.79) |
| 1N | Northumberland Hall, Alnwick | Road/Urban | N | 100.0 | 25.0 | 13 (14) | 17 | 14 | 15 (14) |
| 7N | Greenwell Lane, Alnwick | Road/Urban | N | 100.0 | 25.0 | 21 (23) | 25 | 22 | 23 (24) |
| 8N | Bondgate Without, Alnwick | Road/Urban | N | | 100.0 | 28 (22) | 36 | 33 | 30 |
| Ber5 | Main Street, Tweedmouth | Road/Urban | N | | 91.7 | 27 | 30 | 27 | 24 |
| Ber7 | Castlegate | Road/Urban | N | | 100.0 | 25 | 29 | 26 | 25 |
| B1 | Waterloo Road, opp bus station LP (X2) | Road/Urban | N | | 100.0 | 34 | 35 | 30 | 31 |
| B1(2) | Waterloo Road, opp bus station LP (X2) | Road/Urban | N | | 91.7 | 35 | 34 | 30 | 32 |
| B3 | Cowpen Road, west end monitoring station LP | Road/Urban | N | | 100.0 | 35 | 35 | 28 | 28 |
| B5 | Cowpen Road, east end nr Lord Tool Hire LP | Road/Urban | N | | 100.0 | 23 | 23 | 21 | 20 |
| B6 | Blyth Civic Centre, flagpole LP | Other | N | 100.0 | 25.0 | 21 | 22 | 16 | 22 (21) |
| B8 | Beaumont Manor (ASDA) LP & V6 | Residential | N | 100.0 | 25.0 | 19 | 21 | 16 | 19 (18) |
| B10 | Park Farm Villas, Newsham LP | Residential | N | 100.0 | 25.0 | 22 | 22 | 17 | 23 (22) |
| B11 | Blyth YMCA LP | Road/Urban | N | | 100.0 | 33 | 30 | 26 | 27 |
| B12 | Bridge Street, opp Job Centre LP | Road/Urban | N | | 100.0 | 31 | 32 | 26 | 27 |
| B13 | Health Centre car park LP | Urban | N | 66.6 | 16.7 | 20 | 20 | 17 | 26 (25) |

| | | | | | | | | | |
|-------|--|---------------|---|-------|-------|---------|-----|---------|---------|
| B15 | South Newsham Road | Road/Arterial | N | | 100.0 | N/A | N/A | 19 | 20 |
| C1 | High Pit Road, Burton House car park LP (X2) | Road/Urban | N | | 100.0 | 29 | 32 | 25 | 25 |
| C1(2) | High Pit Road, Burton House car park LP (X2) | Road/Urban | N | | 100.0 | 30 | 29 | 24 | 27 |
| C3 | Ruabon Close, Barns Park LP (X2) | Residential | N | 100.0 | 25.0 | 20 | 19 | 15 | 18 (17) |
| C3(2) | Ruabon Close, Barns Park LP (X2) | Residential | N | 100.0 | 25.0 | 21 | 18 | 16 | 20 (19) |
| C4 | Rochford Grove, Barns Park & V5 | Residential | N | 100.0 | 25.0 | 17 | 18 | 15 | 22 (20) |
| C6 | Lancastrian Drive, dead end & V9 | Residential | N | 100.0 | 25.0 | 20 | 19 | 15 | 20 (19) |
| C7 | Kielder Avenue, Beacon Lane LP | Residential | N | 100.0 | 25.0 | 19 | 19 | 14 (14) | 19 (18) |
| C8 | Manor Walks, BT Sainsbury's and Travellers | Road/Urban | N | 100.0 | 25.0 | 24 | 23 | 19 | 27 (25) |
| C9 | Trebor, A1172 Station Road, Cramlington | Road/Arterial | N | | 100.0 | N/A | N/A | 27 | 21 |
| C10 | Bay Horse, Cramlington | Road/Urban | N | 100.0 | 25.0 | N/A | N/A | N/A | 20 (23) |
| C11 | Storey Street, Cramlington | Road/Urban | N | 100.0 | 25.0 | N/A | N/A | N/A | 18 (21) |
| 2 | Newgate Street/Bullers Green, Morpeth | Road/Urban | N | 100.0 | 25.0 | 17 (16) | 20 | 19 | 22 |
| 3 | Police Station, Ponteland | Road/Urban | N | 100.0 | 25.0 | 32 (30) | 25 | 28 | 27 |
| 4 | Northern Rock, Bridge Street, Morpeth | Road/Urban | N | | 100.0 | 36 (33) | 40 | 25 | 28 |
| 5 | Stobhill Social Club, Morpeth | Road/Arterial | N | | 83.3 | 18 (16) | 14 | 14 | 17 (16) |
| 4 | Station Road, Ashington (LP D127 outside of Heron Garage) | Road/Urban | N | | 100.0 | 22 | 23 | 21 | 23 (22) |
| 7 | Front St, Newbiggin (LP on steps next to Methodist Church) | Road/Urban | N | 100.0 | 25.0 | 19 | 20 | 17 | 21 (20) |
| 11 | North Seaton Roundabout (Sign post off roundabout B1334) | Road/Arterial | N | 100.0 | 25.0 | 24 | 28 | 23 | 28 (27) |

| | | | | | | | | | |
|-----|--|-------------|---|-------|-------|----|----|----|---------|
| 15 | Ravensworth Car Park, Bedlington (LP on opposite site of the road) | Residential | N | 100.0 | 25.0 | 22 | 25 | 20 | 25 (24) |
| 17 | Front Street East, Bedlington (LP next to shelter at junction of Church Ave) | Road/Urban | N | | 100.0 | 22 | 30 | 27 | 24 |
| 18 | Wansbeck Bridge (LP on roundabout) | Residential | N | 100.0 | 25.0 | 23 | 28 | 22 | 27 (25) |
| 20 | Portland Park (LP in Car Park) | Road/Urban | N | 100.0 | 25.0 | 24 | 21 | 21 | 24 (23) |
| SD1 | Seaton Delaval, Salvation Army LP | Road/Urban | N | | 100.0 | 28 | 32 | 33 | 34 |

‡ Diffusion tubes were being analysed by two different companies (Lambeth Scientific Services Ltd = 1.03 and Harwell Scientifics = 0.81)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year. Measured means shown in parentheses.

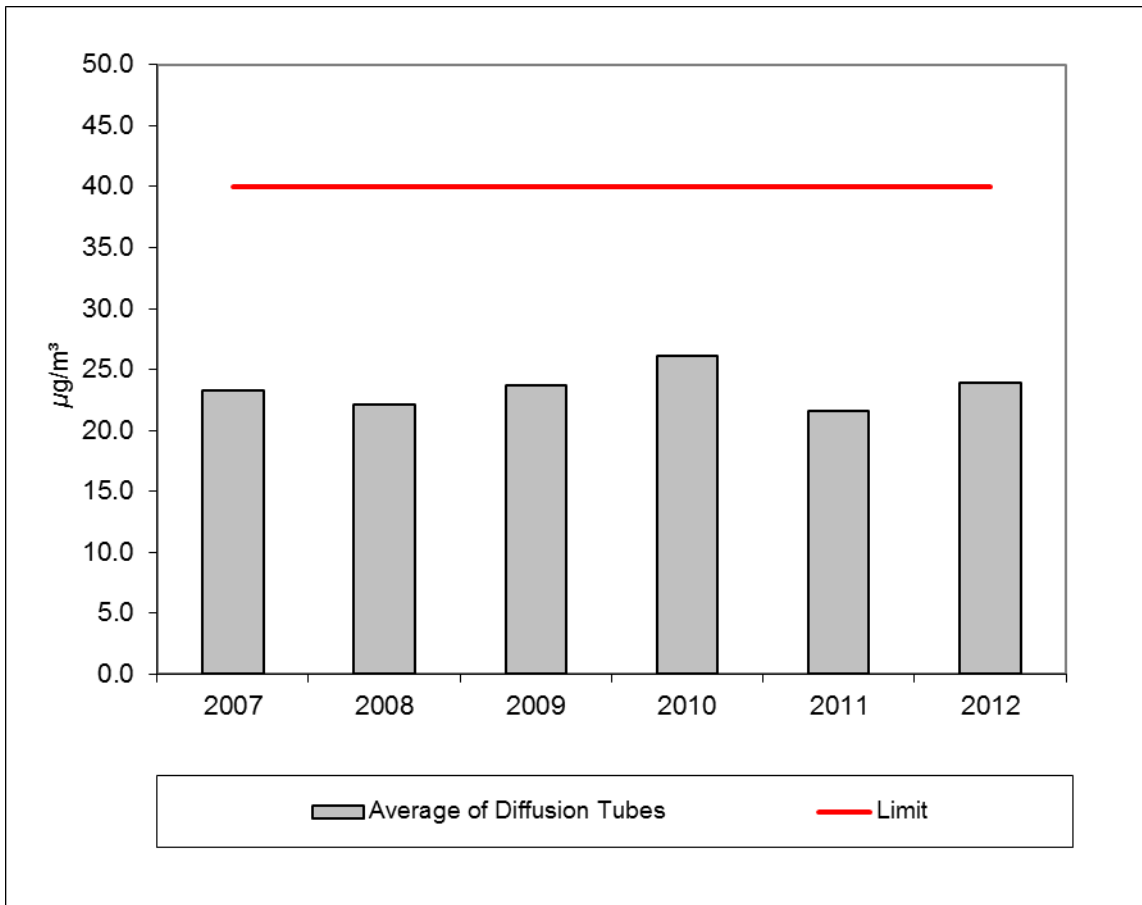
In bold, exceedance of the NO₂ annual mean AQS objective of 40µg/m³

Underlined, annual mean > 60µg/m³, indicating a potential exceedance of the NO₂ hourly mean AQS objective

^a Means should be "annualised" as in Box 3.2 of TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites

Even with several reductions in the diffusion tube programme in Northumberland, the results from the remaining tubes show little annual variation and are within the national Air Quality Objectives for NO₂.



2.2.2 Particulate Matter (PM₁₀)

Neither the Blyth nor Cowpen monitor indicated any breach of the national air quality objectives for PM₁₀. Measured annual means were well within the objective and only the Blyth monitor has shown any exceedance of the daily mean objective of 50 µg/m³ - however, this is still below the limit of 35 times in a year. Both monitors had greater than 90 per cent data capture.

Table 2.5a Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2012 ^b % | Annual mean concentrations (µg/m ³) | | |
|---------|--------------------|--------------|--|--|---|-------------------|------|
| | | | | | 2010 ^{c, d} | 2011 ^c | 2012 |
| | Blyth Library Site | No | N/A | 95.0 | 25 | 30 (30) | 30 |
| | Cowpen Road Site | No | N/A | 97.6 | 17 | 19 (19) | 16 |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year. Displayed in parentheses.

* Optional

In bold, exceedance of the PM₁₀ annual mean AQS objective of 40µg/m³

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

^c Means should be "annualised" as in Box 3.2 of TG(09) (<http://lagm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Table 2.5b Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture 2012 ^b % | Number of Exceedence of daily mean objective (50 µg/m ³) If data capture < 90%, include the 90 th per centile of daily means in brackets. | | |
|---------|--------------------|--------------|--|-------------------------------------|---|-------------------|------|
| | | | | | 2010 ^c | 2011 ^c | 2012 |
| | Blyth Library Site | No | N/A | 95.0 | 3 (38*) | 24 (49) | 22 |
| | Cowpen Road Site | No | N/A | 97.6 | 0 (28*) | 4 (32) | 0 |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c if data capture is less than 90%, include the 90th per centile of 24-hour means in brackets

* Optional

In bold, exceedance of the PM₁₀ daily mean AQS objective (50µg/m³ – not to be exceeded more than 35 times per year)

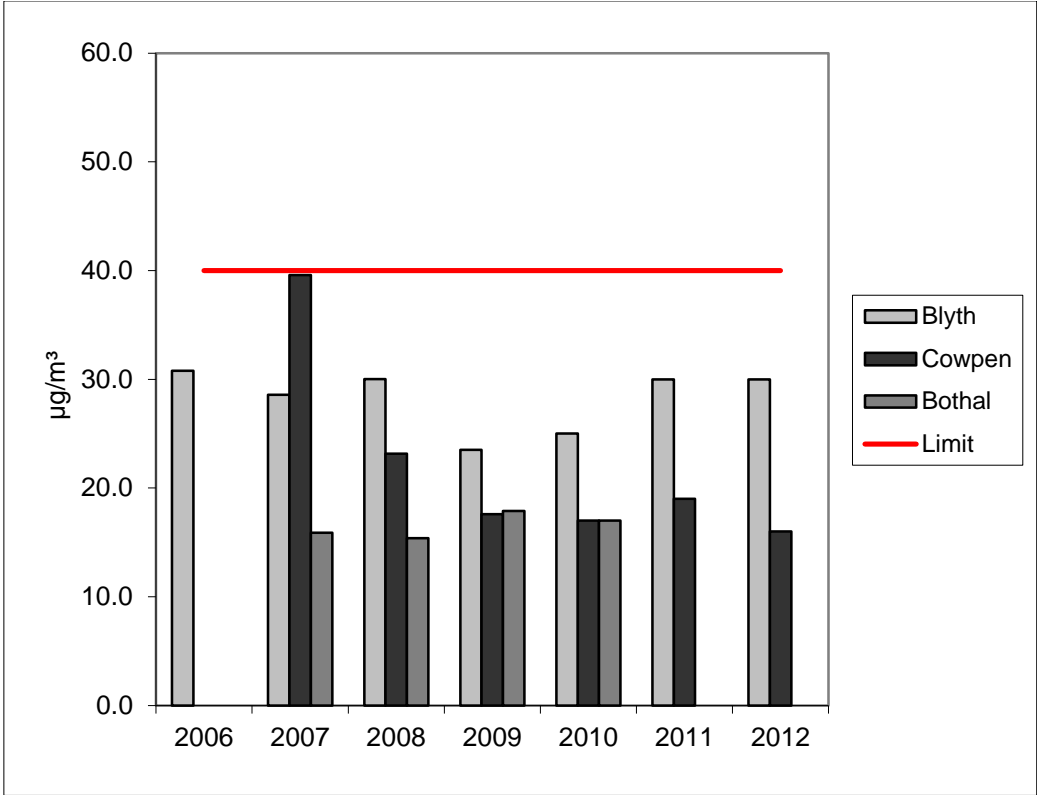
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

^c if data capture for full calendar year is less than 90%, include the 90.4th percentile of 24-hour means in brackets

* Number of exceedances for previous years is optional

Figure 2.5 Trends in Annual Mean PM₁₀ Concentrations



2.2.3 Sulphur Dioxide (SO₂)

Data capture for the Newbiggin SO₂ real-time, continuous monitor fell below 90 per cent in 2012. Therefore, an annualised average has been calculated for this. However, using the nearest AURN network monitors to perform this resulted in no difference between the actual measured or annualised SO₂ annual mean as the ratios were so low.

Data capture from the SO₂ site is below the recommended 90 per cent. Therefore the following per centiles have been calculated; 99.9th = 15 minute mean, 99.7th = 1 hour mean & 99.2nd = 24 hour mean. There has been no exceedence in this year in any of the three monitoring objectives indicated by either the actual averages or the per centiles.

Details of the annualising the data are included in Appendix A. Per centiles were calculated by AQDM.

Table 2.6a Results of Automatic Monitoring of SO₂: Comparison with Annual Mean Objective

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2011 ^b % | Annual mean concentrations ($\mu\text{g}/\text{m}^3$) ^c | | |
|---------|-------------------------|--------------|--|--|--|----------------------|-------------------|
| | | | | | 2010 ^{c,d} | 2011 ^{c, d} | 2012 ^c |
| | Newbiggin Sports Centre | No | N/A | 76.6 | 7 | 5 (5) | 3 (3) |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year. Displayed in parentheses.

* Optional

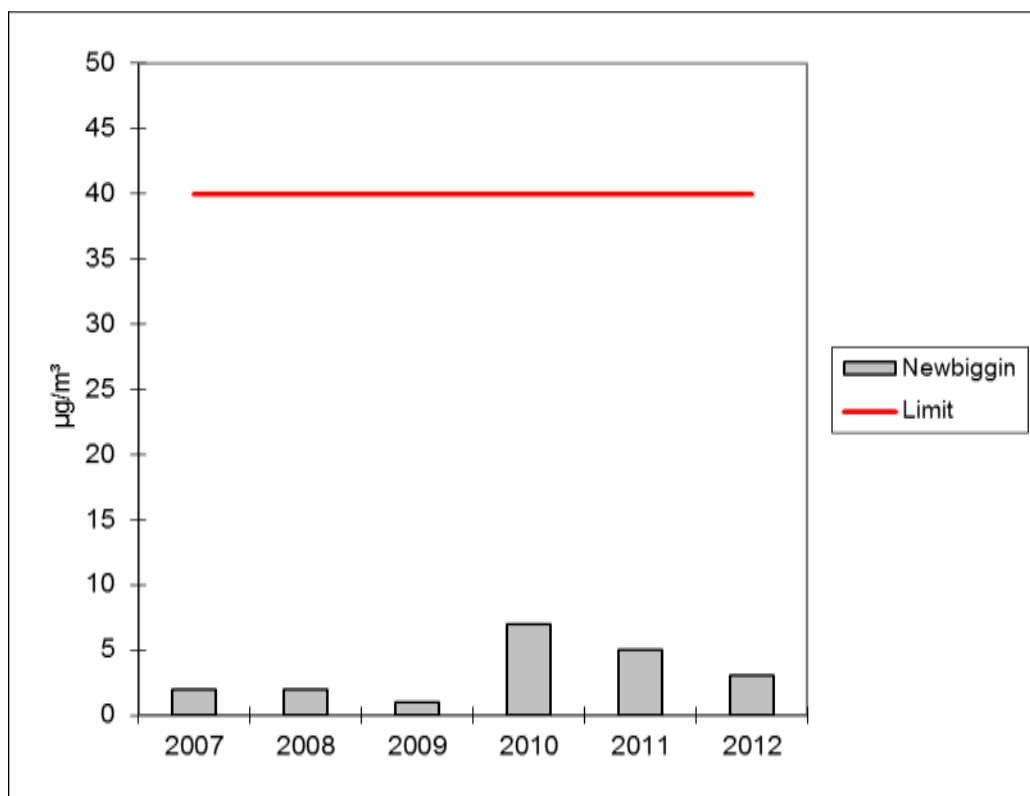
Table 2.6b Results of SO₂ Automatic Monitoring: Comparison with 15-minute, 1-hour & 24-hour Objectives

| Site | Location | Within AQMA | Data Capture for monitoring period ^a % | Data Capture 2011 ^b % | Number of Exceedences of: (µg/m ³) ^c | | |
|------|-------------------------|-------------|---|----------------------------------|---|---|--|
| | | | | | 15-minute Objective (266 µg/m ³) | 1-hour Objective (350 µg/m ³) | 24-hour Objective (125 µg/m ³) |
| | Newbiggin Sports Centre | No | N/A | 76.6 | 0 (37) | 0 (27) | 0 (12) |

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
^b This column shows data capture for the full calendar year – e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.
 NB Relevant per centiles are in parentheses.
 In bold, exceedance of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
^c if data capture for full calendar year is less than 90%, include the relevant percentile in bracket (in µg/m³): 15-min mean = 99.9th; 1-hour mean = 99.7th; 24-hour mean = 99.2th percentile. Displayed in parentheses.

Figure 2.6 Trends in SO₂ Concentrations

SO₂ levels at Newbiggin continue to be well below the national Air Quality Objectives.



2.2.4 Benzene

There continues to be no exceedance of the 5.0 µg/m³ national air quality objective for benzene (2010 objective) or the previous 16.25 µg/m³ objective (2003 objective) at all the monitoring sites.

Table 2.7a Results of Benzene Diffusion Tubes - Running Mean (3 year)

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2011 ^b % | Annual mean concentrations (µg/m ³) | | |
|---------|--|--------------|---|---|---|----------------------|-------------------|
| | | | | | 2010 ^{c,d} | 2011 ^{c, d} | 2012 ^c |
| V1 | Fisher Lane, lamp post south of bus stop LP | No | N/A | 25.0 | 2.5 | 1.8 | 2.5 |
| V2 | Opposite Avery Dennison factory on LP | No | N/A | 25.0 | 2.1 | 1.6 | 2.2 |
| V4 | Windburgh Drive, last cul-de-sac grass area LP | No | N/A | 25.0 | 1.8 | 1.7 | 1.6 |
| V5 | Rochester Green, Barns Park LP | No | N/A | 25.0 | 2.2 | 1.2 | 1.3 |
| V6 | Beaumont Manor (ASDA) LP | No | N/A | 25.0 | 2.0 | 1.2 | 1.4 |
| V8 | Sudbury Way, Beaconhill Estate LP | No | N/A | 25.0 | 2.0 | 1.2 | 1.4 |
| V9 | Lancastrian Road, dead end LP | No | N/A | 25.0 | 2.2 | 1.3 | 1.5 |
| V10 | Northburn Football Club car park LP | No | N/A | 25.0 | 3.1 | 1.6 | 1.7 |
| V11 | Crow Hall Rd opp CMP Factory LP | No | N/A | 25.0 | 3.2 | 1.7 | 1.7 |

* Influenced by one monthly value of 9.3

Table 2.7b Results of Benzene Diffusion Tubes - Annual Means

| Site ID | Location | Within AQMA? | Data Capture for monitoring period ^a % | Data Capture for full calendar year 2011 ^b % | Annual mean concentrations (µg/m ³) | | |
|---------|--|--------------|---|---|---|-------------------|------|
| | | | | | 2010 ^{c,d} | 2011 ^c | 2012 |
| V1 | Fisher Lane, lamp post south of bus stop LP | No | N/A | 25.0 | 2.0 | 2.3 | 1.9 |
| V2 | Opposite Avery Dennison factory on LP | No | N/A | 25.0 | 1.5 | 2.5 | 3.3* |
| V4 | Windburgh Drive, last cul-de-sac grass area LP | No | N/A | 25.0 | 1.7 | 2.9 | 1.0 |
| V5 | Rochester Green, Barns Park LP | No | N/A | 25.0 | 1.6 | 0.9 | 1.0 |
| V6 | Beaumont Manor (ASDA) LP | No | N/A | 25.0 | 1.9 | 0.9 | 1.0 |
| V8 | Sudbury Way, Beaconhill Estate LP | No | N/A | 25.0 | 1.8 | 0.8 | 1.2 |
| V9 | Lancastrian Road, dead end LP | No | N/A | 25.0 | 2.1 | 0.9 | 0.9 |
| V10 | Northburn Football Club car park LP | No | N/A | 25.0 | 2.6 | 1.0 | 1.1 |
| V11 | Crow Hall Rd opp CMP Factory LP | No | N/A | 25.0 | 3.2 | 1.1 | 1.1 |

* Influenced by one monthly value of 9.3

The monitoring points are not directly measurements of public exposure but were installed in the area of several large industrial VOC sources for monitoring purposes. The relevance of these sites has been reviewed as they have never shown any exceedance for benzene. The benzene diffusion tube monitoring was discontinued on the 1 April 2012.

2.2.5 Other Pollutants Monitored

The Council does not routinely monitor any other pollutants.

2.2.6 Summary of Compliance with AQS Objectives

Northumberland County Council has examined the results from monitoring in the Northumberland area. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Industrial Sources

A paint manufacturing plant at Oakwood Way, Ashwood Business Park, Ashington (Planning Ref: 11/03008/FULES) is presently being constructed and was mentioned in the 2012 Updating and Screening Assessment as a planning application. The installation will have an LA-PPC Part B permit for the Manufacture of Coating Materials (Process Guidance note PG6/44(11)) to control emissions from the installation.

A new opencast coal site began operation at the beginning of 2012 and started coaling in May 2012. The site (Butterwell DP Surface Mine Scheme) is located north west of Ashington and covers an area of about 40 hectares. It is expected to yield about 1 million tonnes of coal and 200k tonnes of fireclay and be fully restored by the end of 2014. The site has an LA-PPC permit for Coal, Coke, Coal Product and Petroleum Coke handling and processing (process guidance note PG3/05(12)).

A new petrol filling station opened in May 2012 on the southern outskirts of Alnwick next to the A1, the installation has a LA-PPC Part B permit for the Unloading of Petrol into Storage at Petrol Stations (process guidance note PG1/14(06)).

3.2 Commercial and Domestic Sources

Several biomass plants were installed in Northumberland; where in smoke control areas the appliance has been specified as an exempt appliance. Many of these have been above the 50kW limit for consideration under chimney height agreement through Approved Document J and so were considered under Section 14 of The Clean Air Act 1993.

In all cases where we were aware of such developments for biomass boilers, chimney height approval forms have been sent to the applicant. The distribution of installations are completely random and many are in very rural locations.

3.3 New Developments with Fugitive or Uncontrolled Sources

The Butterwell opencast previously mentioned has internal haul roads, the maintenance and conditioning of these roads are controlled by conditions in their environmental permit.

Northumberland County Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

Paint manufacturing plant at Ashington – LA-PPC and Biomass

Opencast site at Ashington – LA-PPC

Petrol filling station at Alnwick – LA-PPC

Domestic/Commercial Biomass

These will be taken into consideration in the next Updating and Screening Assessment, although the control of emissions from the identified developments are adequately covered by environmental permits.

4 Local / Regional Air Quality Strategy

Air Quality management is in a transitional period following the merging of the former county and district councils in April 2009. Although the County is now a single administrative area, it is currently being covered by a mixture of rural areas with good air quality and urban areas. During 2011/12 the Council underwent a further full service review therefore it is still proposed that:-

During the course of the next year the AQM Officers proposes to:-

Continue to discuss with the Development Planners, Local Traffic Planners, Climate Change Officers and other stakeholders the integration and implementation of a NCC AQ Strategy and Action Plan.

5 Planning Applications

A 100MW renewable energy project fuelled by wood-based biomass at North Blyth, has been proposed. The project includes a power station as well as biomass handling and storage from ship-delivered biomass fuels.

The present status of the project is indicated on the project's website <http://www.northblythproject.co.uk/news/latest-news.aspx> (7 May 2013):

“The Examining Authority from the Planning Inspectorate has issued its recommendation to the Secretary of State. A decision will be published on or before 2 August 2013. Please note that the Examining Authority's recommendation will also be made available at that point.”

A major road development to the north of Morpeth known as the Morpeth Northern Bypass has been proposed, but it will be summer 2013 before the project is submitted to the Planning Inspectorate for a Development Consent Order (DCO). This development and any impact from traffic changes will be addressed in future air quality reports.

A paint manufacturing plant at Oakwood Way, Ashwood Business Park, Ashington (within a Smoke Control Area); Planning Ref: 11/03008/FULES. The applicant has done an assessment of air quality

<http://publicaccess.northumberland.gov.uk/online-applications/simpleSearchResults.do?action=firstPage>

as part of the application submission for a 500kW biomass plant. This is judged against the national air quality objectives within the context of the national air quality strategy. The area has not been declared as an Air Quality Management Area (AQMA), and the application has been evaluated to ensure that this situation is not altered. The decision notice was issued in February 2012 and development began late in 2012. It is expected that the site will be operational toward the end of 2013.

A specialist emergency care hospital at "Land East of A189 And South Of Lanercost Park", A189 Spine Road Moor Farm To Kitty Brewster Bridge, Cramlington, Northumberland; Planning Ref: 11/00129/CCMEIA. The applicant has done an assessment of air quality as part of the application submission for a 450kW biomass plant and altered traffic flow.

<http://publicaccess.northumberland.gov.uk/online-applications/pagedSearchResults.do?action=page&searchCriteria.page=1>

This is judged against the national air quality objectives within the context of the national air quality strategy. Construction began towards the end of 2012 as mentioned in the 2012 Updating and Screening Assessment as a planning application. The hospital will not be opened until 2014/15.

A planning application was lodged in the summer of 2012 for a 76MW_{th} biomass combined heat and power (CHP) plant at an Environment Agency IPPC permitted pharmaceutical installation at Cramlington. An air quality assessment was carried out for this project which concluded that there was no significant impact on air quality from the proposed installation. If approved, it is expected that this development will commence in 2013.

6 Air Quality Planning Policies

Planning policy in Northumberland is in a transitional period following the merging of the former county and district councils in April 2009. Although the County is now a single administrative area, it is currently being covered by a combination of existing county and district planning policy stemming from a mixture of Core Strategy and saved Local Plan policies adopted before unification. The Core Strategy is the principal document in the Northumberland Local Development Plan (or 'Local Plan'). The document is currently under preparation and once finalised it will set out a vision and strategy for development in Northumberland over the next 15 years. The Core Strategy will include the strategic planning policies of the Local Plan. It will be used to assess planning applications for new developments and help protect Northumberland's environment.

The current air quality planning policies from the various planning documents are listed below:

Former Northumberland County Council:

Northumberland Minerals Local Plan (March 2000) – Saved Policies

Policy S6 – Good working practices

Policy EP17 – Encouraging alternatives to road transport and mitigating impacts

Policy EP18 - Encouraging alternatives to road transport and mitigating impacts

Policy EP19 – Protection of local communities

Policy EP20 – Minimising cumulative impact

Policy SM1 – Ensuring good site management

Northumberland Waste Local Plan (December 2001) – Saved Policies

Policy S3 – Protecting communities and the environment

Policy EP2 – Protecting local communities

Policy EP21 - Encouraging alternatives to road transport and mitigating impacts

Policy RE1 – Mini recycling centres

Policy RE2 – Civic amenity sites

Policy RE3 – Material recycling facilities

Policy RE4 – Recycling industrial and commercial waste

Policy RE5 – Recycling construction and demolition waste

Policy RE6 – Composting

Policy DP5 – Transfer stations

Policy SM1 – Ensuring good site management

Former Alnwick District:

Alnwick Local Development Framework Core Strategy Development Plan Document
(October 2007)

Policy S3 – Sustainability criteria

Policy S11 – Locating development to maximise accessibility and minimise impact
from travel

Alnwick District Wide Local Plan, April 1997 – Saved Policies

Policy CD32 – Bad neighbour uses and the environment

Former Berwick Borough:

No saved policies relevant

Former Blyth Valley Borough:

Blyth Valley Borough Local Development Framework Core Strategy Development
Plan Document (July 2007)

Policy SS3 – Sustainability criteria

Policy A1 – Traffic Management

Blyth Valley Borough Local Development Framework Development Control
Development Plan Document (September 2007)

Policy DC1 – General Development

Policy DC11 – Planning for Sustainable Travel

Policy DC21 – Pollution Control

Blyth Valley District Local Plan (May 1999) – Saved Policies

Policy G10 – Development criteria in the countryside generally

Former Castle Morpeth Borough:

Castle Morpeth District Local Plan (February 2003) – Saved Policies

Policy RE7 – Development affecting sites authorised under Part 1 of the Environment
Protection Act

Former Tynedale District:Tynedale Local Development Framework Core Strategy Development Control Document (October 2007)

Policy GD4 – Principles for transport and accessibility

Tynedale District Local Plan (April 2000) – Saved Policies

Policy CS 19 – Location of development either causing or adjacent to pollution sources

Former Wansbeck District:Wansbeck District Local Plan (July 2007)

Policy GP4 – Accessibility

Policy GP23 – Pollution and nuisance

Policy GP24 – Pollution and nuisance

Policy T6 – Traffic implications for new development

Policy T10 – Traffic management

There are some general policies covering sustainability criteria brought together into a 'Consolidated Planning Policy Framework' and this is available in an interactive online version in order that prospective applicants, developers and other interested parties can access all the relevant planning policy documents for Northumberland - these can be accessed via the following link - <http://www.northumberland.gov.uk/Default.aspx?page=1579>. To access the Core Strategy and saved Local Plan policies, go to Annex B, Section A of the Consolidated Planning Policy Framework document and then click on the relevant Core Strategy or Local Plan documents

The planning strategy service is currently working towards the production of a new Local Development Framework (LDF) for Northumberland. The LDF will progressively replace the existing policies detailed in the Consolidated Planning Policy Framework. The central document of the LDF is the Core Strategy DPD, which will set out the overarching vision, spatial strategy and core policies for the spatial development of Northumberland. It is anticipated that it will be adopted at the end of 2014. Allocations for specific land uses will be addressed in separate DPD, due for completion in the autumn of 2014.

The associated information about the core strategy and related documentation can be found at: <http://www.northumberland.gov.uk/default.aspx?page=3443>.

7 Local Transport Plans and Strategies

The Council's third Local Transport Plan (LTP) covers the period from April 2011 to 2026. It explains the 15-year Transport Strategy for the County, the problems faced and proposals on how to tackle these problems.

The associated information about the LTP and related documentation can be found at: <http://www.northumberland.gov.uk/default.aspx?page=7846>.

8 Climate Change Strategies

Northumberland County Council Action on Climate Change

Northumberland County Council signed the Nottingham Declaration on Climate Change in December 2005. This committed the Council to producing a Climate Change Action Plan within two years.

The Climate Change Action Plan was adopted in July 2008 and seeks to identify immediate actions that the Council can take to adapt to climate change and to establish systems and approaches to address longer term concerns. It focuses on three broad areas of activity:

Adaptation – making the Council’s operations more resilient to climate change that is already occurring and likely to increase;

Mitigation – reducing the impact of activities that are likely to contribute to future harmful climate change and;

Awareness Raising – increasing awareness of these matters with partners and communities across Northumberland.

The Northumberland County Council Climate Change Action Plan, together with the action plans prepared by the former districts, will together form the basis for a climate change action plan to be adopted by the new unitary council for Northumberland that replaced the existing councils on 1st April 2009.

The County Council was involved in the production of the Regional Climate Change Adaptation Study, a unique study on the effects of climate change on an entire UK Government Region. It makes projections of climate change and combines cutting-edge research and state-of-the-art expertise from nationally-recognised professional engineers and scientists with the practical experience of staff working ‘on-the-ground’ within a range of organisations and bodies across the region and considers the impacts across a wide range of sectors, providing practical advice on adaptation measures.

The Northumberland Strategic Partnership (NSP) published The Heat is On - a Strategic Framework for Climate Change Planning in Northumberland in 2008, which combines 18 months of research by the Northumberland Strategic Partnership (NSP) and its partner organisations. As well as revealing the climate change forecast for Northumberland - which includes an increased intensity and frequency of severe weather events - the report also calls businesses, public services and local communities to action.

In its Local Area Agreement (LAA), the County Council is committed to achieving Level 4 in National Indicator 188, Planning to Adapt to Climate Change by 2011. This is the highest level it is possible to attain.

Northumberland County Council is committed to reducing the greenhouse gas emissions from both its own operations and the local community. This will be done by a range of measures on transport, waste, procurement, education, planning and finance as well as by having a robust policy on sustainable energy including initiatives to improve efficiency and reduce waste and by a commitment to generating renewable energy within the county.

From: <http://www.northumberland.gov.uk/Default.aspx?page=727>.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Monitoring from the three real-time, continuous stations show continued compliance with the national Air Quality Objectives. Diffusion tube data also continues to show that the Air Quality Objectives for those pollutants are being met in Northumberland.

There are no obvious trends indicating a deterioration of any of the monitored air pollutants in Northumberland.

9.2 Conclusions relating to New Local Developments

The three new industrial sources mentioned in Section 3.1 are all processes requiring an environmental permit under The Environmental Permitting (England and Wales) Regulations 2010 (as amended). As such, their emissions will be controlled as part of their permit conditions for the respective installations.

The planning decision on the North Blyth biomass power station is not expected until summer 2013.

9.3 Proposed Actions

The Progress Report has not identified any need to proceed to a Detailed Assessment for any pollutant.

The Progress Report has identified a need for changes to the existing monitoring programme; re-evaluation of automatic monitoring stations for both location and parameters at Blyth and Cowpen Road. This has been partly brought about by a requirement to monitor PM_{2.5} in future. The new Turnkey Osiris monitors to be installed at Blyth and Cowpen by Easter 2013 will fulfil this.

Additionally, changes to the frontage of Blyth Library forced the removal of the existing enclosure and the planned replacement is to install a lamp-post mounted Turnkey Osiris for particulate monitoring; nitrogen dioxide monitoring will be fulfilled by diffusion tubes.

A further review of NO₂ diffusion tubes will take place in 2013/14 to look at compliance, location and relevant receptors.

The Blyth AQMA was revoked at the end of June 2012.

Northumberland County Council will look to submit a Progress Report in 2014.

10 References

AEA Energy & Environment Document “Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users.” Ref: ED48673043, Issue 1a, February 2008. Available:

http://laqm.defra.gov.uk/documents/0802141004_NO2_WG_PracticalGuidance_Issue1a.pdf

“Local Air Quality Management,” Technical Guidance LAQM.TG(09), Defra, February 2009. Available:

<http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf>

Spreadsheet of Bias Adjustment Factors (v.03/13). Available:

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_13-Final.xls

Last accessed 29/04/2013

Summary of Laboratory Performance in WASP NO₂ Proficiency Testing Scheme for Rounds 113-120 (April 2011 – March 2013). Available:

<http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

Last accessed 29/04/2013

Appendices

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Appendix B: Location Maps of Air Quality Monitoring Sites

Appendix C: Full Monthly NO₂ Diffusion Tube Dataset 2012

Appendix D: Ratified Data Summaries and Time Series Plots from AQDM

Appendix E: Order to revoke an Air Quality Management Area Designation Order

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Diffusion Tube Bias Adjustment Factors

The tubes are prepared and analysed by Environmental Scientifics Group Didcot (formerly Harwell Scientific Services). The method used involves the reaction of gaseous nitrogen dioxide with 50% triethanolamine contained on grids within the diffusion tubes. This is then reacted with reagents to produce a stable coloured complex, which can then be compared to standards prepared from sodium nitrite and analysed using visible spectroscopy.

The ESG laboratory follows the procedures set out in the Harmonisation Practical Guidance.

Northumberland County Council has not compared the diffusion tubes with the reference method in a co-location study.

The bias factor is calculated by the using data from the DEFRA Website:

<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

National Diffusion Tube Bias Adjustment Spreadsheet Version Number: 03/13. The bias factor was calculated to be 0.79 for ESG.

The Results of laboratory precision and WASP scheme are included below; the Environmental Scientifics Group showing a 100 per cent performance for 2012/13.

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | Spreadsheet Version Number: 03/13 | | | | |
|--|---|---------------------------------------|---|--|--------------------------|---|--|----------|----------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies. | | | | | | This spreadsheet will be updated at the end of June 2013 | | | | |
| Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods. Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet. This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | | | | |
| The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory. | | | | | | Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd. | | | | |
| Step 1: | Step 2: | Step 3: | Step 4: | | | | | | | |
| Select the Laboratory that Analyzes Your Tubes from the Drop-Down List | Select a Preparation Method from the Drop-Down List | Select a Year from the Drop-Down List | Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ² shown in blue at the foot of the final column. | | | | | | | |
| If a preparation method is not shown, you have to state the method used in the laboratory. | | | If you have your own co-location study then see footnote ³ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@uk.bureauveritas.com or 0800 0327953 | | | | | | | |
| Analysed By ¹ | Method | Year | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (DM) (ug/m ³) | Automatic Monitor Mean Conc. (CM) (ug/m ³) | Bias (B) | Tube Precision | Bias Adjustment Factor (A) (CM/DM) |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Sivale Borough Council | 3 | 44 | 35 | 26.2% | G | 0.80 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Sivale Borough Council | 11 | 46 | 37 | 23.7% | G | 0.81 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Vale Of White Horse District Council | 12 | 37 | 30 | 24.5% | G | 0.80 |
| ESG Outdoor | 50% TEA in acetone | 2012 | UB | Gravelham Borough Council | 12 | 32 | 27 | 19.6% | G | 0.84 |
| ESG Outdoor | 50% TEA in acetone | 2012 | UB | Gravelham Borough Council | 12 | 44 | 35 | 25.3% | G | 0.80 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Hambleton District Council | 12 | 25 | 19 | 31.2% | G | 0.76 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | North East Lincolnshire Council | 12 | 38 | 30 | 26.2% | G | 0.79 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | North East Lincolnshire Council | 12 | 42 | 31 | 31.3% | G | 0.76 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Fallick Council | 12 | 38 | 33 | 15.3% | G | 0.86 |
| ESG Outdoor | 50% TEA in acetone | 2012 | UB | Fallick Council | 12 | 27 | 24 | 9.5% | G | 0.91 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Thames District Council | 12 | 32 | 25 | 27.2% | G | 0.79 |
| ESG Outdoor | 50% TEA in acetone | 2012 | K/S | Maylebone Road Intercomparison | 11 | 127 | 95 | 34.7% | G | 0.75 |
| ESG Outdoor | 50% TEA in acetone | 2012 | B | Stockton on Tees | 12 | 28 | 21 | 33.8% | G | 0.75 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Stockton on Tees | 11 | 22 | 17 | 25.3% | G | 0.77 |
| ESG Outdoor | 50% TEA in acetone | 2012 | SU | Thames District Council | 12 | 21 | 16 | 16.6% | G | 0.86 |
| ESG Outdoor | 50% TEA in acetone | 2012 | UB | CITY OF YORK COUNCIL | 12 | 28 | 24 | 15.3% | P | 0.87 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | CITY OF YORK COUNCIL | 12 | 41 | 32 | 20.5% | P | 0.77 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | CITY OF YORK COUNCIL | 12 | 37 | 28 | 31.4% | G | 0.76 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | CITY OF YORK COUNCIL | 12 | 41 | 30 | 34.4% | G | 0.74 |
| ESG Outdoor | 50% TEA in Acetone | 2012 | K/S | Suffolk Coastal District Council | 12 | 50 | 44 | 13.8% | G | 0.88 |
| ESG Outdoor | 50% TEA in acetone | 2012 | B | Maldstone Borough Council | 12 | 20 | 14 | 46.2% | G | 0.68 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Maldstone Borough Council | 12 | 48 | 43 | 13.2% | P | 0.88 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Armagh City and District Council | 12 | 40 | 27 | 45.3% | G | 0.69 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Dumfries and Galloway Council | 12 | 38 | 33 | 14.2% | G | 0.88 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Cambridge City Council | 12 | 48 | 35 | 31.5% | G | 0.76 |
| ESG Outdoor | 50% TEA in acetone | 2012 | R | Sivale Borough Council | 11 | 44 | 31 | 41.9% | G | 0.70 |
| ESG Outdoor | 50% TEA in acetone | 2012 | | Overall Factor² (26 studies) | | | | | Use | 0.79 |

Factor from Local Co-location Studies (if available)

Co-location data is collected at the Cowpen Road site and was submitted to DEFRA on at the end of April 2013.

| Start Date (dd/mm/yy) | End Date (dd/mm/yy) | % Data Capture | Ratified / Provisional | NOx (if available) (ug/m3) | Nitrogen Dioxide (ug/m3) | Tube 1 (ug/m3) |
|-----------------------|---------------------|----------------|------------------------|----------------------------|--------------------------|----------------|
| 04/01/2012 | 01/02/2012 | 91.7 | Ratified | 92 | 32 | 48 |
| 01/02/2012 | 29/02/2012 | 85 | Ratified | 52 | 22 | 36 |
| 29/02/2012 | 28/03/2012 | 99.9 | Ratified | 74 | 31 | 43 |
| 28/03/2012 | 25/04/2012 | 99.9 | Ratified | 48 | 22 | 16 |
| 25/04/2012 | 30/05/2012 | 99.6 | Ratified | 44 | 22 | 24 |
| 30/05/2012 | 27/06/2012 | 99.3 | Ratified | 60 | 25 | 39 |
| 27/06/2012 | 01/08/2012 | 99.6 | Ratified | 62 | 24 | 31 |
| 01/08/2012 | 29/08/2012 | 99.7 | Ratified | 69 | 29 | 39 |
| 29/08/2012 | 26/09/2012 | 99.9 | Ratified | 59 | 24 | 37 |
| 26/09/2012 | 31/10/2012 | 99.8 | Ratified | 90 | 33 | 46 |
| 31/10/2012 | 28/11/2012 | 99.9 | Ratified | 92 | 35 | 37 |
| 28/11/2012 | 04/01/2013 | 99.7 | Ratified | 83 | 32 | 38 |

Means 28 36 Ratio 0.76

Discussion of Choice of Factor to Use

Local bias adjustment factors were not calculated at the time of data processing, therefore national factors were used.

Only the national adjustment factor was used, however the local factor submitted to DEFRA for the co-location study was only 0.03 different, therefore the impact of using local and/or national adjustment would have been minimal.

PM Monitoring Adjustment

PM₁₀ measurements by the BAM units had a factor of 0.83¹ applied to give gravimetric equivalent concentrations.

Short-term to Long-term Data adjustment

Estimation of annual mean concentrations for short-term monitoring data

Following the methodology in Box 3.2 of LAQM.TG(09), the following sites with short-term monitoring data had their annual mean estimated using data from the three nearest monitoring sites in the AURN network (Newcastle City, Newcastle Cradlewell and Sunderland Silksworth) and both our local stations which has been audited by AEA previously (the inclusion or exclusion of these stations only changes the combined ratio by 0.02):

| 1N - Northumberland Hall, Alnwick and 7N - Bondgate Without, Alnwick | | | |
|---|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.02 |
| Newcastle Cradlewell | 46.5 | 46.2 | 1.01 |
| Sunderland Silksworth | 19.7 | 18.0 | 1.09 |
| Middlebrough | 18.0 | 15.8 | 1.14 |
| Blyth Library | 25.4 | 23.2 | 1.09 |
| Cowpen Road | 27.9 | 27.7 | 1.01 |
| | | Average (Ra) | 1.06 |

| Ber5 - Main Street, Tweedmouth | | | |
|---------------------------------------|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.02 |
| Newcastle Cradlewell | 46.5 | 42.7 | 1.09 |
| Sunderland Silksworth | 19.7 | 23.0 | 0.86 |
| Middlebrough | 18.0 | 23.3 | 0.77 |
| Blyth Library | 25.4 | 32.8 | 0.77 |
| Cowpen Road | 27.9 | 22.1 | 1.27 |
| | | Average (Ra) | 0.96 |

| B6 – Blyth Civic Centre, B8 – Beaumont Manor and B10 Park Farm Villas, all Blyth | | | |
|---|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.02 |
| Newcastle Cradlewell | 46.5 | 46.2 | 1.01 |

| | | | |
|-----------------------|------|--------------|-------------|
| Sunderland Silksworth | 19.7 | 18.0 | 1.09 |
| Middlebrough | 18.0 | 15.8 | 1.14 |
| Blyth Library | 25.4 | 23.2 | 1.09 |
| Cowpen Road | 27.9 | 27.7 | 1.01 |
| | | Average (Ra) | 1.06 |

| B13 – Health Centre Car Park, Blyth | | | |
|--|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.2 | 1.02 |
| Newcastle Cradlewell | 46.5 | 46.3 | 1.00 |
| Sunderland Silksworth | 19.7 | 19.1 | 1.03 |
| Middlebrough | 18.0 | 16.7 | 1.08 |
| Blyth Library | 25.4 | 23.8 | 1.06 |
| Cowpen Road | 27.9 | 28.1 | 0.99 |
| | | Average (Ra) | 1.03 |

| C3 – Ruabon Close (X2), C4 - Rochford Grove, C6 – Lancastrian Drive, C7 – Kielder Avenue & C8 – Manor Walks all Cramlington | | | |
|--|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.02 |
| Newcastle Cradlewell | 46.5 | 46.2 | 1.01 |
| Sunderland Silksworth | 19.7 | 18.0 | 1.09 |
| Middlebrough | 18.0 | 15.8 | 1.14 |
| Blyth Library | 25.4 | 23.2 | 1.09 |
| Cowpen Road | 27.9 | 27.7 | 1.01 |
| | | Average (Ra) | 1.06 |

| C10 – Bay Horse, Cramlington | | | |
|-------------------------------------|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 31.9 | 0.93 |
| Newcastle Cradlewell | 46.5 | 47.4 | 0.98 |
| Sunderland Silksworth | 19.7 | 24.6 | 0.80 |
| Middlebrough | 18.0 | 24.6 | 0.73 |
| Blyth Library | 25.4 | 31.8 | 0.80 |
| Cowpen Road | 27.9 | 28.5 | 0.98 |
| | | Average (Ra) | 0.87 |

| C11 – Storey Street, Cramlington | | | |
|---|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 32.8 | 0.91 |
| Newcastle Cradlewell | 46.5 | 50.4 | 0.92 |
| Sunderland Silksworth | 19.7 | 23.8 | 0.83 |
| Middlebrough | 18.0 | 22.3 | 0.81 |
| Blyth Library | 25.4 | 31.4 | 0.81 |
| Cowpen Road | 27.9 | 29.8 | 0.94 |
| | | Average (Ra) | 0.87 |

| 5 – Stobhill Social Club, Morpeth | | | |
|--|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.03 |
| Newcastle Cradlewell | 46.5 | 46.2 | 1.01 |
| Sunderland Silksworth | 19.7 | 18.0 | 1.09 |
| Middlebrough | 18.0 | 15.8 | 1.14 |
| Blyth Library | 25.4 | 23.2 | 1.09 |
| Cowpen Road | 27.9 | 27.7 | 1.01 |
| | | Average (Ra) | 1.06 |

| 4 – Station Road, Ashington, 7 – Front Street, Newbiggin, 11 – North Seaton Roundabout, Ashington, 15 – Ravensworth Car Park, Bedlington, 18 – Wansbeck Bridge, Stakeford & 20 – Portland Park, Ashington | | | |
|--|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Newcastle Centre | 29.7 | 29.0 | 1.03 |
| Newcastle Cradlewell | 46.5 | 46.2 | 1.01 |
| Sunderland Silksworth | 19.7 | 18.0 | 1.09 |

| | | | |
|---------------|------|--------------|-------------|
| Middlebrough | 18.0 | 15.8 | 1.14 |
| Blyth Library | 25.4 | 23.2 | 1.09 |
| Cowpen Road | 27.9 | 27.7 | 1.01 |
| | | Average (Ra) | 1.06 |

The Newbiggin SO₂ continuous monitor fell below 90 per cent data capture and presented below is the ratio calculation for this site.

| Newbiggin | | | |
|-----------------------|-----------------------|-----------------------|---------------|
| Long Term Site | Annual Mean 2012 (AM) | Period Mean 2012 (PM) | Ratio (AM/PM) |
| Sunderland Silksworth | 1.8 | 2.0 | 0.91 |
| Newcastle Centre | 5.0 | 4.5 | 1.12 |
| Middlesbrough | 3.5 | 3.6 | 0.96 |
| | | Average (Ra) | 1.00 |

The data for the AURN stations was obtained from the UK-Air website (http://uk-air.defra.gov.uk/data/data_selector).

QA/QC of Automatic Monitoring

It is recognised that any monitoring survey must be subject to quality assurance and quality control (QA/QC) to ensure the integrity of the data and to guarantee that the measurements fully comply with the requirements of the air quality review and assessment and are, therefore, fit for purpose. Therefore:

- data should be representative of ambient concentrations existing in the area under investigation.
- measurements need to be sufficiently accurate and precise to meet the defined monitoring requirements. Data must be inter-comparable and reproducible. Results from multi-site networks need to be internally consistent and comparable with national, international or other acceptable standards.
- measurements should be consistent over time, particularly if long-term trend analysis is to be undertaken.

QA/QC procedures were applied to both passive samplers and automatic monitoring data throughout the monitoring period. QA/QC procedures are involved in all aspects of the monitoring exercise from purchase of equipment to the data presentation. The following information summarizes the QA/QC practice applied for the purpose of this report.

Routine Site Visits

Regular site visits are carried out to:

- carry out site checks on equipment, sampling systems, safety and security.
- perform manual calibrations.

The following operations are carried out on site to maximise data integrity and capture rate:

- ensuring the proper running of equipment.
- performing instrument calibrations and diagnostic checks.
- minimising instruments down-time as much as possible, by anticipating problems prior to them becoming serious or fatal.
- carrying out essential routine functions such as particle filter changes and BAM tape replacement
- performing checks of the automatic calibration systems
- ensuring that initial siting criteria are still fulfilled i.e. that the surrounding environment has not changed in any way that prejudices the monitoring objectives.

Calibration Procedure

Proper calibration of automatic monitoring equipment is essential for obtaining accurate and reproducible air quality data. Electrical response signals are generated by the M200E analyser that corresponds to the concentrations of NO_x and NO in the air. In order to correctly scale the analyser response, it is necessary to calibrate it using a gas mixture of known concentration from a gas cylinder.

Calibrations are conducted at a number of levels

- daily automatic calibration by the analyser
- frequent (fortnightly) manual calibration (performed by qualified Northumberland County Council staff)
- periodic (6 monthly) reference calibrations (performed by SupportingU engineers)

The fortnightly calibrations are carried out according to procedures contained in the Site Manual and blank forms are provided to assist in performing and documenting the calibrations. Copies of the completed forms during the monitoring period are available on request.

Equipment Service Maintenance

An on-going service and maintenance contract is in place with SupportingU for the mobile unit. The contract provides the following cover:

- routine six monthly service visits in accordance with the manufacturer's and warranty conditions
- guaranteed breakdown call out response of forty eight hours (normal working time)
- written reports showing work carried out and status of instrumentation
- all work and documentation carried out in accordance with BS ISO 9002 accredited system
- dedicated telephone support (Technical Support Engineer) in normal working hours

Data Capture

The following methods are employed to maximise data capture rates.

- regular and frequent site visits
- automatic daily data collection using dedicated software
- M200E and BAM in-built data storage capability
- rapid, service, maintenance and repair
- comprehensive and documented site operational protocols
- experienced site operator

Data Processing

The data stored on each of the analyser's in-built loggers is then downloaded via a modem and mobile telephone line to a computer at the Council Offices or by direct download from data loggers.

The raw values are then converted using calibration factors obtained from manual calibrations performed every fortnight. There is always a gradual decline in the sensitivity of the analyser between each full 6-monthly service. It is this decline in sensitivity that the manual calibration conversion factors are intended to scale against.

The conversion is achieved using zero and span "calibration factors" achieved from the fortnightly calibrations. The two-point calibration will quantify the analysers "zero" and "span" response.

The zero response, V_z , is the response in measurements units of the analyser when the pollutant species being measured is not present in the sample air stream.

The span response, V_s , is the response of the analyser to an accurate known concentration, c , of the pollutant species. Instrument zero and span factors are then calculated using these data as follows:

Instrument zero = V_z

Instrument span, $F = c/(V_s - V_z)$

Ambient pollution data are then calculated by applying these factors to logged output signals as follows:

Pollutant concentration (ppb) = $F(V_a - V_z)$

Where V_a is the recorded signal from the analyser sampling ambient air.

Data Validation and Ratification

All data collected was thoroughly scrutinised by visual examination to ensure that there was no spurious and unusual measurements. The dedicated software used for

handling the data allows data to be edited but ensures that a raw data set is always maintained.

Through ratification of the data was carried out at the end, and during, the monitoring period. Steps in the ratification process included:

- examination of the calibration records to ensure correct application of calibration factors
- examination of simultaneously monitored pollutants PM10 and NO₂ data monitored at the MAQU is scrutinised to ensure that there are no anomalies in either of the measured concentrations.

The data for 2011 from the automatic monitors was ratified by AEA. The automatic monitors were QA/QC audited by AEA during 2010/11 to the AURN standard.

Ratified Data Summaries and Time Series Plots from the automatic monitors were undertaken by Air Quality Data Management as shown in Appendix D.

QA/QC of Diffusion Tube Monitoring

Precision and accuracy

The spreadsheet of diffusion tube co-location results, made available by the Local Air Quality Management Helpdesk to allow annual mean diffusion tube results to be bias adjusted, also contains information on the precision of the diffusion tubes, in those cases where duplicate or triplicate tubes were exposed. At the request of a number of Local Authorities, the precision data for each laboratory have been brought together in a summary form.

This page contains the following sections. Use the links below to jump to a specific section.

- [Precision vs Accuracy \(Bias\)](#)
- [Good vs Bad Precision](#)
- [What to do with Poor Precision](#)

- **[Precision vs Accuracy \(Bias\)](#)**

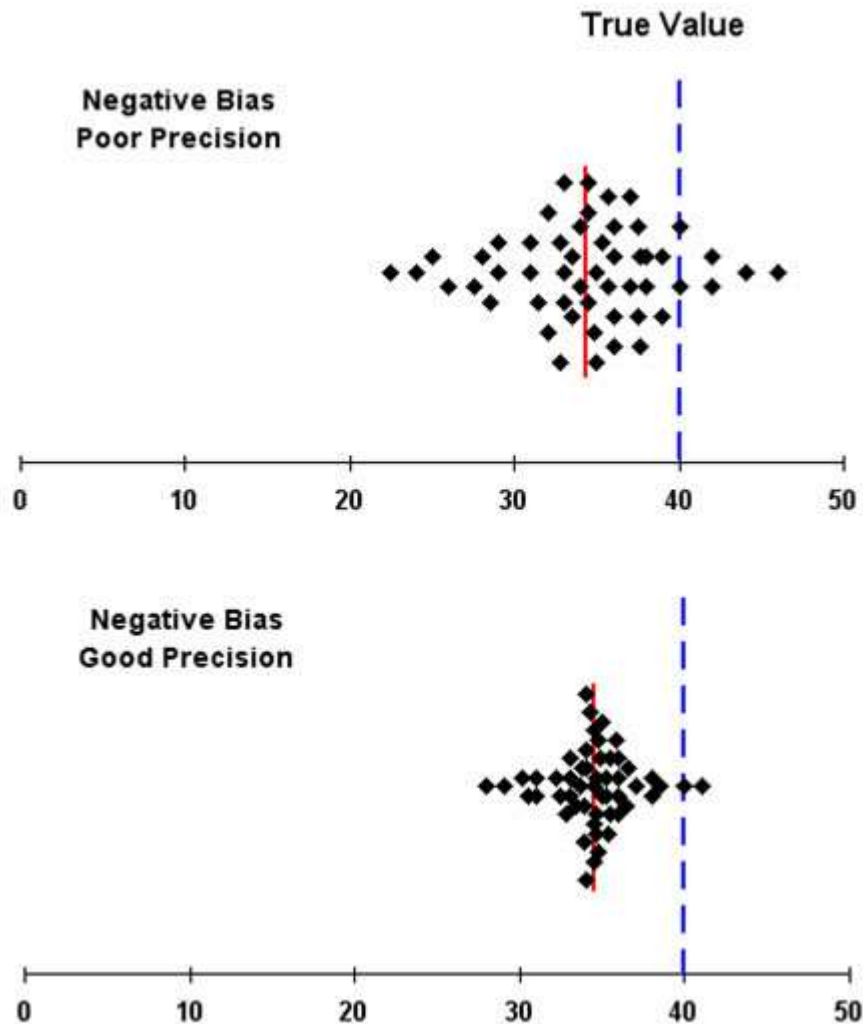
Precision should not be confused with accuracy. Diffusion tube precision can be described as the ability of a measurement to be consistently reproduced, i.e. how similar the results of duplicate or triplicate tubes are to each other. Accuracy represents the ability of the measurement to represent the ‘true’ value, which, in this case, is defined as the result from the automatic analyser. When averaged over a number of sets of results bias can be evident. This represents the overall tendency of the diffusion tubes to depart from the ‘true’ value, i.e. to systematically over-or under-read when compared against the reference method.

Once identified, bias can be adjusted for to improve the accuracy of diffusion tube results. This is done using **bias adjustment factors**, which have been found to be specific to a laboratory and tube preparation method.

A spreadsheet database of bias adjustment factors obtained from Local Authority co-location studies has been compiled by the Local Air Quality Management Helpdesk **and can be downloaded here**.

Unlike bias, poor precision cannot be adjusted for. It can only be improved by careful handling of the tubes in both the laboratory and the field. The two Figures below illustrate the difference between bias and precision. Both sets of results have the same calculated negative bias, shown by the vertical red line, compared with the true value. However, those in the top part of the Figure have poor precision, whereas

those in the lower part have good precision (the vertical spread is just a way of displaying the large number of individual results).



- **Good vs Poor Precision**

For the purposes of Local Air Quality Management, tube precision is separated into two categories, "Good" or "Poor", as follows: tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have "poor" precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

A spreadsheet tool has been developed to calculate the overall precision of a particular co-location study or any sets of duplicate or triplicate results. The tool can be downloaded on the [Local Bias Adjustment Factors page](#).

The distinction between "good" and "poor" precision is an indicator of how well the same measurement can be reproduced. This precision will reflect the laboratory's performance/consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Any laboratory can show "poor" precision for a particular period/co-location study, if this is due to poor handling of the tubes in the field.

A summary of precision results for the individual laboratories can be downloaded here as a PDF:

[Download Summary of Diffusion Tube Precision 2008-2012](#) (PDF 15KB)
[Updated Version March 2013]

Please note that the performance of a laboratory may change from one year to another. Therefore, when assessing the performance of a laboratory using the findings in the above Summary, account should be taken of the proportion of "poor" precision co-location results, not just the presence or absence of poor precision co-location results. Given this, particular care should be exercised when interpreting the results for a laboratory with only a few precision results. Some laboratories in the co-location spreadsheet are not represented in the Summary, because there were no duplicate or triplicate co-location results for that laboratory (some co-location studies are carried out using tubes exposed singly).

- **What to do with poor precision results**

Where results show "poor" precision, then they should be treated with caution, and may not be suitable for their intended purpose. If a particular authority has "Poor" precision from most or all of its duplicate or triplicate data sets then it should look at its own tube handling procedures.

If these are judged to be good then it will be appropriate to look at the precision results for its laboratory to see if this may be the explanation. The aim should be to use results from tubes that are giving "good" precision, as this will improve the overall reliability of the annual mean concentrations derived from diffusion tubes.

Summary of Laboratory Performance in WASP NO₂ Proficiency Testing Scheme for Rounds 113-120.

March 2013

LAQM Helpdesk – March 2013

Summary of Laboratory Performance in WASP NO₂ Proficiency Testing Scheme for Rounds 113-120.

Reports are prepared by HSL for BV/NPL on behalf of Defra and the Devolved Administrations.

Background

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical proficiency-testing (PT) scheme, operated by the Health and Safety Laboratory (HSL). WASP offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in workplace and ambient air. One such sample is the WASP NO₂ test sample type that is distributed to participants in a quarterly basis.

WASP NO₂ PT forms an integral part of the UK NO₂ Network's QA/QC, and is a useful tool in assessing the analytical performance of laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). With consent from the participating laboratories, HSL provides summary proficiency testing data to the LAQM Helpdesk for hosting on the web-pages at <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

The WASP scheme is operated independently by HSL. The cost of operating the WASP is borne by the laboratories, which pay an annual fee to HSL.

Defra and the Devolved Administrations advise that diffusion tubes used for Local Air Quality Management should be obtained from laboratories that have demonstrated satisfactory performance in the WASP scheme.

For this reason, although WASP remains an independent proficiency-testing scheme, laboratory performance in WASP is also assessed by NPL in conjunction with separate data from the Field Intercomparison Exercise carried out at Marylebone Road, central London. The information is used to help the laboratories to identify if they have problems and may assist devising measures to improve their performance. This forms part of work for Defra and the Devolved Administrations under the Local Air Quality Management Services Contract.

This information will be updated on a quarterly basis following completion of each WASP PT round. The posting of reports to schedule is dependent on the laboratories sending their results promptly to HSL.

WASP NO₂ PT Scheme overview

Purpose of scheme

The WASP performance testing scheme uses artificially spiked Palmes type diffusion tubes to test each participating laboratory's analytical performance on a quarterly basis. Such tubes are not designed to test other parts of the measurement system e.g. sampling. Every quarter, roughly January, April, July and October each year, each laboratory receives four diffusion tubes doped with an amount of nitrite, known to HSL, but not the participants. At least two of the tubes are usually duplicates, which enables precision, as well as accuracy, to be assessed. The masses of nitrite on the spiked tubes are different each quarter, and reflect the typical analytical range encountered in actual NO₂ ambient monitoring in the UK when using such diffusion tubes.

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Preparation of test samples

Diffusion tubes are spiked using a working nitrite solution prepared from a stock solution. The concentration of this stock solution is initially assayed using a titrimetric procedure. All steps in the subsequent test sample production process, involving gravimetric and volumetric considerations, are undertaken using calibrated instruments employing traceable standards. As an additional cross check, 12 spiked Palmes tubes are picked at random from each spike loading level and submitted to a third party laboratory which is accredited to ISO 17025 to undertake this analysis using an ion chromatographic procedure.

In summary, the tube spiking precision is calculated to be better than 0.5 %, expressed as a standard deviation, and this is derived from repeat gravimetric checking of the pipette device used to spike the test samples. The calculated spike values, derived from titrimetric, gravimetric and volumetric considerations, are found to be typically within ± 3 % of results obtained by the third party laboratory using an ion chromatographic analytical procedure.

Scheme operation

The participants analyse the test samples and report the results to HSL. HSL assign a performance score to each laboratory's result, based on how far their results deviate from the reference values for each test samples. The reference values are best estimates of the levels of nitrite doped onto the test sample tubes. At the completion of the round, laboratories receive a report detailing how they have performed and how their results relate to those of their peers.

Performance scoring

Changes to Scoring System as reported on the LAQM website

The z-score system is used by HSL to assess the performance of laboratories participating in the WASP NO₂ scheme. Information on the interpretation of the z score is provided below.

It was proposed however that HSL would migrate to an alternative scoring scheme, which is commonly used elsewhere in their WASP scheme for other PT services. In anticipation of this proposed migration, laboratory summary performance, previously reported on the LAQM website, has been based upon this WASP scoring system.

HSL has decided, upon review, to maintain the z-score system, primarily due to the fact that it is a more readily understandable scoring system when viewed by a wider audience. Hence, going forward, laboratory summary performance, to be reported on the LAQM website, will be based upon this z-score system.

Key changes to the scoring system include:

- All monthly performance scores are reported and the previous WASP scoring system, which allowed the lowest performing round result (best 4 out of 5) to be dropped, is no longer used.

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- The use of the z-score allows new entrants or those leaving the WASP scheme to be assessed as the score is not based on a rolling performance indicator.
- All results from UK laboratories participating in the WASP scheme are now reported (previously laboratories that did not demonstrate satisfactory performance were not included).

Z-Score performance

Performance scores are currently based upon the z-score statistic, a widely used scoring system employed in chemical proficiency testing. More detailed information is available at <http://www.hsl.gov.uk/centres-of-excellence/proficiency-testing-schemes/wasp.aspx> where the latest version of the WASP participant handbook (February 2013) can be downloaded.

The z-score, z_{score} , may be defined as:

$$z_{score} = \frac{(x_{lab} - \bar{x}_{ref})}{\sigma_{ref}}$$

where;

x_{lab} = participant result from a laboratory

\bar{x}_{ref} = reference result (here it is the calculated nitrite spike value)

σ_{ref} = reference standard deviation (currently set at 7.5 % of \bar{x}_{ref})

Performance score interpretation

A z_{score} may be interpreted as:

$z_{score} \leq \pm 2$ – satisfactory laboratory result

$z_{score} > \pm 2$ and $\leq \pm 3$ – questionable (warning) laboratory result

$z_{score} > \pm 3$ – unsatisfactory laboratory result

As a general rule of thumb, provided that a laboratory does not have systematic sources of bias in their laboratory measurement system, then on average, 19 out of every 20 z-scores should be $\leq \pm 2$. In this scheme each laboratory receives 4 test samples per round and therefore submits 4 z-scores per round. Hence over 5 rounds laboratories would receive 20 test samples and report 20 z-scores.

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Assessing the performance of a laboratory

End users that avail of analytical services from laboratories should satisfy themselves that such laboratories meet their requirements. A number of factors ideally need to be considered including

- Expertise and skills of staff within the laboratory?
- Does the laboratory follow accepted measurement standards, guidance?
- Does the laboratory operate a robust internal quality control system?
- Is the laboratory third party accredited to relevant standards such as ISO 17025?
- Does the laboratory successfully participate in relevant external proficiency testing schemes?
- How good is their customer care (communication, turnaround times, pricing etc)?

Participation therefore in an external proficiency-testing scheme such as WASP represents but one factor in such considerations.

Participation in a single round of an external proficiency-testing scheme represents but a "snap-shot" in time of the analytical quality that a laboratory can produce. It is more intuitive therefore to consider performance over a number of rounds.

Following on from above, therefore over a rolling five round WASP window, one would expect that 95 % of laboratory results should be $\leq \pm 2$. If this percentage is substantially lower than 95 % for a particular laboratory, within this five round window, then one can conclude that the laboratory in question may have significant systematic sources of bias in their assay.

A summary of the WASP performance for each laboratory participating in the scheme is provided in Table 1. This table provides the percentage of results where the z-score was between -2 and +2 which is deemed to be a satisfactory z-score.

Contacts for HSL WASP scheme

Further **specific** information on the WASP NO₂ PT scheme is available from HSL by contacting the proficiency testing team at proficiency.testing@hsl.gov.uk or at 01246 218553. For **general** questions about the scheme within the context of wider LAQM activities please contact Nick Martin at NPL on 0208 943 7088 or nick.martin@npl.co.uk.

Table 1: Laboratory summary performance for WASP NO₂ PT rounds 113 - 120

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent HSL WASP NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of $\leq \pm 2$ as defined above.

| WASP Round | WASP R113 | WASP R114 | WASP R115 | WASP R116 | WASP R117 | WASP R118 | WASP R119 | WASP R120 |
|--|-------------------|-----------------------|-------------------------|----------------------|-------------------|-----------------------|-------------------------|----------------------|
| Round conducted in the period | April - June 2011 | July - September 2011 | October - December 2011 | January - March 2012 | April - June 2012 | July - September 2012 | October - December 2012 | January - March 2013 |
| Aberdeen Scientific Services | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Bristol City Council [4] | 100 % | 100 % | 100 % | - | - | - | - | - |
| Cardiff Scientific Services | 100 % | 100 % | 75 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Edinburgh Scientific Services | 100 % | 100 % | 0 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Environmental Services Group, Didcot (formerly Bureau Veritas Laboratories, Glasgow and Harwell Scientifics) [1] [2] | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Essex (formerly Clyde Analytical) | 100 % | 0 % | 75 % | 0 % | 0 % | 100 % | 25 % | 75 % |
| Glasgow Scientific Services | 100 % | 100 % | 100 % | 100 % | 50 % | 100 % | 100 % | 50 % |
| Grasko International [2] | 100 % | 100 % | 37.5 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Kent Scientific Services | 100 % | 100 % | 75 % | 75 % | 100 % | 75 % | 100 % | 50 % |
| Kirklees MBC | 0 % | 0 % | 50 % | 100 % | 100 % | 75 % | 100 % | 100 % |
| Lambeth Scientific Services | 25 % | 100 % | 25 % | 75 % | 100 % | 0 % | 100 % | 100 % |
| Milton Keynes Council | 75 % | 100 % | 100 % | 100 % | 100 % | 75 % | 100 % | 50 % |
| Northampton Borough Council | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 0 % |
| Somerset Scientific Services [3] | - | - | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| South Yorkshire Air Quality Samplers | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Staffordshire County Council | 100 % | 100 % | 100 % | 100 % | 100 % | 75 % | 100 % | 50 % |
| Tayside Scientific Services (formerly Dundee C.C.) | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 75 % |
| West Yorkshire Analytical Services | 75 % | 100 % | 100 % | 75 % | 75 % | 50 % | 100 % | 100 % |

[1] Bureau Veritas laboratory and Harwell Scientific now part of ESG Group

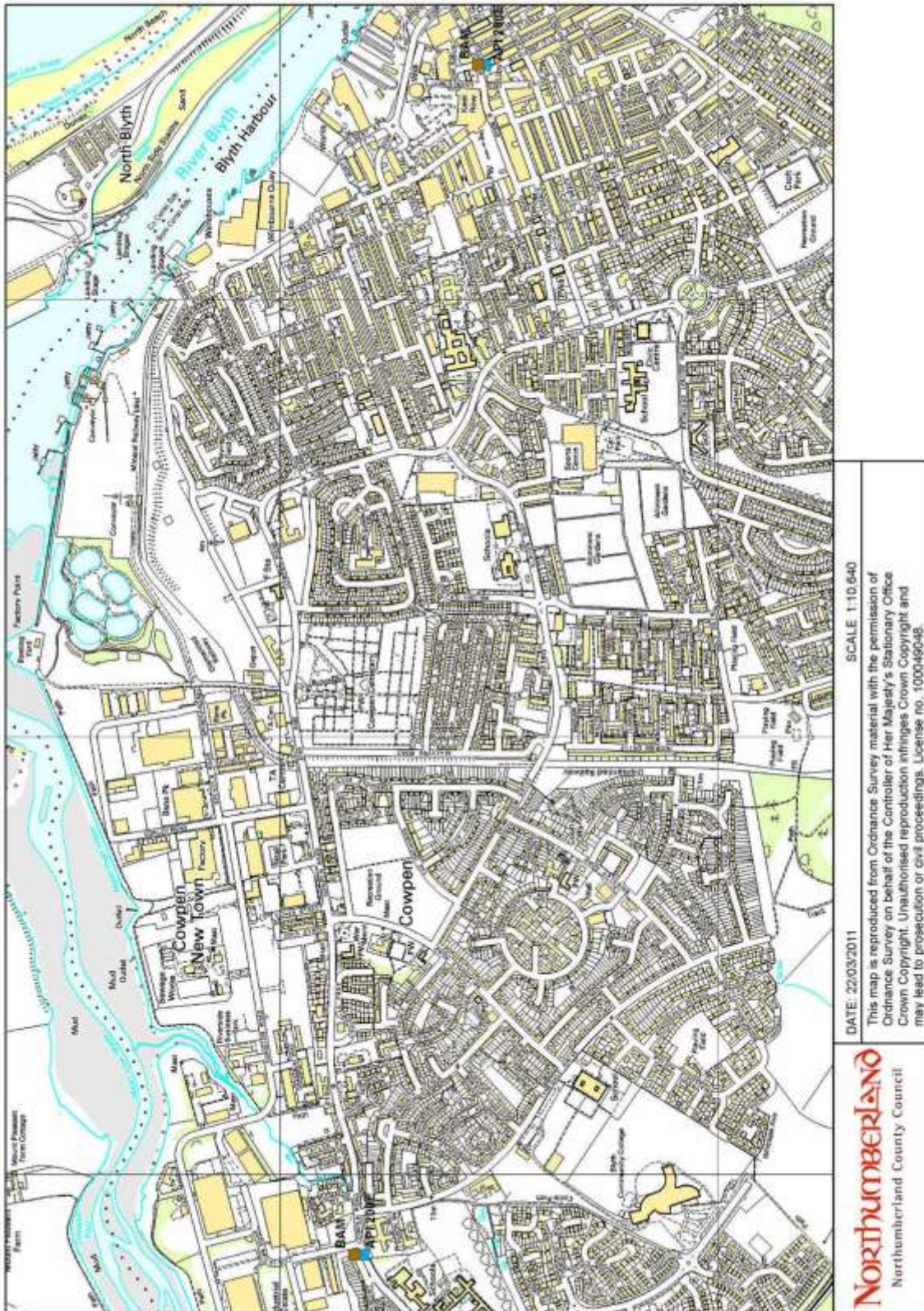
[2] Participant subscribes to two sets of test samples (2 x 4 test samples) in each WASP PT round.

[3] New participant from R115.

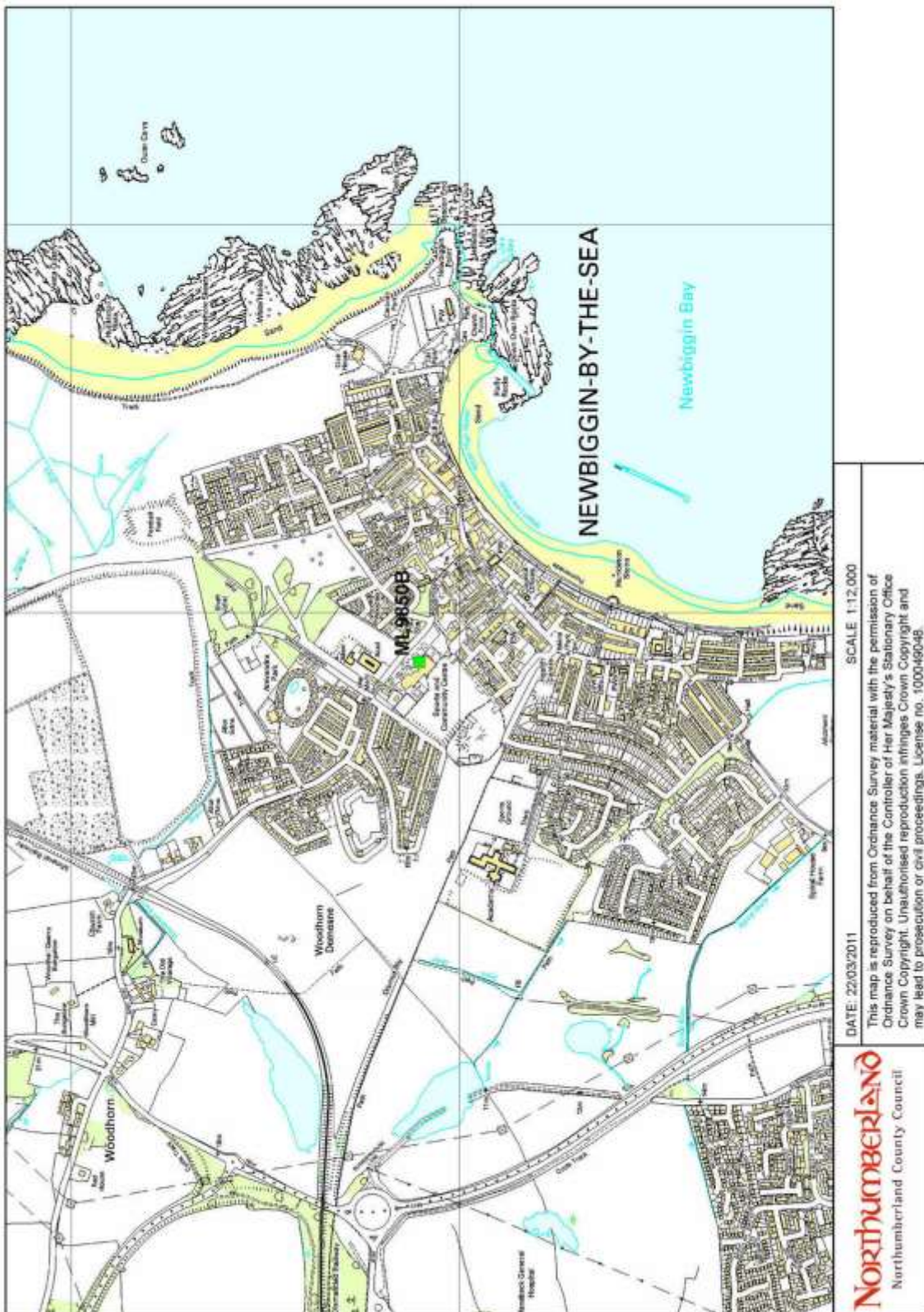
[4] No longer involved in NO₂ diffusion tube measurements from R116.

Appendix B: Location Maps of Air Quality Monitoring Locations

Blyth and Cowpen Automatic Monitoring Station Locations



Newbiggin Automatic Monitoring Station Locations



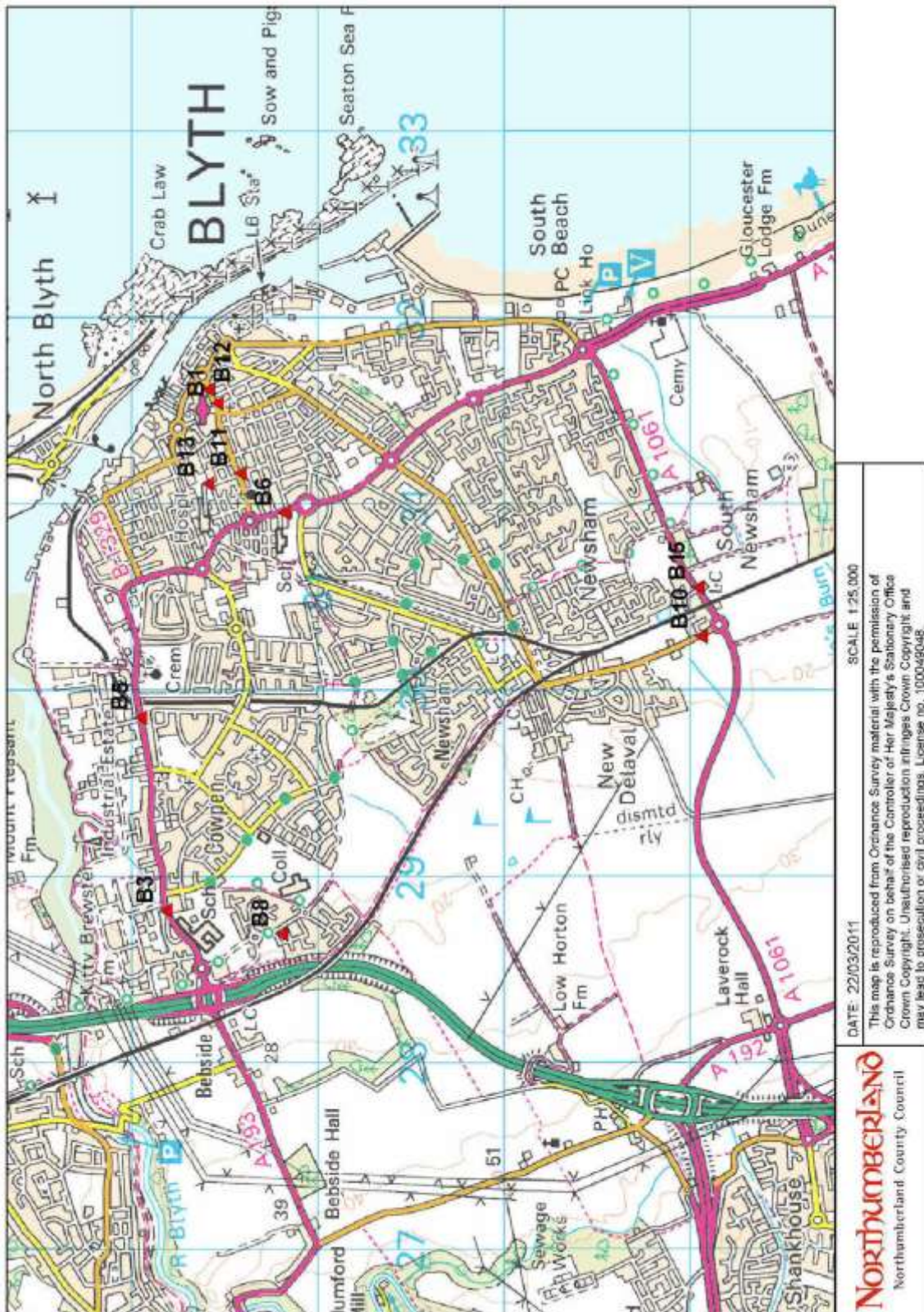
Alnwick NO₂ Diffusion Tube Monitoring Locations



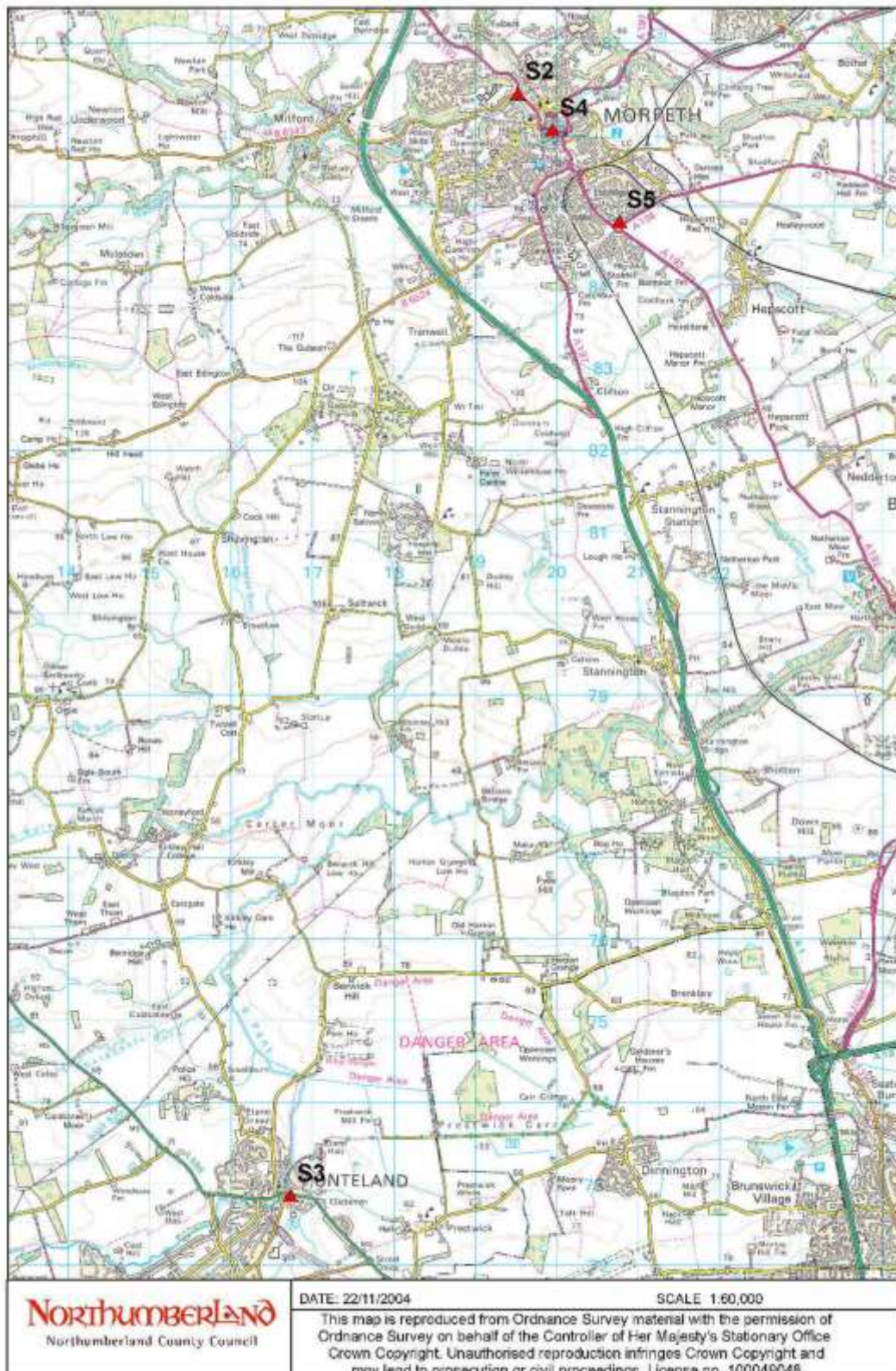
Berwick NO_x Diffusion Tube Monitoring Locations



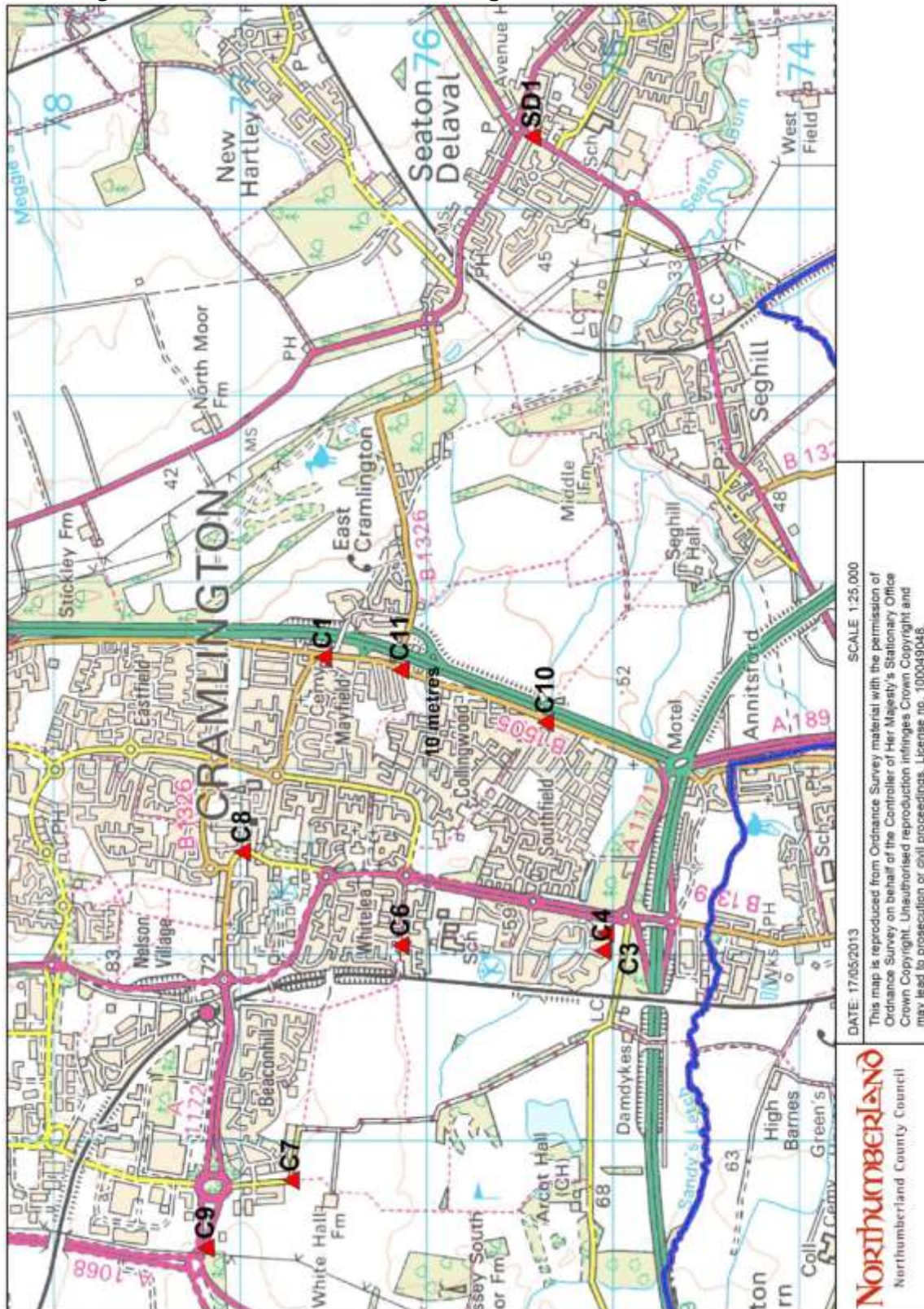
Blyth NO₂ Diffusion Tube Monitoring Locations



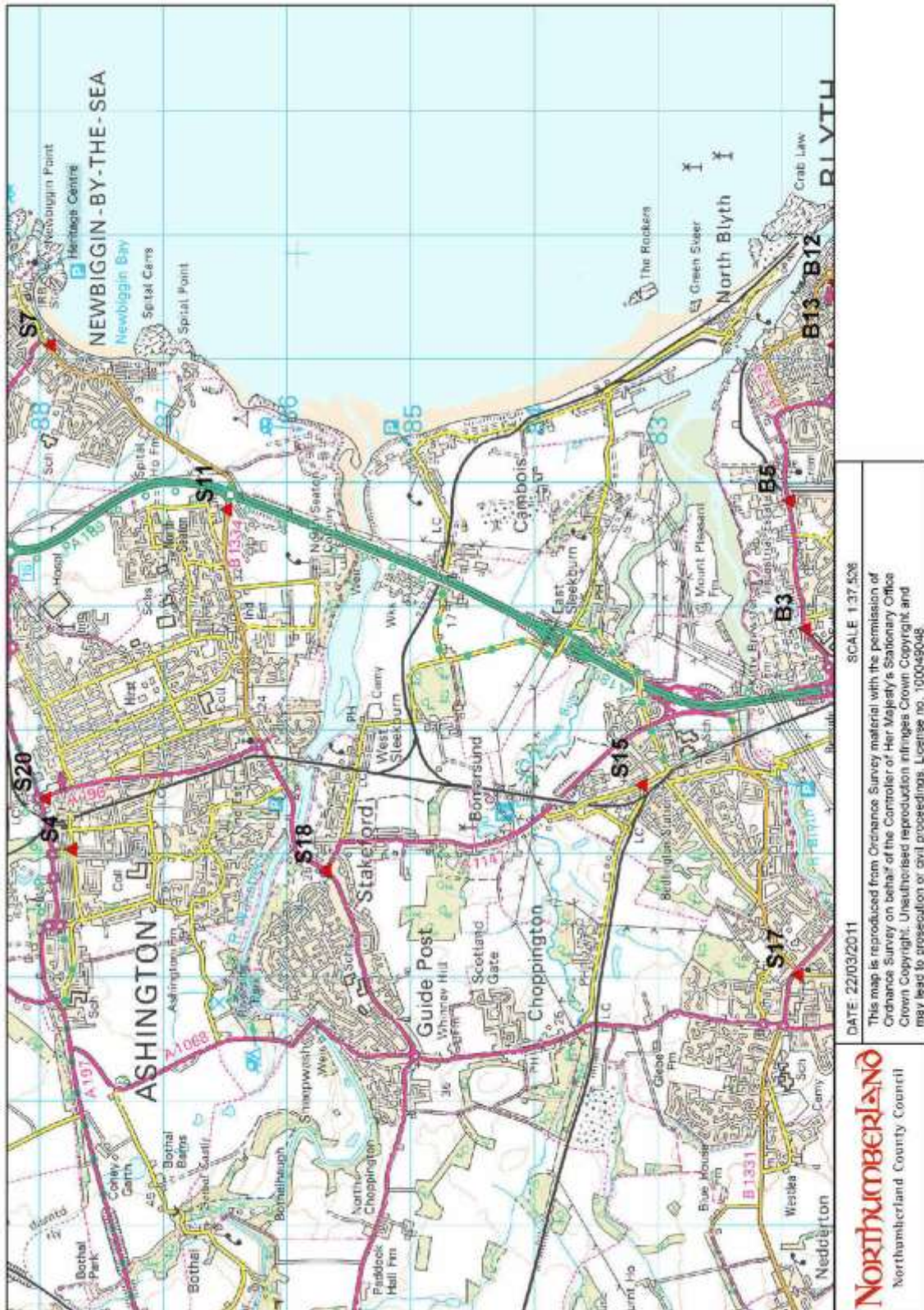
Morpeth and Ponteland NO_x Diffusion Tube Monitoring Locations



Cramlington NO₂ Diffusion Tube Monitoring Locations



Wansbeck NO_x Diffusion Tube Monitoring Locations



VOC/Benzene Diffusion Tube Monitoring Locations



Appendix C: Full Monthly NO₂ Diffusion Tube Dataset 2012

| Site ID | Location | Type | x | y | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Average | Bias Factor | Bias Adjusted Average | Annualised Average | Data Capture |
|---------|--|----------|--------|--------|------|------|------|------|------|------|------|------|------|------|------|------|---------|-------------|-----------------------|--------------------|--------------|
| 1N | Northumberland Hall, Alnwick | Roadside | 418670 | 613286 | 20.5 | 18 | 13.7 | | | | | | | | | | 17.4 | 0.79 | 14 | | 25.0 |
| 7N | Bondgate Without, Alnwick | Roadside | 418890 | 613210 | 31.4 | 27 | 28.8 | | | | | | | | | | 29.1 | 0.79 | 23 | 24 | 25.0 |
| 8N | Bondgate Without, Alnwick | Roadside | 419025 | 613070 | 46.1 | 42.9 | 40.6 | 32.8 | 27.7 | 38.2 | 33.3 | 36.7 | 34.8 | 42.1 | 29.9 | 49.4 | 37.9 | 0.79 | 30 | | 100.0 |
| Ber 5 | Main Street, Tweedmouth | Roadside | 399437 | 652022 | 43.8 | | 31.5 | 28.6 | 17.1 | 22.9 | 23.7 | 27.9 | 33.8 | 36.3 | 38.6 | 43.3 | 31.6 | 0.79 | 25 | 24 | 91.7 |
| Ber 7 | Castlegate | Roadside | 399595 | 653170 | 33.7 | 34 | 31.4 | 30.2 | 32.9 | 28.5 | 28.9 | 32.4 | 28.7 | 38.2 | 29.2 | 26.4 | 31.2 | 0.79 | 25 | | 100.0 |
| B1 | Waterloo Road, opp bus station LP (X2) | Roadside | 431537 | 581537 | 47.1 | 46.4 | 43.3 | 34.5 | 33.6 | 28.6 | 30.1 | 35.6 | 41.1 | 43.0 | 34.1 | 46.1 | 38.6 | 0.79 | 31 | | 100.0 |
| B1 | Waterloo Road, opp bus station LP (X2) | Roadside | 431537 | 581537 | 50.8 | 57.7 | 45.7 | 37.0 | 32.9 | 29.2 | 26.0 | 30.3 | 39.5 | 43.5 | 46.8 | | 39.9 | 0.79 | 32 | | 91.7 |
| B3 | Cowpen Road, west ent monitoring station LP | Roadside | 428815 | 581813 | 47.5 | 36.1 | 42.6 | 16.3 | 23.5 | 39.2 | 30.7 | 38.5 | 36.9 | 45.9 | 36.6 | 37.8 | 35.9 | 0.79 | 28 | | 100.0 |
| B5 | Cowpen Road, east ent nr Lord Tool Hire LP | Roadside | 429850 | 581947 | 36.7 | 31.7 | 27.1 | 30.4 | 14.8 | 13.9 | 14.6 | 19.4 | 19.7 | 27.5 | 34.6 | 30.4 | 25.1 | 0.79 | 20 | | 100.0 |
| B6 | Blyth Civic Centre, flagpole LP | Roadside | 430949 | 581178 | 25 | 27.6 | 25.5 | | | | | | | | | | 26.0 | 0.79 | 21 | 22 | 25.0 |
| B8 | Beaumont Manor (ASDA) LP & V6 | Roadside | 428688 | 581193 | 19.6 | 26.2 | 22.4 | | | | | | | | | | 22.7 | 0.79 | 18 | 19 | 25.0 |
| B10 | Park Farm Villas, Newsham LP | Roadside | 430287 | 578942 | 33.9 | 26.9 | 21.3 | | | | | | | | | | 27.4 | 0.79 | 22 | 23 | 25.0 |
| B11 | Blyth YMCA LP | Roadside | 431160 | 581415 | 45.6 | 44.1 | 35.9 | 31.0 | 30.8 | 27.0 | 25.4 | 28.6 | 31.5 | 35.0 | 36.0 | 39.9 | 34.2 | 0.79 | 27 | | 100.0 |
| B12 | Bridge Street, opp Job Centre LP | Roadside | 431612 | 581586 | 48.7 | 38.8 | 33.6 | 35.5 | 34.9 | 25.4 | 26.8 | 27.3 | 22.8 | 36.8 | 38.8 | 33.1 | 33.5 | 0.79 | 26 | | 100.0 |
| B13 | Health Centre car park LP | Roadside | 431105 | 581589 | 32.2 | 30.7 | | | | | | | | | | | 31.5 | 0.79 | 25 | 26 | 16.7 |
| B15 | South Newsham Road | Roadside | | | 31.4 | 33.0 | 24.4 | 20.0 | 18.6 | 20.0 | 17.4 | 22.1 | 24.3 | 30.9 | 35.0 | 27.5 | 25.4 | 0.79 | 20 | | 100.0 |
| C1 | High Pit Road, Burton House car park LP (X2) | Roadside | 427593 | 576555 | 38.9 | 33.3 | 31.8 | 25.3 | 36.0 | 23.6 | 22.1 | 33.3 | 23.3 | 33.6 | 36.6 | 36.2 | 31.2 | 0.79 | 25 | | 100.0 |
| C1 | High Pit Road, Burton House car park LP (X2) | Roadside | 427593 | 576555 | 58.1 | 53.7 | 28.7 | 25.2 | 25.4 | 25.1 | 24.1 | 26.2 | 24.5 | 33.3 | 44.8 | 35.0 | 33.7 | 0.79 | 27 | | 100.0 |
| C3 | Ruabon Close, Barns Park LP (X2) | Roadside | 426113 | 575041 | 23.3 | 24.3 | 15.2 | | | | | | | | | | 20.9 | 0.79 | 17 | 18 | 25.0 |
| C3 | Ruabon Close, Barns Park LP (X2) | Roadside | 426113 | 575041 | 25.4 | 25.5 | 19.9 | | | | | | | | | | 23.6 | 0.79 | 19 | 20 | 25.0 |
| C4 | Rochford Grove, Barns Park & V5 | Roadside | 426020 | 575057 | 27.6 | 26.5 | 22.8 | | | | | | | | | | 25.6 | 0.79 | 20 | 21 | 25.0 |
| C6 | Lancastrian Drive, dead end & V9 | Roadside | 426047 | 576139 | 26.7 | 20.9 | 22.5 | | | | | | | | | | 23.4 | 0.79 | 18 | 20 | 25.0 |
| C7 | Kielder Avenue, Beacon Lane LP | Roadside | 424785 | 576728 | 25.8 | 22.8 | 19.3 | | | | | | | | | | 22.6 | 0.79 | 18 | 19 | 25.0 |
| C8 | Manor Walks, BT Sainsburys and Travellers | Roadside | 426548 | 576990 | 36.5 | 33.4 | 26.4 | | | | | | | | | | 32.1 | 0.79 | 25 | 27 | 25.0 |
| C9 | Trebor | Roadside | | | 28 | 30.7 | 23.9 | 24.9 | 24.7 | 26.9 | 18.9 | 23.5 | 22.7 | 34.4 | 30.2 | 23.9 | 26.1 | 0.79 | 21 | | 100.0 |
| C10 | Bay Horse | Roadside | | | | | | 30.1 | 25.9 | 33.7 | 22.5 | 32.1 | 22.2 | 34.2 | 25.1 | 35.5 | 29.0 | 0.79 | 23 | 20 | 75.0 |
| C11 | Storey Street | Roadside | | | | | | 26.4 | 28.0 | 27.5 | 19.7 | 26.5 | 17.3 | 23.0 | 41.1 | | 26.2 | 0.79 | 21 | 18 | 66.7 |
| 2 | Newgate Street/Bullers Green, Mopeth | Roadside | 419525 | 586380 | 29 | 29 | 30.2 | 24.6 | 28.5 | 29.4 | 24.4 | 25.1 | 20.2 | 28.7 | 35.2 | 34.5 | 28.2 | 0.79 | 22 | | 100.0 |
| 3 | Police Station, Ponteland | Roadside | 416724 | 572853 | 36 | 40.9 | 37.6 | 30.2 | 28.7 | 31.8 | 31.8 | 36.3 | 31.7 | 39.2 | | | 34.4 | 0.79 | 27 | | 83.3 |
| 4 | Northern Rock, Bridge Street, Morpeth | Roadside | 419947 | 585937 | 36.4 | 32.7 | 38.1 | 40.1 | 38.2 | 41.2 | 28.9 | 36.9 | 28.0 | 39.4 | 28.4 | 40.8 | 35.8 | 0.79 | 28 | | 100.0 |
| 5 | Stobhill Social Club, Morpeth | Roadside | 420769 | 584807 | 21.8 | 18.8 | 18.9 | | | | | | | | | | 19.8 | 0.79 | 16 | 17 | 25.0 |
| 4 | Station Road, Ashington (LP D127 outside of Heron Garage) | Roadside | 427031 | 587746 | 27.3 | 25.4 | 30.3 | | | | | | | | | | 27.7 | 0.79 | 22 | 23 | 25.0 |
| 7 | Front St, Newbiggin (LP on steps next to Methodist Church) | Roadside | 431110 | 587918 | 25.8 | 25.3 | 24.3 | | | | | | | | | | 25.1 | 0.79 | 20 | 21 | 25.0 |
| 11 | North Seaton Roundabout (Sign post off roundabout B1334) | Roadside | 429778 | 586492 | 33.1 | 34.5 | 33.4 | | | | | | | | | | 33.7 | 0.79 | 27 | 28 | 25.0 |
| 15 | Ravensworth Car Park, Bedlington (LP on opposite site of the road) | Roadside | 427554 | 583137 | 30.6 | 30.8 | 29 | | | | | | | | | | 30.1 | 0.79 | 24 | 25 | 25.0 |
| 17 | Front Street East, Bedlington (LP next to shelter at junction of Church Ave) | Roadside | 426014 | 581879 | 35.1 | 32.4 | 25.8 | 25.0 | 27.1 | 24.4 | 24.0 | 30.2 | 25.9 | 36.9 | 39.2 | 31.0 | 29.8 | 0.79 | 24 | | 100.0 |
| 18 | Wansbeck Bridge (LP on roundabout next to the care home) | Roadside | 426860 | 585691 | 33.1 | 33.1 | 28.6 | | | | | | | | | | 31.6 | 0.79 | 25 | 26 | 25.0 |
| 20 | Portland Park (LP on main road) | Roadside | 427442 | 587959 | 31.1 | 28.5 | 27.5 | | | | | | | | | | 29.0 | 0.79 | 23 | 24 | 25.0 |
| SD1 | Seaton Delaval, Salvation Army LP | Roadside | 430387 | 575433 | 43.7 | 43.5 | 31.1 | 30.3 | 22.9 | 23.5 | 25.1 | 32.0 | 28.3 | 39.7 | 49.1 | 37.7 | 33.9 | 0.79 | 34 | | 100.0 |

Appendix D: Ratified Data Summaries and Time Series Plots from AQDM

Blyth Library AQ Monitoring Station

Air Quality Report

Produced by AQDM on behalf of Northumberland

BLYTH TOWN CENTRE 2012

These data have been fully ratified by AQDM to LAQM TG(09) standards

Site Description

Bridge Street, Blyth

Air Quality Statistics

| Pollutant | PM ₁₀ [*] | PM _{2.5} [*] | NO _x | NO | NO ₂ |
|-------------------------------|-------------------------------|--------------------------------|------------------------|------------------------|------------------------|
| Number Very High [#] | 0 | - | 0 | - | - |
| Number High [#] | 0 | - | 0 | - | - |
| Number Moderate [#] | 27 | - | 0 | - | - |
| Number Low [#] | 315 | - | 8311 | - | - |
| Maximum 15-minute mean | - | - | 216 µg m ⁻³ | 458 µg m ⁻³ | 749 µg m ⁻³ |
| Maximum hourly mean | 168 µg m ⁻³ | 202 µg m ⁻³ | 97 µg m ⁻³ | 315 µg m ⁻³ | 562 µg m ⁻³ |
| Maximum running 8-hour mean | 108 µg m ⁻³ | 130 µg m ⁻³ | 88 µg m ⁻³ | 191 µg m ⁻³ | 372 µg m ⁻³ |
| Maximum running 24-hour mean | 79 µg m ⁻³ | 95 µg m ⁻³ | 70 µg m ⁻³ | 131 µg m ⁻³ | 267 µg m ⁻³ |
| Maximum daily mean | 73 µg m ⁻³ | 88 µg m ⁻³ | 67 µg m ⁻³ | 129 µg m ⁻³ | 264 µg m ⁻³ |
| Average | 30 µg m ⁻³ | 36 µg m ⁻³ | 25 µg m ⁻³ | 23 µg m ⁻³ | 60 µg m ⁻³ |
| Data capture | 95.0 % | 95.0 % | 94.6 % | 94.6 % | 94.6 % |

[#] Daily Air Quality Index (DAQI) as defined by COMEAP 1st January 2012

^{*} PM₁₀ as measured by a BAM using a gravimetric factor of 0.83333 for Indicative Gravimetric Equivalent

^{*} PM_{2.5} as measured by a BAM

Mass units for the gases are at 20°C and 1013mb

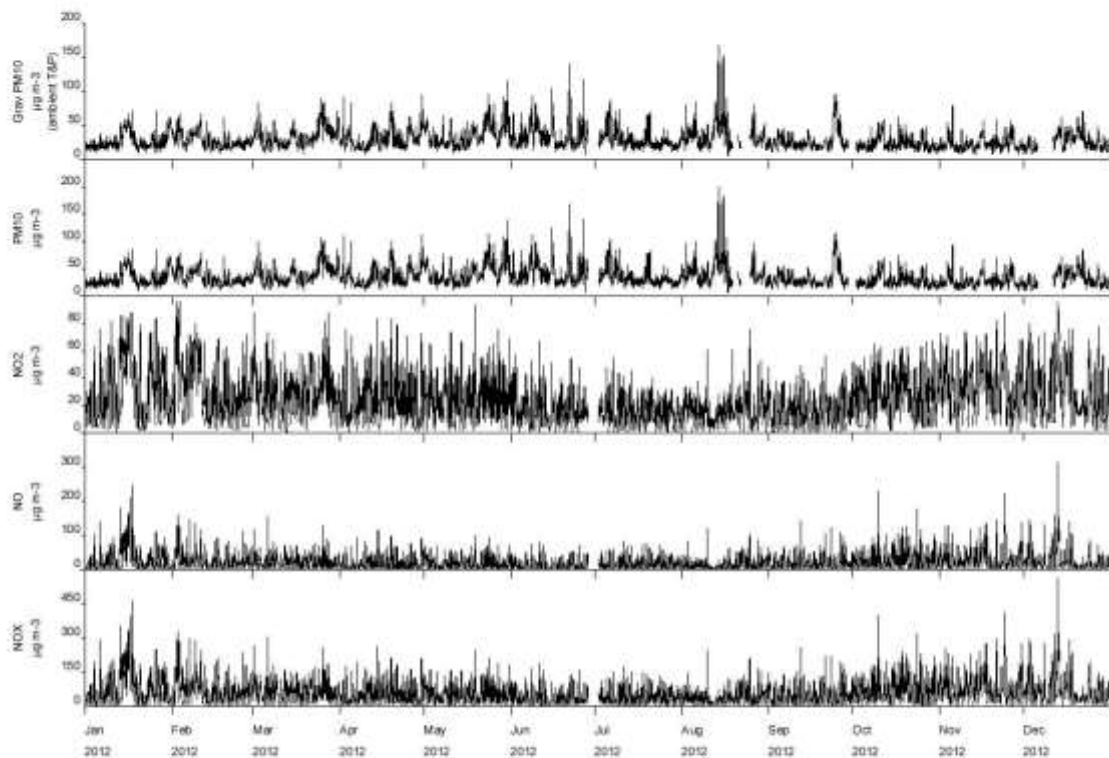
NO_x mass units are NO_x as NO₂ µg m⁻³

Air Quality Exceedences

| Pollutant | Air Quality (England) Regulations 2000 & (Amendment) Regulations 2002 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|-----------------------|--------|------|----------|----------|
| PM ₁₀ Particulate Matter (Gravimetric) | Daily mean > 50 µg m ⁻³ | 73 µg m ⁻³ | 22 | 22 | 35 days | No |
| PM ₁₀ Particulate Matter (Gravimetric) | Annual mean > 40 µg m ⁻³ | 30 µg m ⁻³ | 0 | - | - | No |
| Nitrogen Dioxide | Annual mean > 40 µg m ⁻³ | 25 µg m ⁻³ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg m ⁻³ | 97 µg m ⁻³ | 0 | 0 | 18 hours | No |

Air Quality Report

BLYTH TOWN CENTRE 2012 Hourly Mean Timeseries



Blyth Town Centre Air Quality Report produced by:

Geoff Broughton

Air Quality Data Management (AQDM)

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<http://www.UKAirQuality.net>



Cowpen Road AQ Monitoring Station

Air Quality Report

Produced by AQDM on behalf of Northumberland

BLYTH COWPEN ROAD 2012

These data have been fully ratified by AQDM to LAQM TG(09) standards

Site Description

Air Quality Statistics

| Pollutant | PM ₁₀ * | PM ₁₀ * | NO _x | NO | NO ₂ |
|------------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|
| Number Very High # | 0 | - | 0 | - | - |
| Number High # | 0 | - | 0 | - | - |
| Number Moderate # | 0 | - | 3 | - | - |
| Number Low # | 354 | - | 8575 | - | - |
| Maximum 15-minute mean | - | - | 403 µg m ⁻³ | 1071 µg m ⁻³ | 1984 µg m ⁻³ |
| Maximum hourly mean | 166 µg m ⁻³ | 199 µg m ⁻³ | 298 µg m ⁻³ | 855 µg m ⁻³ | 1604 µg m ⁻³ |
| Maximum running 8-hour mean | 70 µg m ⁻³ | 84 µg m ⁻³ | 176 µg m ⁻³ | 451 µg m ⁻³ | 865 µg m ⁻³ |
| Maximum running 24-hour mean | 49 µg m ⁻³ | 59 µg m ⁻³ | 130 µg m ⁻³ | 250 µg m ⁻³ | 503 µg m ⁻³ |
| Maximum daily mean | 49 µg m ⁻³ | 59 µg m ⁻³ | 121 µg m ⁻³ | 249 µg m ⁻³ | 501 µg m ⁻³ |
| Average | 16 µg m ⁻³ | 19 µg m ⁻³ | 28 µg m ⁻³ | 27 µg m ⁻³ | 69 µg m ⁻³ |
| Data capture | 97.6 % | 97.6 % | 97.7 % | 97.7 % | 97.7 % |

Daily Air Quality Index (DAQI) as defined by COMEAP 1st January 2012

* PM₁₀ as measured by a BAM using a gravimetric factor of 0.83333 for Indicative Gravimetric Equivalent

* PM₁₀ as measured by a BAM

Mass units for the gases are at 20°C and 1013mb

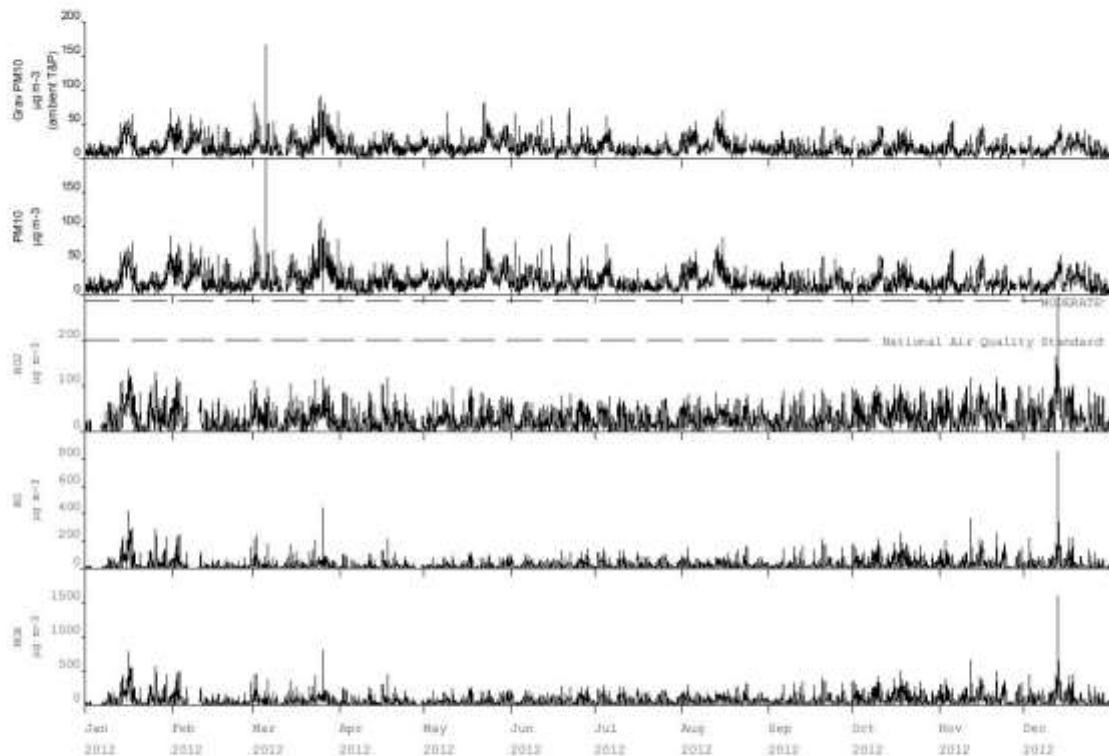
NO_x mass units are NO_x as NO₂ µg m⁻³

Air Quality Exceedences

| Pollutant | Air Quality (England) Regulations 2000 & (Amendment) Regulations 2002 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|------------------------|--------|------|----------|----------|
| PM ₁₀ Particulate Matter (Gravimetric) | Daily mean > 50 µg m ⁻³ | 49 µg m ⁻³ | 0 | 0 | 35 days | No |
| PM ₁₀ Particulate Matter (Gravimetric) | Annual mean > 40 µg m ⁻³ | 16 µg m ⁻³ | 0 | - | - | No |
| Nitrogen Dioxide | Annual mean > 40 µg m ⁻³ | 28 µg m ⁻³ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg m ⁻³ | 298 µg m ⁻³ | 3 | 1 | 18 hours | No |

Air Quality Report

BLYTH COWPEN ROAD 2012 Hourly Mean Timeseries



Blyth Cowpen Road Air Quality Report produced by:

Geoff Broughton

Air Quality Data Management (AQDM)

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Geoff.Broughton@aqdm.co.uk

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<http://www.UKAirQuality.net>



Newbiggin AQ Monitoring Station

Air Quality Report

Produced by AQDM on behalf of Northumberland

NEWBIGGIN SPORTS CENTRE 2012

These data have been fully ratified by AQDM to LAQM TG(09) standards

Site Description

Newbiggin Sports Centre

Air Quality Statistics

| Pollutant | SO ₂ |
|---|------------------------|
| Number Very High * | 0 |
| Number High * | 0 |
| Number Moderate * | 0 |
| Number Low * | 26371 |
| Maximum 15-minute mean | 202 µg m ⁻³ |
| Maximum hourly mean | 146 µg m ⁻³ |
| Maximum running 8-hour mean | 37 µg m ⁻³ |
| Maximum running 24-hour mean | 18 µg m ⁻³ |
| Maximum daily mean | 16 µg m ⁻³ |
| 99.9 th percentile of 15-minute means† | 37 µg m ⁻³ |
| 99.7 th percentile of hourly means† | 27 µg m ⁻³ |
| 99.2 nd percentile of daily means† | 12 µg m ⁻³ |
| Average | 3 µg m ⁻³ |
| Data capture | 76.6 % |

* Daily Air Quality Index (DAQI) as defined by COMEAP 1st January 2012

† Percentile required for data capture < 90%

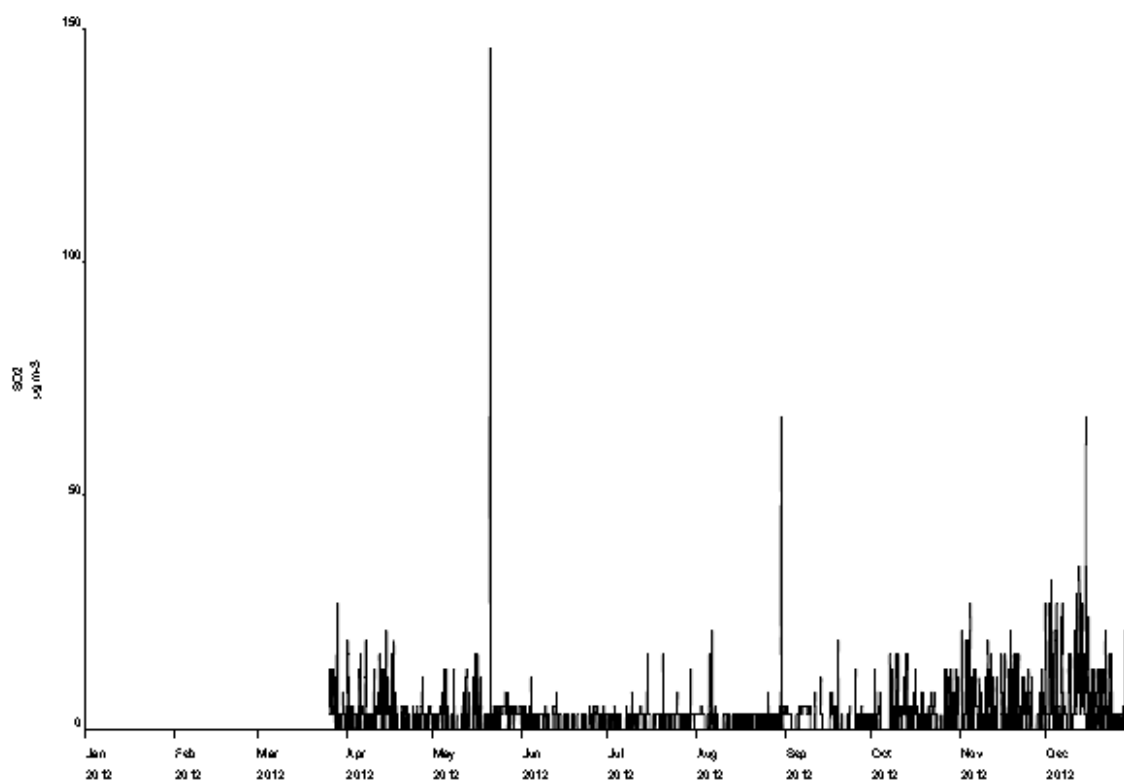
Mass units for the gases are at 20°C and 1013mb

Air Quality Exceedences

| Pollutant | Air Quality (England) Regulations 2000 & (Amendment) Regulations 2002 | Max Conc | Number | Days | Allowed | Exceeded |
|-----------------|---|------------------------|--------|------|------------|----------|
| Sulphur Dioxide | 15-minute mean > 266 µg m ⁻³ | 202 µg m ⁻³ | 0 | 0 | 35 15 mins | No |
| Sulphur Dioxide | Hourly mean > 350 µg m ⁻³ | 146 µg m ⁻³ | 0 | 0 | 24 hours | No |
| Sulphur Dioxide | Daily mean > 125 µg m ⁻³ | 16 µg m ⁻³ | 0 | 0 | 3 days | No |
| Sulphur Dioxide | Annual mean > 20 µg m ⁻³ | 3 µg m ⁻³ | 0 | - | - | No |

Air Quality Report

NEWBIGGIN SPORTS CENTRE 2012 Hourly Mean Timeseries



Newbiggin Sports Centre Air Quality Report produced by:

Geoff Broughton

Air Quality Data Management (AQDM)

Tel: 01235 559761

Geoff.Broughton@aqdm.co.uk

<http://www.aqdm.co.uk>

<http://www.uk.linkedin.com/pub/geoff-broughton/22/187/87>

<http://www.UKAirQuality.net>



Appendix E: Order to revoke an Air Quality Management Area Designation Order (NOU000554)

NORTHUMBERLAND
Northumberland County Council

Ref: NOU000554

Order to revoke an Air Quality Management Area Designation Order

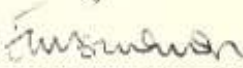
**Environment Act 1995
Part IV, Section 83(2)(b)**

Northumberland County Council ("the County Council") in exercise of its powers under section 83 of the Environment Act 1995 ("the Act") hereby makes the following Order ("the Revocation Order"):


- 1 The **Blyth Valley Borough Council Air Quality Management Area No. 1 Order 211204** ("the Designation Order") was made by Blyth Valley Borough Council ("the Borough Council") and came into force on 22 December 2004..
- 2 The Designation Order prescribed Blyth town centre (as more specifically set out in the Designation Order) as a Designated Area for the purposes of section 83 of the Act.
- 3 The County Council is the successor authority to the Borough Council.
- 4 It appears to the County Council that upon an air quality review being carried out the air quality standards and objectives are being achieved, and are likely throughout the relevant period to be achieved, within the Designated Area for the purposes of the Air Quality (England) Regulations 2000.
- 5 In consequence of the circumstances detailed in paragraph 4 above, the County Council hereby revokes the Designation Order.

Dated this 29th day of June 2012

The Common Seal of the
Northumberland County Council
was hereunto affixed in the presence of:



.....
Elizabeth Sinnamon
Principal Solicitor
Duty Authorised Officer


Seal No. 11347

1