



2011 Air Quality Progress Report for *Northumberland County Council*

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

April 2011

Local Authority Officer	Geoff Newcombe
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Department	Environmental Protection (Central)
Address	Public Health & Protection Loansdean Morpeth Northumberland NE61 2AP
Telephone	01670 534761
e-mail	Geoff.Newcombe@northumberland.gcsx.gov.uk

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Executive Summary

None of the air quality monitoring locations in Northumberland have shown any exceedences of the National Air Quality Objectives.

The monitoring stations in Blyth town centre and Cowpen Road have not shown 1hr/24hr exceedences on either nitrogen dioxide (NO₂) or particulate matter (PM₁₀) for 2010. The Cowpen site has not shown an annual mean exceedence for NO₂.

The station (monitoring PM₁₀ and NO₂) within the Air Quality Management Area in Blyth town centre has, in particular, not shown any exceedences of either parameter in 2010.

The Newbiggin sulphur dioxide (SO₂) monitor has shown no exceedence and has not breached the air quality objective for SO₂.

None of the diffusion tubes measuring NO₂ or benzene have shown any monthly exceedences or an annual mean above the air quality objectives.

A detailed assessment for the Cowpen Road NO₂ and the Blyth town centre Air Quality Management Area has been undertaken because of previous results. An undertaking to undertake a detailed assessment was given in the 2010 progress report.

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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 (307,190 persons in the 2001 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 percent of the population live in the former districts of Blyth Valley and Wansbeck which cover only three percent of the area of Northumberland which 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; Berwick, Alnwick, Morpeth, Ashington, Blyth, Cramlington and Hexham.

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 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 has a few main sources on its industrial estate.

At present, Northumberland has one coal-fired and co-fuelled biomass power station at Lynemouth which powers the aluminium smelter nearby and supplies surplus electricity to the national grid.

There are a number of opencast coal sites (OCCS) within the county, currently operating are; Shotton, Delhi/Brenkley.

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

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 exceedence 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 Local Air Quality Management (LAQM) in **England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	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	Maximum daily 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 (PM₁₀) (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 second progress report from the unitary Northumberland County Council, composed of the former districts, boroughs and county council of Northumberland. This report is built upon the Updated Screening & Assessment reports submitted in the previous year by the following councils; Alnwick District Council, Berwick-upon-Tweed Borough Council, Blyth Valley Borough Council/Port Health Authority, Castle Morpeth Borough Council, Tynedale District Council and Wansbeck District Council.

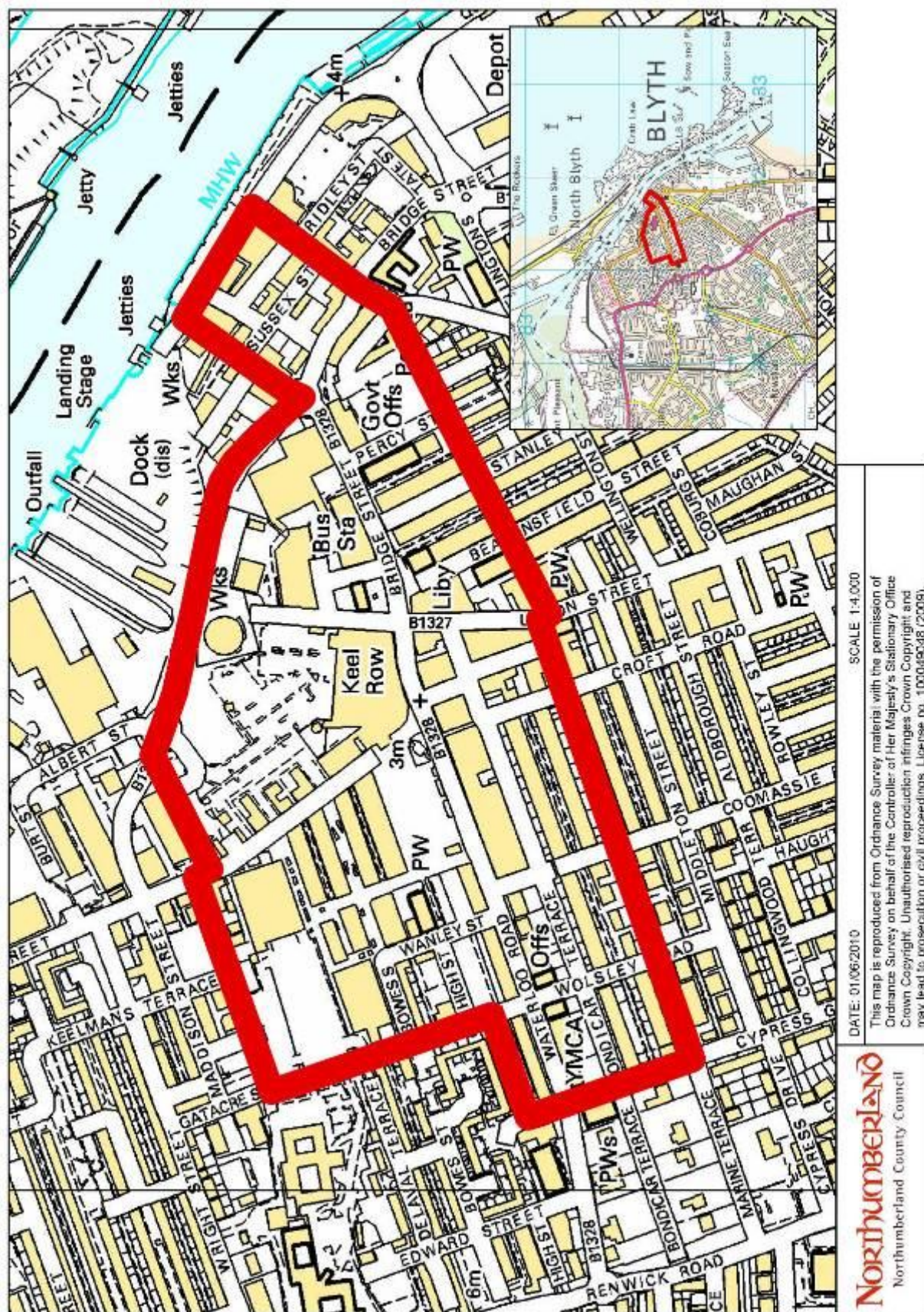
Table 1.2 Previous Air Quality Reports for Northumberland

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 exceedences of National Air Quality Objectives
Tynedale DC	July 2009	Results do not show exceedences 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 exceedences 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 PM_{10's} as the national air quality objective of PM₁₀ was being exceeded. The AQMA reference is 211204.

Figure 1.2 Map of AQMA Boundary



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The continuous PM₁₀ monitor sited at Bothal Middle School Ashington is been decommissioned during May 2011 as it was to gather pre-development background information for a now permitted opencast coal site which has its own monitoring programme..

Quality assurance and quality control information (including WASP ratings of the laboratories used) are included in Appendix 1 and 2

Details of the diffusion tube bias adjustments and Met-One BAM correction factors are also included in Appendix 1.

Figure 2.1 Map(s) of Automatic Monitoring Sites (if applicable)

Location maps of the continuous monitoring locations are shown in Appendix 3.

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
Bothal County Middle School	Suburban	X587699	Y425825	PM ₁₀	NL	N	Y (10m)	25m	Y
Blyth Town Centre	Urban Centre / Roadside	X431536	Y581531	NO ₂ , PM ₁₀	CL, BAM	Y	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 mostly manual at present until arrangements can be made with NCC IT department to establish download links. Data validation is carried out by officers of Northumberland County Council and unless specifically mentioned are rolling, annual monitoring periods.

2.1.2 Non-Automatic Monitoring Sites

The Council have 37 NO_x diffusion tubes in Cramlington, Blyth, Morpeth, Ponteland, Alnwick, Berwick and several outlying areas. The Council also have 9 benzene diffusion tubes located mostly in the Cramlington area with a few in Blyth.

The diffusion tubes for Blyth Valley (Blyth, Cramlington and outlying areas) were supplied by Lambeth Scientific Services. Details of the laboratory, preparation methods, procedures followed, bias factors, laboratory precision etc. are specified in Appendix 1 & 2.

Since the data capture for the Alnwick and Berwick diffusion tubes ranged between 8 & 50 percent, the data has been “annualised” using the technique in Box 3.2 in the technical guidance, data from continuous NO₂ monitors in Newcastle and Sunderland have been used to accomplish this. The calculation produced various ratios of annual mean over period mean (Appendix 1 – Short-term to Long-term Data adjustment)

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

Location maps of the non-continuous monitoring locations are shown in Appendix 3.

Table 2.2 Details of Non- Automatic Monitoring Sites

NO2 Diffusion Tubes

(Sites in bold were removed from the monitoring programme at the end of March 2010 because of consistently low results well below the National Air Quality Objective.)

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)		
Ber1 - Marygate, Berwick	Roadside	X 399824	Y 652953	NO ₂	N	Y – (2m)	2m	Y
Ber2 - Bridge St, Berwick	Roadside	X 399759	Y 652822	NO ₂	N	Y – (1m)	2m	Y
Ber3 - Scott's Place, Berwick	Urban	X 399658	Y 653171	NO ₂	N	Y – (1m)	2m	Y
Ber4 - Osborne Road, Berwick	Urban Background	X 399082	Y 652600	NO ₂	N	N – (10m)	2m	Y
Ber5 - Main Street, Tweedmouth	Roadside	X 399437	Y 652022	NO ₂	N	Y – (1m)	4m	Y
Ber6 - Royal Tweed Bridge	Kerbside	X 399336	Y 652655	NO ₂	N	Y – (10m)	1m	Y
Ber7 - Castlegate, Berwick	Roadside	X 399595	Y 653170	NO ₂	N	Y – (1m)	2m	Y
1N - Northumberland Hall, Alnwick	Roadside	X 418670	Y 613285	NO ₂	N	N – (10m)	5m	Y
4N – West Acres, Alnwick	Urban Background	X 419800	Y 612800	NO ₂	N	N	1m	N
7N – Greenwell Lane, Alnwick	Roadside	X 418800	Y 613300	NO ₂	N	N	1m	Y
8N – Bondgate Without, Alnwick	Roadside	X 419890	Y 613210	NO ₂	N	N	1m	Y
9N – Three Tuns Lane, Alnwick	Urban Background	X 418599	Y 613184	NO ₂	N	N	1m	N
B1 - Waterloo Road, Blyth (X2)	Urban Centre	X431537	Y581537	NO ₂	Y	Y – (5m)	1m	Y
B2 - Wellington St, Blyth	Urban Background	X431688	Y581401	NO₂	N	N – (40m)	1m	N
B3 - Cowpen Rd. West, Blyth	Roadside	X428815	Y581813	NO ₂	N	Y – (6m)	1m	Y
B4 - Kielder Cl, Blyth	Suburban	X429854	Y580149	NO₂	N	N – (5m)	1m	N
B5 - Cowpen Rd. East, Blyth	Roadside	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
B7 - Tynedale Drive, Blyth	Roadside	X429267	Y581343	NO₂	N	Y – (10m)	1m	Y
B8 - Beaumont Manor, Blyth	Urban Background	X428688	Y581193	NO ₂	N	Y – (16m)	1m	N
B9 - Bebside, Blyth	Roadside	X428172	Y581509	NO₂	N	Y – (20m)	1m	Y
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	Y	Y - (2m)	1m	Y

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA ?	Relevant	Distance to kerb of nearest road	Worst-case Location?
						Exposure? (Y/N with distance (m) to relevant exposure)	(N/A if not applicable)	
B12 - Bridge St, Blyth	Urban Centre	X431612	Y581586	NO ₂	Y	Y - (1m)	1m	Y
B13 - Blyth Health Centre, Blyth	Urban Background	X431105	Y581589	NO ₂	Y	Y - (2m)	2m	N
B14 - Keel Row, Blyth	Urban Background	X431429	Y581725	NO₂	N		1m	Y
B14 - South Newsham Road	Roadside							
C1 - High Pit Road, Cramlington (X2)	Roadside	X427593	Y576555	NO ₂	N	Y - (1m)	1m	Y
C2 - Fernley Villas, Cramlington	Suburban	X427507	Y576843	NO₂	N	Y - (3m)	1m	N
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
C5 - Nayland Rd, Cramlington	Suburban	X426435	Y577315	NO₂	N		1m	
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
1 - Court House, Morpeth	Roadside	X 420125	Y 585679	NO₂	N	Y - (2m)	2m	Y
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
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
3 - Bothal Village	Rural	X586695	Y423950	NO₂	N	Y - (15m)	1m	N
4 - Station Road, Ashington	Urban Centre	X587746	Y427031	NO ₂	N	Y - (25m)	1m	Y
7 - Front Street, Newbiggin	Urban Centre	X587918	Y431110	NO ₂	N	Y - (8m)	2m	Y
11 - North Seaton (B1334)	Roadside	X586492	Y429778	NO ₂	N	Y - (40m)	5m	Y
12 - Brock Lane, Cambois	Roadside	X584741	Y428552	NO₂	N	N - (180m)	2m	N
14 - Ashington Drive, Choppington	Suburban	X585671	Y425822	NO₂	N	Y - (4m)	1m	N
15 - Ravensworth Street,	Urban Centre	X583137	Y427554	NO ₂	N	Y - (2m)	1m	N

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)		
Bedlington								
17 - Front Street, Bedlington	Urban Centre	X581879	Y426014	NO ₂	N	N – (25m)	1m	Y
18 - Half Moon roundabout A196	Roadside	X585691	Y426860	NO ₂	N	Y – (5m)	2M	Y
20 - Lintonville Terrace A196	Roadside	X587959	Y427442	NO ₂	N	N – (75m)	10M	
EH1 - East Hartford	Suburban	X426818	Y579046	NO ₂	N	Y – (3m)	1m	N
H1 - Holywell	Roadside	X431738	Y574477	NO ₂	N	Y – (5m)	1m	Y
SD1 - Salvation Army, Seaton Delaval	Roadside	X430387	Y575433	NO ₂	N	Y – (1m)	1m	Y
SD2 - Blyth St, Seaton Delaval	Suburban	X430259	Y575482	NO ₂	N	Y – (4m)	1m	N
SEG1 - Seghill	Roadside	X429579	Y574549	NO ₂	N	Y – (5m)	5m	Y
SS1 - Seaton Sluice	Roadside	X434007	Y576008	NO ₂	N	Y – (50m)	1m	Y

VOC (Benzene) Diffusion Tubes

(Sites in bold were removed from the monitoring programme at the end of March 2010 because of consistently low results well below the National Air Quality Objective.)

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant	Distance to kerb of nearest road	Worst-case Location?
						Exposure? (Y/N with distance (m) to relevant exposure)	(N/A if not applicable)	
V1 - Fisher Lane	Industrial	X 424454	Y 578463	Benzene	N		2m	Y
V2 - Opp Avery Dennison	Industrial	X 425584	Y 578166	Benzene	N		2m	Y
V3 - Northburn 1st School	Suburban	x426385	Y578269	Benzene	N		70m	N
V4 - Windburgh Dr.	Suburban	x426527	Y575118	Benzene	N		40m	N
V5 - Rochester Green	Suburban	x426002	Y575042	Benzene	N		1m	N
V6 - Beaumont Manor	Industrial	x428688	Y581193	Benzene	N		1m	N
V7 - Coniston Rd.	Industrial	x429765	Y582107	Benzene	N		1m	N
V8 - Sudbury Way	Suburban	x425322	Y576963	Benzene	N		1m	N
V9 - Lancastrian Way	Suburban	x426047	Y576139	Benzene	N		1m	N
V10 - Northburn Football Club	Industrial	x425955	Y578278	Benzene	N		10m	N
V11 - Crow Hall Rd.	Industrial	x425756	Y578376	Benzene	N		1m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Data capture from both the NO₂ sites are below the recommended 90 percent so the 99.8th Percentile has been calculated for each site. The measured annual mean and number of exceedences for each site are both well within the national air quality objectives. The 99.8th Percentile for each site is also below the annual mean in the national air quality objectives (200 µg/m³).

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 2010 ^b %	Annual mean concentrations (µg/m ³)		
					2008 ^{c,d}	2009 ^{c, d}	2010 ^c
	Blyth Library Site	Yes	N/A	10.7	15.25	29.6	28
	Cowpen Road Site	No	N/A	11.0	15.11	58.6	33

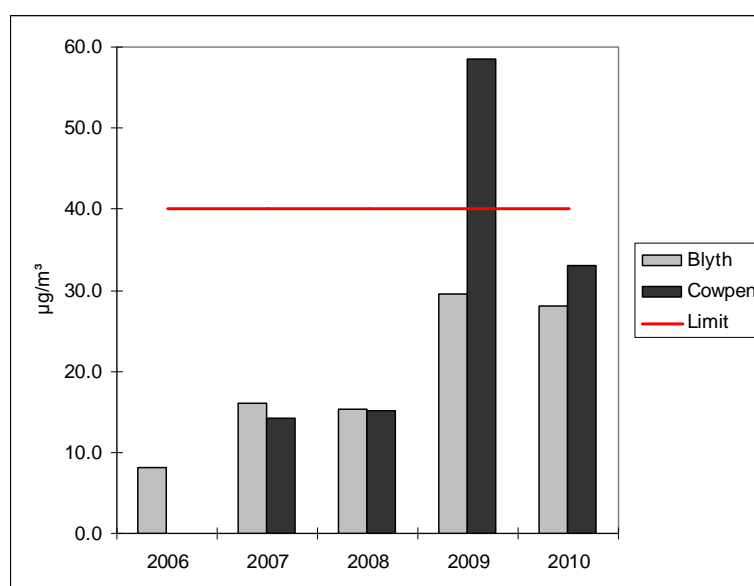
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^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.

^d Annual mean concentrations for previous years are optional.

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.



Trends in NO₂ levels 2006 - 2010 at the Blyth and Cowpen sites

Guidance in LAQM.TG(09) Para 2.34 indicates that exceedences of the 1-hour mean objective for NO₂ are only likely to occur where annual mean concentrations are 60 µg/m³ or above. Therefore there is no significance to results in Table 2.3b.

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 2010 ^b %	Number of Exceedences 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.		
					2008 ^c	2009 ^c	2010
	Blyth Library Site	Yes	N/A	10.7	0	0	0 (84*)
	Cowpen Road Site	No	N/A	11.0	0	0	0 (126*)

* Below the 90% data capture therefore 99.8th Percentile = 84 & 126 µg/m³ (below the 200 µg/m³ guideline value)

^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.

Diffusion Tube Monitoring Data

All the diffusion tubes (nitrogen dioxide and benzene) have shown to be within the national air quality objectives.

A number of sites are approaching the objectives for nitrogen dioxide, such as the three sites within the AQMA at Blyth (Keel Row, Bridge Street and Blyth YMCA, Waterloo Street) which have all shown an annual mean over $30 \mu\text{g}/\text{m}^3$. These will continue to be monitored and examined in more detail alongside the Air Quality Management Area itself. The Blyth (Cowpen Road & Bebside) diffusion tubes (located near the continuous monitoring station) has also shown an annual mean over $30 \mu\text{g}/\text{m}^3$ which is mirrored by the results from the continuous monitor. Other sites which have all shown an annual mean over $30 \mu\text{g}/\text{m}^3$ are Alnwick (Bondgate Without); Cramlington (High Pit); Morpeth (Queens Court, Bridge Street); Ponteland (Police Station); Holywell (Milbourne Arms); Seaton Delaval (Salvation Army); Seghill (Burnlea Gardens).

The two Morpeth tubes which are showing an annual mean of $40 \mu\text{g}/\text{m}^3$ will be monitored over the next year and further considered in the Updateing and Screening Assessment.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008 ^{c,d}	2009 ^{c, d}	2010 ^c
Ber1	Marygate	N		0	19.3	19.3	
Ber2	Bridge Street	N		0	21.7	19.6	
Ber3	Scott's Place	N		0	11.2	14.6	
Ber4	Osborne Road	N		0	10.9	15.6	
Ber5	Main Street, Tweedmouth	N		75	27.1	27.0	30
Ber6	Royal Tweed Bridge	N		8	20.9	19.2	19± (23)
Ber7	Castlegate	N		75	26.5	25.3	29
1N	Northumberland Hall, Alnwick	N		42	15.2	13.4 (14.0)	16± (17)
4N	West Acres, Alnwick	N		17	8.4	7.4 (8.1)	12± (15)
7N	Bondgate Without, Alnwick	N		50	23.6	20.8 (22.7)	24± (24)
8N	Bondgate Without, Alnwick	N		75	32.3	28.4 (22.1)	36
9N	Three Tuns Lane, Alnwick	N		17	9.5	8.4 (14.4)	14± (18)
B1	Waterloo Road, opp bus station LP (X2)	Y		100	34.8	33.1	35
B1(2)	Waterloo Road, opp bus station LP (X2)	Y		100	Ω	33.3	34
B2	Wellington Street, outside Pembroke Court LP	N		25	15.8	17.8	26
B3	Cowpen Road, west ent monitoring station LP	N		100	34.4	33.2	35
B4	Kielder Close, outside No 38 LP	N		25	14.8	16.4	22

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008 ^{c,d}	2009 ^c	2010 ^c
B5	Cowpen Road, east end nr Lord Tool Hire LP	N		100	19.6	22.5	23
B6	Blyth Civic Centre, flagpole LP	N		100	18.1	20.4	22
B7	Tynedale Drive, Driardale Road junction LP	N		25	19.1	19.9	27
B8	Beaumont Manor (ASDA) LP & V6	N		100	16.6	17.9	21
B9	Bebside, opp Mansell Terr LP	N		25	19.9	19.6	30
B10	Park Farm Villas, Newsham LP	N		100	17.7	21.1	22
B11	Blyth YMCA LP	Y		100	23.2	32.2	30
B12	Bridge Street, opp Job Centre LP	Y		100	27.8	30.2	32
B13	Health Centre car park LP	Y		100	20.4	19.2	20
B14	Keel Row, entrance to car park LP	Y		25	19.6	21.2	32
B15	South Newsham Road	N		75	N/A	N/A	22
C1	High Pit Road, Burton House car park LP (X2)	N		100	23.8	27.9	33
C1(2)	High Pit Road, Burton House car park LP (X2)	N		100	Ω	28.6	30
C2	Fernley Villas LP	N		25	19.3	20.2	28
C3	Ruabon Close, Barns Park LP (X2)	N		100	17.9	19.0	20
C3(2)	Ruabon Close, Barns Park LP (X2)	N		100	Ω	19.8	18
C4	Rochford Grove, Barns Park & V5	N		100	13.4	16.3	19
C5	Nayland Road, Parkside LP	N		25	19.4	18.8	25
C6	Lancastrian Drive, dead end & V9	N		100	17.5	19.1	20
C7	Kielder Avenue, Beacon Lane LP	N		100	16.2	18.2	19
C8	Manor Walks, BT Sainsburys and Travellers	N		100	21.6	23.4	24
1	Queens Court, Morpeth	N		25	11.0	17.4 (15.8)	40
2	Newgate Street/Bullers Green, Morpeth	N		100	19.6	17.2 (15.6)	26
3	Police Station, Ponteland	N		100	22.8	32.1 (29.1)	34
4	Northern Rock, Bridge Street, Morpeth	N		100	23.1	36.3 (33.0)	40
5	Stobhill Social Club, Morpeth	N		100	10.2	18.1 (16.4)	19
3	Bothal Village (LP opposite Joiners Cottage)	N		17	8.8	9.6	17

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008 ^{c,d}	2009 ^c	2010 ^c
4	Station Road, Ashington (LP D127 outside of Heron Garage)	N		92	22.4	21.6	23
7	Front St, Newbiggin (LP on steps next to Methodist Church)	N		75	19.5	19.1	20
11	North Seaton Roundabout (Sign post off roundabout B1334)	N		92	23.2	24.4	28
12	Brock Lane Junction (LP directly opposite junction)	N		17	17.7	16.5	31
14	Ashington Drive, Choppington (LP outside No 27)	N		17	15.5	14.9	32
15	Ravensworth Car Park, Bedlington (LP on opposite site of the road)	N		92	22.2	21.7	25
17	Front Street East, Bedlington (LP next to shelter at junction of Church Ave)	N		92	26.3	22.2	30
18	Wansbeck Bridge (LP on roundabout next to the care home)	N		92	25.5	22.6	28
20	Portland Park (LP in Car Park)	N		92	21.1	23.5	21
EH1	East Hartford, Ormston St nr bus stop LP	N		25	16.6	19.5	28
H1	Holywell, outside Milbourne Arms LP	N		25	21.5	23.9	32
SD1	Seaton Delaval, Salvation Army LP	N		100	24.7	28.4	32
SD2	Seaton Delaval, Blyth Street LP	N		25	15.6	17.5	28
SEG1	Seghill, Burnlea Gardens junction LP	N		25	22.0	23.3	33
SS1	Seaton Sluice, top of Colywell Road LP	N		25	17.7	21.5	23

Q Duplicate tubes which have been aggregated

Diffusion tube bias adjustments: all the tubes were analysed by Lambeth Scientific Services Ltd (bias = 1.08)

Annualised values are presented for sites marked with a ‡ (calculated values are in parentheses)

Sites with data capture of 17 or 25 percent are sites which were dropped at the end of March 2010 – please refer to Table 2.2

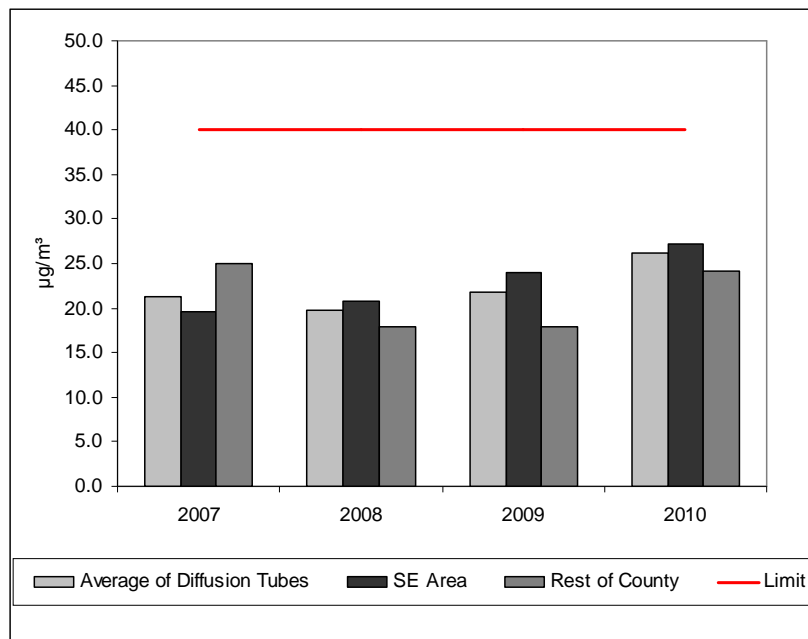
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^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.

^d Annual mean concentrations for previous years are optional.

Figure 2.4a Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.



Trends in NO₂ levels 2007 - 2010 as measured by diffusion tubs around the county

2.2.2 PM₁₀

Data capture from all the PM₁₀ sites are below the recommended 90 percent so the 90th Percentile has been calculated for each site. The measured annual mean and number of exceedences for each site are both well within the national air quality objectives. The 90th Percentile for each site is also below the annual mean in the national air quality objectives (40 µg/m³). All sites are representative of public exposure.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations (µg/m ³)		
					2008 ^{c,d}	2009 ^{c, d}	2010 ^c
	Blyth Library Site	Yes	N/A	54.2	30.0	23.5	25
	Cowpen Road Site	No	N/A	56.5	23.2	17.6	17
	Bothal School Site	No	N/A	89.3	15.4	17.9	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.

^d Annual mean concentrations for previous years are optional.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture 2010 ^b %	Number of Exceedences of daily mean objective (50 µg/m ³) If data capture < 90%, include the 90 th percentile of daily means in brackets.		
					2008 ^c	2009 ^c	2010
	Blyth Library Site	Yes	N/A	54.2	16	6	3 (38*)
	Cowpen Road Site	No	N/A	56.5	9	8	0 (28*)
	Bothal School Site	No	N/A	89.3	13	12	6 (32*)

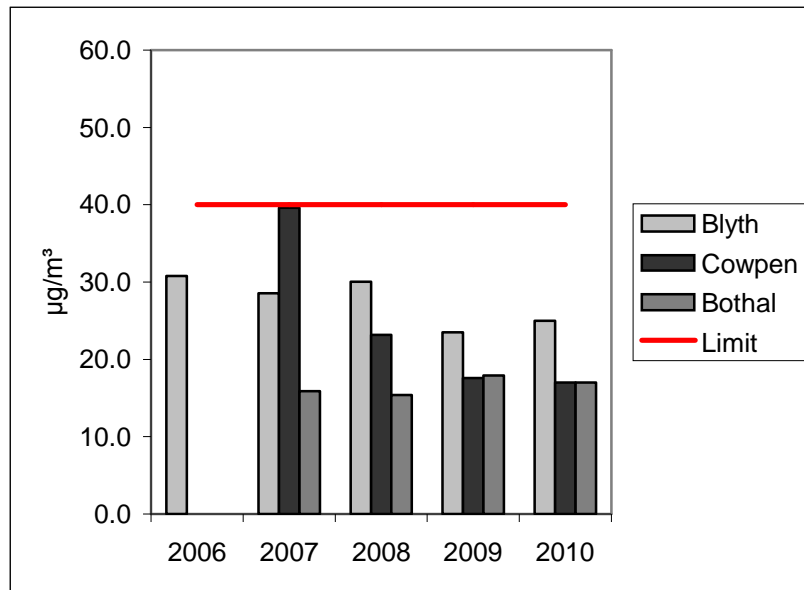
* Below the 90% data capture therefore 90th Percentile (40 µg/m³ guideline value)

^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 2.5 Trends in Annual Mean PM₁₀.



Trends in PM₁₀ levels 2006 - 2010 at the Blyth, Cowpen and Ashington Sites

The trend chart indicates that that PM₁₀'s are consistently below the national air quality objective annual mean concentration, including the Blyth site which is within the declared AQMA. The only exception being at the Cowpen Road site during 2007.

The data for 2010 from the automatic monitors was also ratified by AEA.

The automatic monitors were QA/QC audited by AEA during 2010/11 to the AURN standard.

Sulphur Dioxide

Newbiggin SO₂

Data Capture	No 15 Minute Exceedences	No 1 Hour Exceedences	No 24 Hour Exceedences	Annual Mean	Annual Min	Annual Max
93.6%	0	0	0	7	0	71

Data capture from the SO₂ site is above the recommended 90 percent. There have been no exceedences in this year in any of the three time monitoring objectives.

The monitoring site location is in an urban area and is operated in conjunction with Lynemouth coal fired power station to assist them to control their stack emissions.

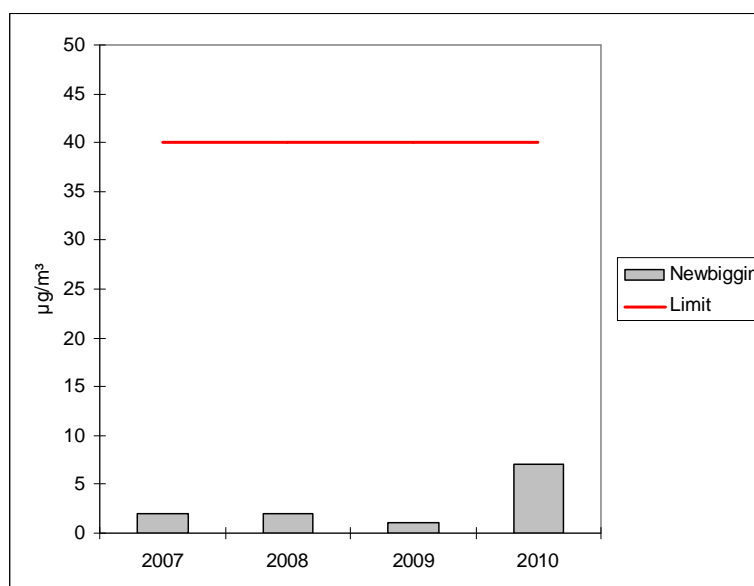
Table 2.6 Results of SO₂ Automatic Monitoring: Comparison with Objectives

Site	Location	Within AQMA	Data Capture for monitoring period ^a %	Data Capture 2009 ^b %	Number of Exceedences of: (µg/m ³)		
					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		93.6	0	0	0

^a ie. 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%.

Figure 2.6 Trends in Sulphur Dioxide .



Trends in Annual Mean SO₂ levels 2007 - 2010 at the Newbiggin site

Annual mean SO₂ levels remain low, however a slight increase was noted in 2010

2.2.3 Benzene

Running Mean (3 year)

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008 ^{c,d}	2009 ^{c, d}	2010 ^c
V1	Fisher Lane, lamp post south of bus stop LP	No	N/A	100	2.4	2.6	2.5
V2	Opposite Avery Dennison factory on LP	No	N/A	100	2.2	2.2	2.1
V3*	Northburn 1st School on cycle track LP	No	N/A	25*	2.3	2.1	1.9*
V4	Windburgh Drive, last cul-de-sac grass area LP	No	N/A	100	1.9	1.9	1.8
V5	Rochester Green, Barns Park LP	No	N/A	100	2.1	2.3	2.2
V6	Beaumont Manor (ASDA) LP	No	N/A	100	2.1	2.0	2.0
V7*	Coniston Rd nr Cowley Rd Depot LP	No	N/A	25*	2.2	2.1	2.0*
V8	Sudbury Way, Beaconhill Estate LP	No	N/A	100	2.0	2.1	2.0
V9	Lancastrian Road, dead end LP	No	N/A	100	2.2	2.3	2.2
V10	Northburn Football Club car park LP	No	N/A	91.7	2.7	3.1	3.1
V11	Crow Hall Rd opp CMP Factory LP	No	N/A	91.7	2.8	3.3	3.2

* Tube has been discontinued as of 31 March 2010

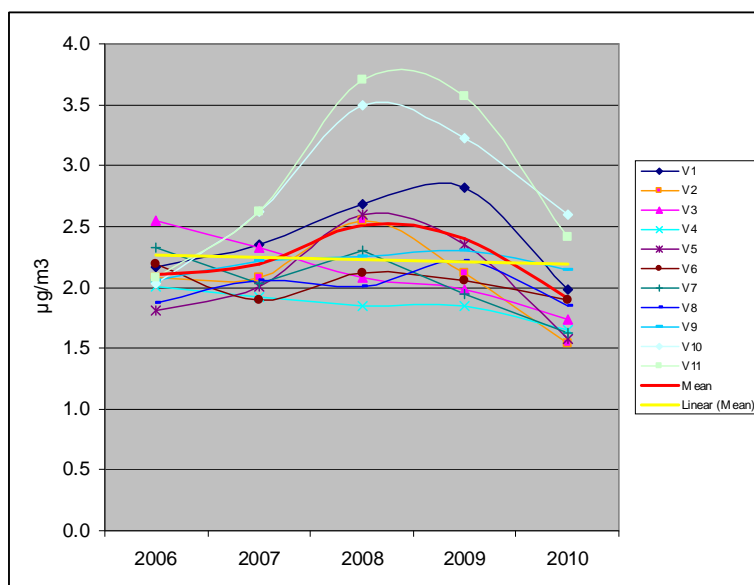
Annual Means

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2008 ^{c,d}	2009 ^c	2010
V1	Fisher Lane, lamp post south of bus stop LP	No	N/A	100	2.7	2.8	2.0
V2	Opposite Avery Dennison factory on LP	No	N/A	100	2.5	2.1	1.5
V3*	Northburn 1st School on cycle track LP	No	N/A	25*	2.1	2.0	1.7*
V4	Windburgh Drive, last cul-de-sac grass area LP	No	N/A	100	1.8	1.8	1.7
V5	Rochester Green, Barns Park LP	No	N/A	100	2.6	2.4	1.6
V6	Beaumont Manor (ASDA) LP	No	N/A	100	2.1	2.1	1.9
V7*	Coniston Rd nr Cowley Rd Depot LP	No	N/A	25*	2.3	2.0	1.6*
V8	Sudbury Way, Beaconhill Estate LP	No	N/A	100	2.0	2.2	1.8
V9	Lancastrian Road, dead end LP	No	N/A	100	2.2	2.3	2.1
V10	Northburn Football Club car park LP	No	N/A	91.7	3.5	3.2	2.6
V11	Crow Hall Rd opp CMP Factory LP	No	N/A	91.7	3.7	3.6	3.2

* Tube has been discontinued as of 31 March 2010

There continues to be no breaches of the present $5.0 \mu\text{g}/\text{m}^3$ national air quality objective for benzene (2010 objective) or the previous $16.25 \mu\text{g}/\text{m}^3$ objective (2003 objective).

Figure 2.2 Trends of benzene levels 2006 - 2010 for the Cramlington and Blyth areas showing the average of 11 sites and a best fit linear regression line.



The monitoring points are not directly measurements of public exposure but are undertaken in an area of several large users of VOC's to monitor trend.

2.2.4 Other pollutants monitored

The Council does not routinely monitor any other pollutants.

2.2.5 Summary of Compliance with AQS Objectives

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

3 New Local Developments

3.1 Road Traffic Sources

There are no new road traffic sources which fall within the criteria.

3.2 Other Transport Sources

There are no new transport sources within the county.

3.3 Industrial Sources

Tesco Petrol Station, Berwick on Tweed (New Part B Environmental Permit);
Biomass Power Station, Cambois (Proposed);
Emergency Care Hospital, Cramlington (Proposed);
Delhi Brenkley Lane Surface Coal Mine (Part B Environmental Permit variation).

3.4 Commercial and Domestic Sources

There are no new commercial and domestic sources which fall within the criteria.

3.5 New Developments with Fugitive or Uncontrolled Sources

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

Tesco Petrol Station, Berwick on Tweed;
Biomass Power Station, Cambois;
Emergency Care Hospital, Cramlington;
Delhi Brenkley Lane Surface Coal Mine.
Potland Burn Surface Coal Mine.

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

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 2010/11 the Council has undergone a further full service review therefore it is still proposed that:-

During the course of the next year the AQM Officers proposes 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

Emergency Care Hospital, Cramlington (Planning Ref: 11/0129/CCMEIA); Air Quality Assessment provided.

Whittonstall OCCS, Consett (Planning Ref: 10/00267/CCMEIA); Air Quality Assessment provided.

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 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 beginning of 2012. Allocations for specific land uses will be addressed in separate DPD, due for completion in the autumn of 2014.

7 Local Transport Plans and Strategies

KEY ISSUE	ACTIONS
Idling taxis	An early review of the Borough Council's taxi licensing policy. This should look at the age of vehicles, making the license fee favourable to operators of alternative or clean fuel vehicles. Signage in taxis to show alternative fuel.
Idling traffic	An all vehicle ban on idling within the AQMA
Inappropriate parking	Increased parking enforcement – needs Police support.
Idling buses	Vehicle Emissions Enforcement – emissions testing. Bus drivers not to let vehicles idle at the bus station.
Lack of understanding of Air Quality issues by bus operators	Improved information for bus drivers on good practice, and how buses can contribute to reducing air quality problem. Visit Arriva to show air quality monitoring equipment to explain relationship between idling engines and PM10 issues.
Idling commercial vehicles /traffic flow	Encourage best practice amongst commercial operators in unloading /loading – turn off engines and use specific bays.
Inappropriate parking/traffic flow	Double yellow lines to stop build up of traffic on Bridge Street.
Excess traffic in AQMA area	Improving signage around the town centre especially to the car parking areas.
Lack of information on alternatives	Improving public information about the AQMA and also transport services.
Visual improvements; reduction in pollutants	'Environmental Interventions' – improved planting and greenery.
Increasing traffic	Residents only parking zones
Reducing pollutants	Promotion of cleaner / alternative fuels using fleet as example
Reduce traffic; increase public transport use	Local campaign days
Traffic flow	Explore the possibility of a one way traffic system / inner relief road.
Accurate evidence of pollution problems	Improved monitoring of pollutants across the district to avoid future problems
Congestion and pollutants	'Time zoning' – restrict delivery and vehicle access times allowing for some pedestrian only times during the day. Introduce coach park near Regent Street. Restrict port and timings of loading and unloading. Installation of new methods and techniques. Additional taxi ranks around town centre to spread vehicular activity.
Reduce traffic flow; increase public transport use	Improve bus connections to Newcastle and the Metro. Sustainable travel plans Family rates for bus travel
Safety of pedestrians and cyclists	Clear pedestrian zones and cyclist zones
Lack of information	Real time information for bus passengers at bus tops and stations.
Effect of new development	Develop planning policies which do not contradict air quality aims.
Pollution (particulate matter)	Explore the possibility of relocating the bus depot, probably in association with further commercial development.
Traffic flow and pedestrian safety	The closure to private vehicles of the spur of Regent Street in front of Burton's.
Traffic congestion	Explore the possibility of a Park and Ride scheme outside the centre to link in with the Quayside and in conjunction with commercial development.
Lack of information about air quality and climate change	Education within community and schools about air quality and climate change
Pollution	Exclusion zones for certain types of traffic or fuel used. Buses to operate on biodiesel.
Traffic flow	Change traffic light sequence at Union Street/Bridge Street to improve traffic flow. Decriminalise parking so Local Authority can have control and enforcement role. Car parking charges in Town Centre (and wider?) perhaps in County wide scheme to ensure parity over charging. Inner relief road to be constructed.

Northumberland Local Transport Plan 2006-11

8 Climate Change Strategies

8.1 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.

9 Implementation of Action Plans

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. In December 2004, Blyth Valley BC designated Blyth Town Centre as an Air Quality Management Area (AQMA), due to exceedences of the fine particulate (PM₁₀) objectives.

That authority was rated as 'excellent' under the Comprehensive Performance Assessment (CPA) and is therefore not required to submit an Air Quality Action Plan (AQAP). The Section 6 Order under the Local Government Act 2000 includes clauses, which allow excellent authorities to voluntarily choose to produce an AQAP. Excellent authorities have to follow the statutory legislation under the Environment Act 1995 and the relevant statutory LAQM guidance, should they choose to produce one. Blyth Valley BC has chosen to fulfil their local air quality responsibilities within an overarching climate change strategy.

Blyth Valley BC produced an action plan in November 2006 and submitted it to Defra in January 2007. However since the completion of the action plan 2006, no further annual report on the progress made on the measures has been submitted to Defra.

Local Government Reorganisation (LGR) and the run up to it from July 2006 has caused a state of flux with reconfiguration of IT systems, office relocations and closures, and staff redundancies. Therefore, the full quantifiable measurements of the implementation of the action plan and annual reports are not available from 2006. Some information on progress with the original 2006 plan is included below.

As can be seen from the monitoring results Section 2 there have been no exceedences of the NAQO's in 2008 2009, & 2010 with the exception of the annual mean exceedence for nitrogen dioxide at Cowpen Road, Blyth for 2009. During 2010/11 the Council has undergone a further full service review therefore it is still however the detailed assessment has been undertaken:-

- The Blyth AQMA Detailed Assessment has been undertaken to see if the AQMA should be maintained/varied or undeclared. This Detailed assessment is submitted additionally with this report; and
- During the course of the year 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.

Table 9.1 Action Plan Progress

No.	Measure	Focus	Lead authority	Implementation phase	Progress to date
0	Manage bus emissions	Reduce unit emissions in the AQMA using Bus Quality Partnership Agreements (BQPA)	County Council	2011-14	Failure to reach a BQPA meant the authority applied for a Traffic Regulation Control (TRC)
1	The council to ensure that resources are made available to enable planning and environmental protection business unit to purchase additional particulate and nitrogen dioxide technical monitors housed in a mobile trailer to allow monitoring points to be set up all over the borough expanding the air quality monitoring network.	Funds have been allocated from the PEP budget and a mobile trailer incorporating new particulate and nitrogen dioxide monitors is now operating. Env Protection and SPaED joined funds to purchase the mobile vehicle testing equipment.	BVBC	Dec 2006	Achieved
1	. In addition to purchase measuring equipment to differentiate between car and bus pollution allowing appropriate action to be taken to improve air quality accordingly and ensure greater compliance with emission standards.	Officers are now trained on its operation and it has been used first to test Councils officers vehicles with a wider one day initiative planned for autumn at SDCO and then in Blyth Town centre to raise public awareness	BVBC	Feb 2007	Achieved
2	Planning and environmental protection business unit to ensure that any pollution implications are brought into future planning applications where necessary.	EP comment on all planning applications concerning pollution control. Additional comments are made for developments within or adjacent to the AQMA. Development control are informed of issues from applications to allow influence of planning permissions in the town centre and have developers contribute to a fund for town centre	BVBC		Ongoing

No.	Measure	Focus	Lead authority	Implementation phase	Progress to date
		improvements and supplementary planning guidance is being written to strengthen the adopted CC&AQ strategy			
3	Officers from planning and environmental protection and the environmental projects manager to raise awareness of air pollution within the borough highlighting what the public can do to help improve air quality.	CCAQ` strategy and action plan adopted and ratified by DEFRA. Includes information and communication section highlighting what the public and other partners can do to help mitigate climate change and improve air quality. Our baselines have now been added to the regional strategy to inform the way forward for the northeast region with BVBC officers leading 3 of the climate change working groups to help business and public make more sustainable choices and to calculate a carbon baseline for the region	BVBC	Achieved	Nov 2006 & ongoing
4	Legal and democratic services to review the powers available through vehicle licensing regarding the age of taxi vehicles allowed on the road and to also encourage the take-up of LPG fuel vehicles.		BVBC		
5	The council should make representation to Northumberland County Council regarding additional taxi ranks within Blyth town centre and to move the taxi rank adjacent to the bus station. The representation should also include the suggestion of having LPG only ranks in addition as an incentive for taxis to transfer to LPG fuel.		BVBC		
6	Officers to work in conjunction with Arriva to ensure that bus engines	Following discussion with Arriva they have put an article in their staff bulletin	BVBC		Autumn 2006 Ongoing

No.	Measure	Focus	Lead authority	Implementation phase	Progress to date
	are switched off when vehicles are stationary at the bus station and enforcement is adhered to where necessary.	highlighting the AQMA and also added warnings to drivers about idling in their staff information. Additional checks will be done on bus emissions with the testing equipment as part of public awareness days in the summer and again in the autumn with the full co-operation of Arriva management. Testing will now be expanded to other companies			
7	The Portfolio holder for Community Protection and Equity should ensure that an air quality action plan is developed and implemented. Officers should also develop a shared approach for closer working between Blyth Valley Council and Northumberland County Council establishing a process to manage further the improvement in air quality.	Air Quality Action Plan incorporated into the CCAQ strategy was adopted by Cabinet last year and ratified in January 2007. Officers are now meeting with NCC officers to look at funding CCAQ actions with a view to improving air quality in the town centre and also to better inform LTP2 with local data.	BVBC	achieved	Nov 2006 ongoing
8	Officers to seek the support of other councils and stakeholders to resolve the issue of local authorities being charged with reducing air pollution and improving air quality when it is beyond their control to do so.	The air quality working group includes officers from other councils, regulators and stakeholders. The Environment Agency and HPA, Newcastle university and NE Regional Assembly are already committing officer time and resources to the action plan projects	BVBC	Progress being made	ongoing
9	Officers to ensure that the suitable vegetation schemes to combat pollution should be used throughout the borough.	As part of the Blyth Town centre regeneration plan environmental planting is being included which will both act as a barrier to particulates and help absorb nitrogen dioxides.	BVBC	Progress being made	Feb 2007 ongoing

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

No exceedences have been identified within or outside the AQMA. Potential exceedences have been identified at several NO₂ diffusion sites and these will be kept under review, despite being against the general trend in the area.

All monitoring results within the AQMA are again below the air quality objectives and have been considered in the attached detailed assessment with a view to revoking the AQMA.

10.2 Conclusions relating to New Local Developments

The new major developments that will require consideration in the next USA is a proposed biomass power station.

10.3 Proposed Actions

The new monitoring data has indicated that this year several nitrogen dioxide diffusion tube sites are approaching or at the annual mean level in 2010. This will be kept under review to see if it is a trend or an anomaly. If it is an increasing trend then consideration will be given to automatic monitoring at these sites. This will be considered at the next USA.

A detailed assessment of PM₁₀ and NO₂ data has been undertaken for the Cowpen Road, Blyth and AQMA, Blyth automatic monitors with a view to creating a new AQMA and revoking the existing AQMA. The results of this detailed assessment are in the attached report.

The next course of action is to:-

- Submit the Updating And Screening Assessment 2012
- Revoke the existing Blyth AQMA in line with the conclusions of the Detailed Assessment 2011.

11 References

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

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

Spreadsheet of Bias Adjustment Factors (v.04/11). Available:

[http://laqm.defra.gov.uk/documents/Diffusion Tube Bias Factors v04 11 v6.xls](http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls)

Last accessed 12/05/2011.

Summary of Laboratory Performance in WASP (April 2009 – 2010). Available:

[http://laqm.defra.gov.uk/documents/Summary of Laboratory Performance in WASP R105-109.pdf](http://laqm.defra.gov.uk/documents/Summary_of_Laboratory_Performance_in_WASP_R105-109.pdf)

Last accessed 12/05/2011

Appendices

Appendix 1: QA/QC Data

Appendix 2 WASP – Annual Performance Criteria for Laboratories Carrying out
Analysis of Diffusion Tubes

Appendix 3 Location Maps of Air Quality Monitoring

Appendix 1: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The tubes are prepared and analysed by Lambeth 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 Lambeth 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 results are reported with an adjustment for the bias adjustment factor already made. This bias adjustment factor is calculated by the Laboratory for the same exposure period as that used for the monthly survey.

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

<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html> Co-Location Bias Correction Spreadsheet Version Number: 04/11 Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland

The bias factor was calculated to be 1.08 by Lambeth.

The Results of laboratory precision and WASP scheme are shown below; the Lambeth Scientific Services showing a GOOD/ACCEPTABLE performance for 2009/10.

Microsoft Excel - Diffusion_Tube_Bias_Factors_v04_11_v6.xls

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National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 04/11

Follow the steps below in the correct order to show the results of relevant co-location studies

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.

This spreadsheet will be updated in late June 2011 on the [LAQM Helpdesk Website](#)

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

Step 2: Select a Preparation Method from the Drop-Down List

Step 3: Select a Year from the Drop-Down List

Step 4: 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 shown in blue at the foot of the final column.

If a laboratory is not shown, we have no data for this laboratory

If a preparation method is not shown, we have no data for this method at this laboratory

If a year is not shown, we have no data

If you have your own co-location study then see footnote 1. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQM-Helpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in Acetone	2010	R	Waverley BC	10	34	38	-12.7%	P	1.15
Lambeth Scientific Services	50% TEA in Acetone	2010	K	Marlybone Road Intercomparison	11	91	92	-1.8%	G	1.02
Lambeth Scientific Services	50% TEA in Acetone	2010	K	Waverley BC	9	38	41	-5.3%	P	1.07
Lambeth Scientific Services	50% TEA in Acetone	2010		Overall Factor¹ (3 studies)					Use	1.08

¹ For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradiol 50% TEA in Acetone.
For Casella Seal/MS/Casella CRE/Bureau Veritas Labs/Eurofins use Environmental Scientific Groups.
For Staffordshire CC/SS/Staffordshire County Analysts use Staffordshire Scientific Services.
For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova.
For Rotherham MBC use South Yorkshire Labs.
For Dundee CC use Tayside SS.
For Leicester Scientific Services use Staffordshire Scientific Services.
For South Yorkshire Air Quality Samplers use South Yorkshire Labs.

² In this situation it would be reasonable to use data from the nearest year.

³ Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.

⁴ If you have your own co-location study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).

⁵ Where an annual data set falls into two years it has been ascribed to the year in which most of the data has been taken.

⁶ Tube precision is determined as follows: G = Good precision - coefficient of variation (CV) of diffusion tube replicates is considered good when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%; P = Poor precision - CV of four or more periods >20% and/or average CV >10%; S = Single tube, therefore not applicable; na = not available.

Collocation Data / Revisions /

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			Mean	
Newcastle Centre		32	34	0.93
Newcastle Cradlewell		37	37	1.00
Sunderland Silksworth		16	17	0.94
			Average	0.95

4N West Acres and 9N Three Tuns Lane, Alnwick

Site	Site Type	Annual Mean	Period Mean	Ratio
Newcastle Centre		32	38	0.84
Newcastle Cradlewell		37	42	0.97
Sunderland Silksworth		16	24	0.67
			Average	0.79

7N Bondgate Without, Alnwick

Site	Site Type	Annual Mean	Period Mean	Ratio
Newcastle Centre		32	33	0.98
Newcastle Cradlewell		37	37	1.00
Sunderland Silksworth		16	26	1.02
			Average	1.00

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 intercomparable 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 were 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.

A Site Manual is displayed in the MAQU, which provides the facility to document visits made to the site by operating personnel.

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 correspond 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 ongoing 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 dataloggers.

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.

The list of calibration factors applied to the raw data can be provided upon request.

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 PM_{10} and NO_2 data monitored at the MAQU is scrutinised to ensure that there are no anomalies in either of the measured concentrations.

The data for 2010 from the automatic monitors was also ratified by AEA.

The automatic monitors were QA/QC audited by AEA during 2010/11 to the AURN standard.

PM Monitoring Adjustment

PM_{10} measurements by the BAM units had a factor of 0.83333 applied to give gravimetric equivalent concentrations.

Appendix 2 WASP – Annual Performance Criteria for Laboratories Carrying out Analysis of Diffusion Tubes

QA/QC of diffusion tube monitoring

Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 105-109.

17th September 2010

Introduction

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL).

WASP formed a key part of the former UK NO₂ Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). The WASP scheme is operated independently by HSL. The cost of operating the WASP scheme itself is borne by the laboratories, who pay an annual fee to HSL.

However, 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 AEA, according to criteria which have been agreed with Defra, the Devolved Administrations and HSL. (This forms part of AEA's work for Defra and the Devolved Administrations under their contract "Support to Local Authorities for LAQM").

AEA, in co-operation with HSL, have therefore compiled the list below, which is posted on the LA Air Quality Support web-pages at <http://www.laqmsupport.org.uk/index.php> , of the laboratories who have demonstrated satisfactory performance in WASP over the past year. This list is to be updated quarterly (subject to provision of the results to AEA by HSL). It should be noted that WASP results themselves are not shown, as they are subject to certain confidentiality provisions. Also, only those laboratories who have met the agreed performance criteria are included. If information on any laboratory's performance is required, please contact the laboratory directly.

About the WASP Scheme

The WASP performance testing scheme uses artificially spiked diffusion tubes to test each participating laboratory's analytical performance on a quarterly basis. Every quarter, (in January, April, July and October each year) each laboratory (of which there are currently approximately 20) 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 mass of nitrite on the spiked tubes is different each quarter, and reflects the range encountered in actual ambient monitoring. (HSL advises that the spike levels are accurate, with standard deviation around 0.5%). The participants analyse the tubes, and report the results to HSL. HSL assign a performance score to each laboratory's result, based on their deviation from the known mass of nitrite in the analyte.

Performance scores are currently based upon the Z-score statistic but HSL are moving towards a scoring system based on the Rolling Performance Indicator, and it is this new scoring system which is used here. Results are communicated to each participating laboratory (and to AEA), by HSL.

Performance Index

The Performance Index statistic is calculated from the four sample results in each round, as specified in Appendix 1 of the WASP participants' handbook¹ (at <http://www.hsl.gov.uk/proficiency-testing/waspinf.pdf>). This is calculated as in Equation 1:

Equation 1:

$$\text{Performance Index} = \frac{\sum_{s=1}^4 \left(\frac{x_s}{\bar{x}} - 1 \right)^2 \times 10,000}{4}$$

- where x_s is the result obtained by the laboratory for sample number s (of four), and \bar{x} is the assigned value for sample 's'. (The ratio x_s/\bar{x} is the "standardised result", i.e. the result obtained by the participant, divided by the "assigned value".) (The multiplication factor of 10,000 is arbitrary, to avoid having to deal with very small numbers).

Rolling Performance Index

The Rolling Performance Index (RPI) allows long-term trends in performance to be monitored. It is calculated as the arithmetic mean of the *best four Performance Index values from the most recent five rounds*, as also specified in Appendix 1 of the WASP participants' handbook. (If a participant has participated in less than four of the last five rounds, it is not possible to calculate an RPI).

Performance Criteria

The performance criteria set by HSL for accuracy *at present* are as based on the z-score method, not the PI or RPI, but equate to the following:

- **GOOD:** Results obtained by the participating laboratory are on average within 13% of the assigned value. This equates to an **RPI of 169 or less**.
- **ACCEPTABLE:** Results obtained by the participating laboratory are on average within 13- 26% of the assigned value. This equates to an **RPI of 169 - 676**.
- **WARNING:** Results obtained by the participating laboratory are on average within 26 – 39% of the assigned value. This equates to an **RPI of 676 - 1521**.
- **FAILURE:** Results obtained by the participating laboratory differ by more than 39% of the assigned value. This equates to an **RPI of greater than 1521**.

As of Round 111 (October 2010), the performance criteria set by HSL will be based upon the RPI statistic, and will be tightened to the following:

- **GOOD:** Results obtained by the participating laboratory are on average within 7.5% of the assigned value. This equates to an **RPI of 56.25 or less**.
- **ACCEPTABLE:** Results obtained by the participating laboratory are on average within 15% of the assigned value. This equates to an **RPI of 225 or less**.
- **UNACCEPTABLE:** Results obtained by the participating laboratory differ by more than 15% of the assigned value. This equates to an **RPI of greater than 225**.

Both sets of performance criteria that have been used to compile Table 1 below, which shows laboratories which have demonstrated acceptable performance in the WASP scheme, over rounds 105 (April 2009) to 109 (April 2010). Due to WASP's confidentiality provisions, laboratories that have not demonstrated satisfactory performance over the past five rounds (based on the new criteria) are not included.

Table 1 Laboratories that have demonstrated satisfactory performance in the WASP scheme for analysis of NO₂ diffusion tubes, April 2009 – April 2010.

Laboratory	Performance on basis of RPI, OLD CRITERIA, best 4 out of the 5 rounds 105-109	Performance on basis of RPI, NEW CRITERIA, best 4 out of the 5 rounds 105-109
Aberdeen Public Analysts	Good	Good
Bristol City Council	Good	Good
Cardiff Scientific Services	Good	Good
Edinburgh City Council	Good	Good
Environmental Services Group (formerly Bureau Veritas)	Good	Good
Exova (formerly Clyde Analytical)	Good	Acceptable
Glasgow Scientific Services	Good	Good
Gradko International	Good	Good
Harwell Scientifics	Good	Good
Kent Scientific Services	Good	Good
Kirklees MBC	Good	Acceptable
Lambeth Scientific Services	Good	Acceptable
Lancashire County Analysts	Good	Acceptable
Milton Keynes Council	Good	Acceptable
Northampton Borough Council	Good	Good
South Yorkshire Air Quality Samplers	Good	Acceptable
Staffordshire County Council	Good	Good
Tayside (formerly Dundee CC)	Good	Good
Walsall MBC	Participated in less than 4 of last 5 rounds.	
West Yorks Analytical Services	Good	Acceptable

For further information about any particular laboratory's performance, please contact the laboratory directly.

If you have any questions about these performance criteria, or the context in which they apply, please contact Alison Loader at AEA, on 0870 190 6518, or e-mail alison.loader@aeat.co.uk . For more general enquiries about the WASP scheme, please contact Hannah Clark at HSL, hannah.clark@hsl.gov.uk .

¹ The Health & Safety Laboratory: "WASP The Workplace Analysis Scheme for Proficiency - Information For Participants" Buxton, 2004.

Appendix 3 Location Maps of Air Quality Monitoring

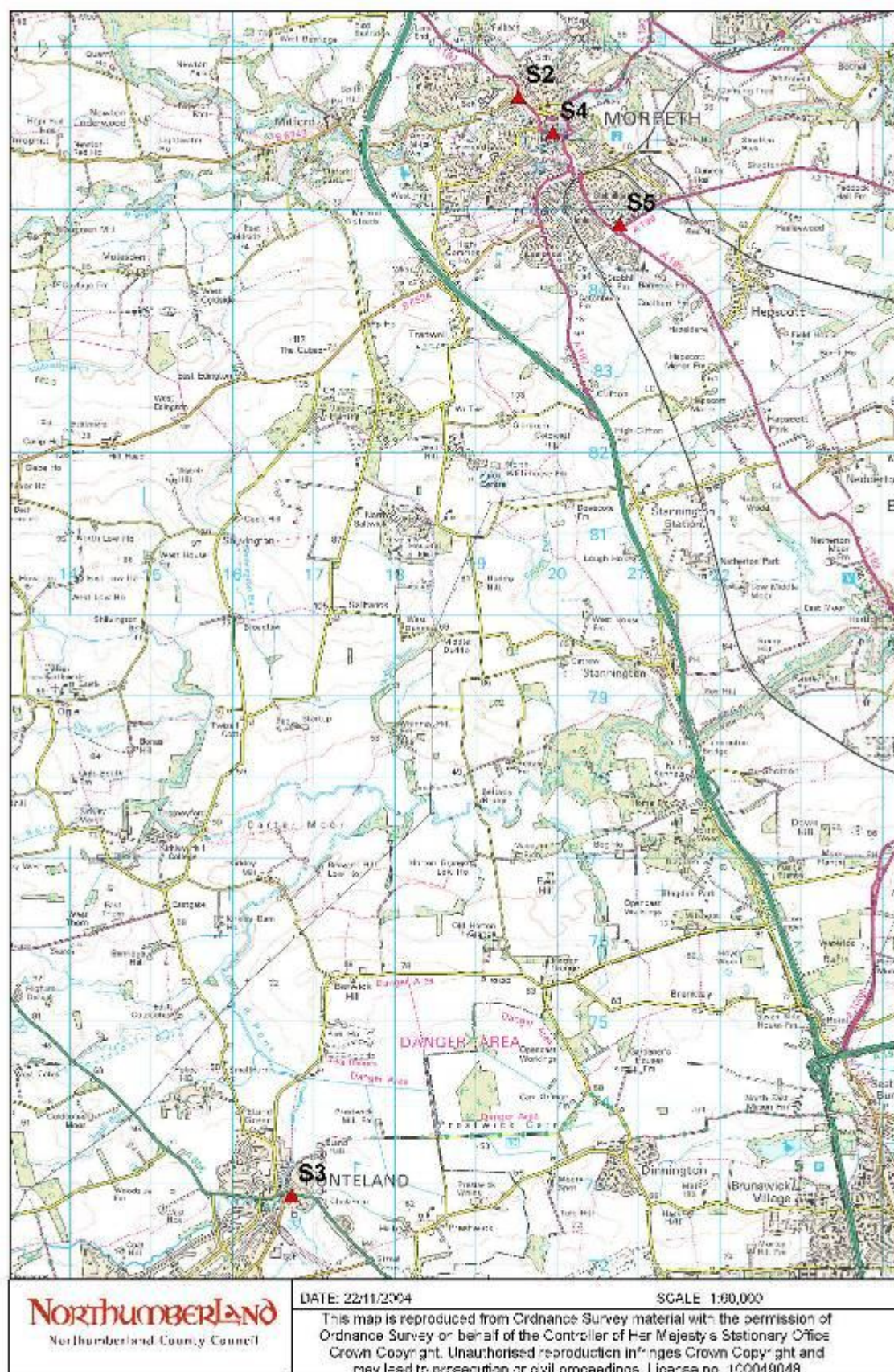
C.1 Berwick-upon-Tweed Diffusion Tube Locations



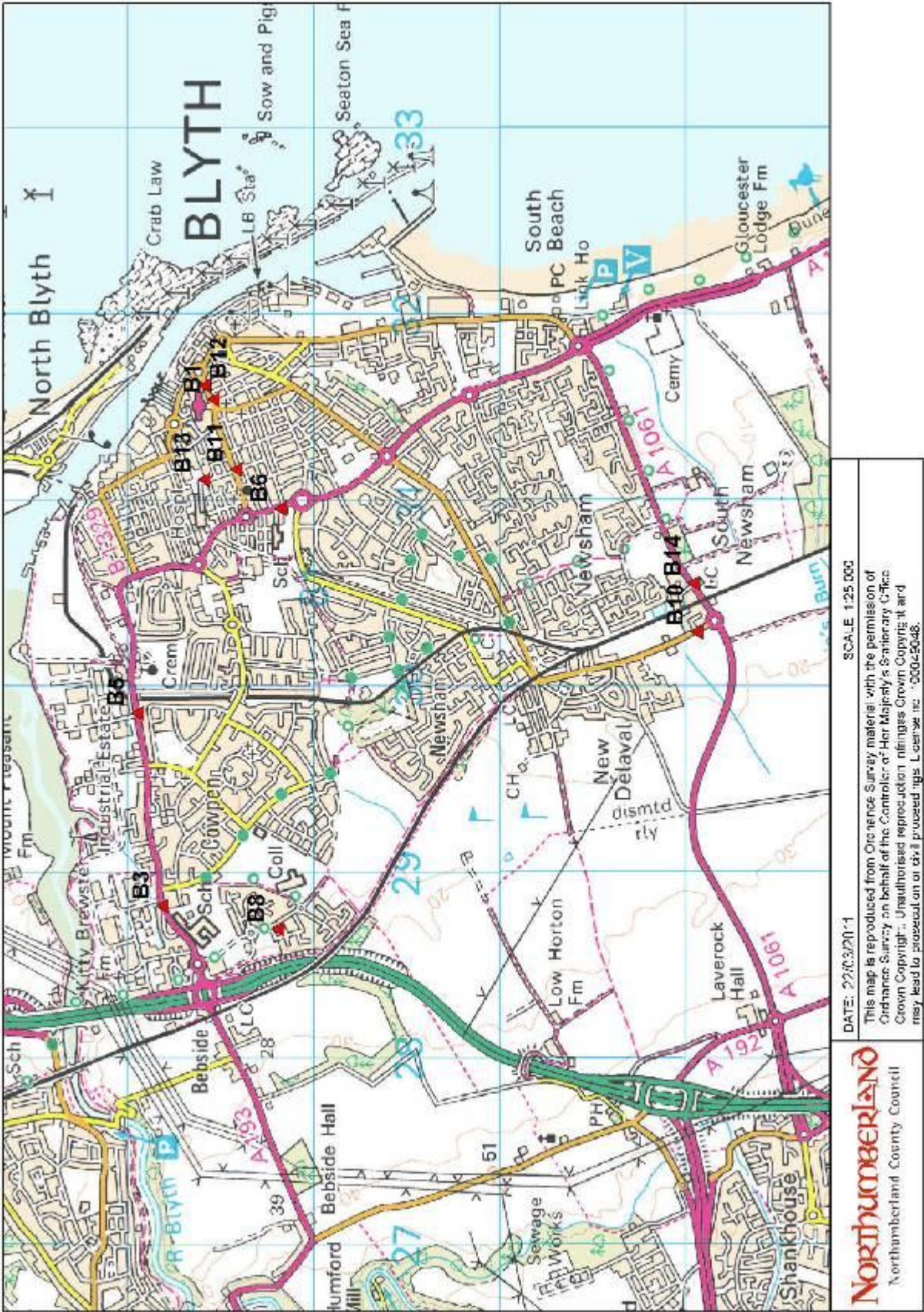
C.2 Alnwick Diffusion Tube Locations



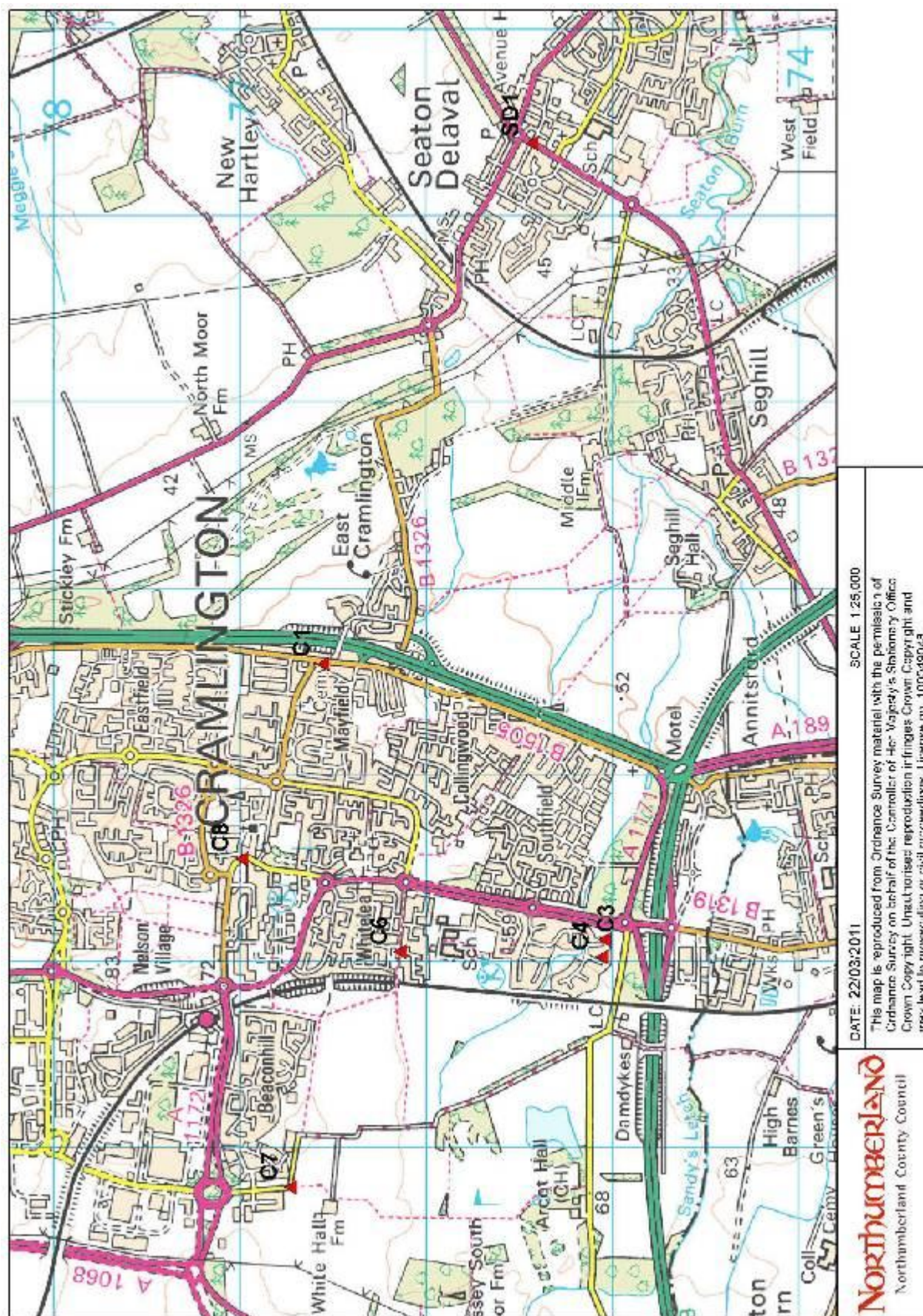
C.3 Morpeth Diffusion Tube Locations



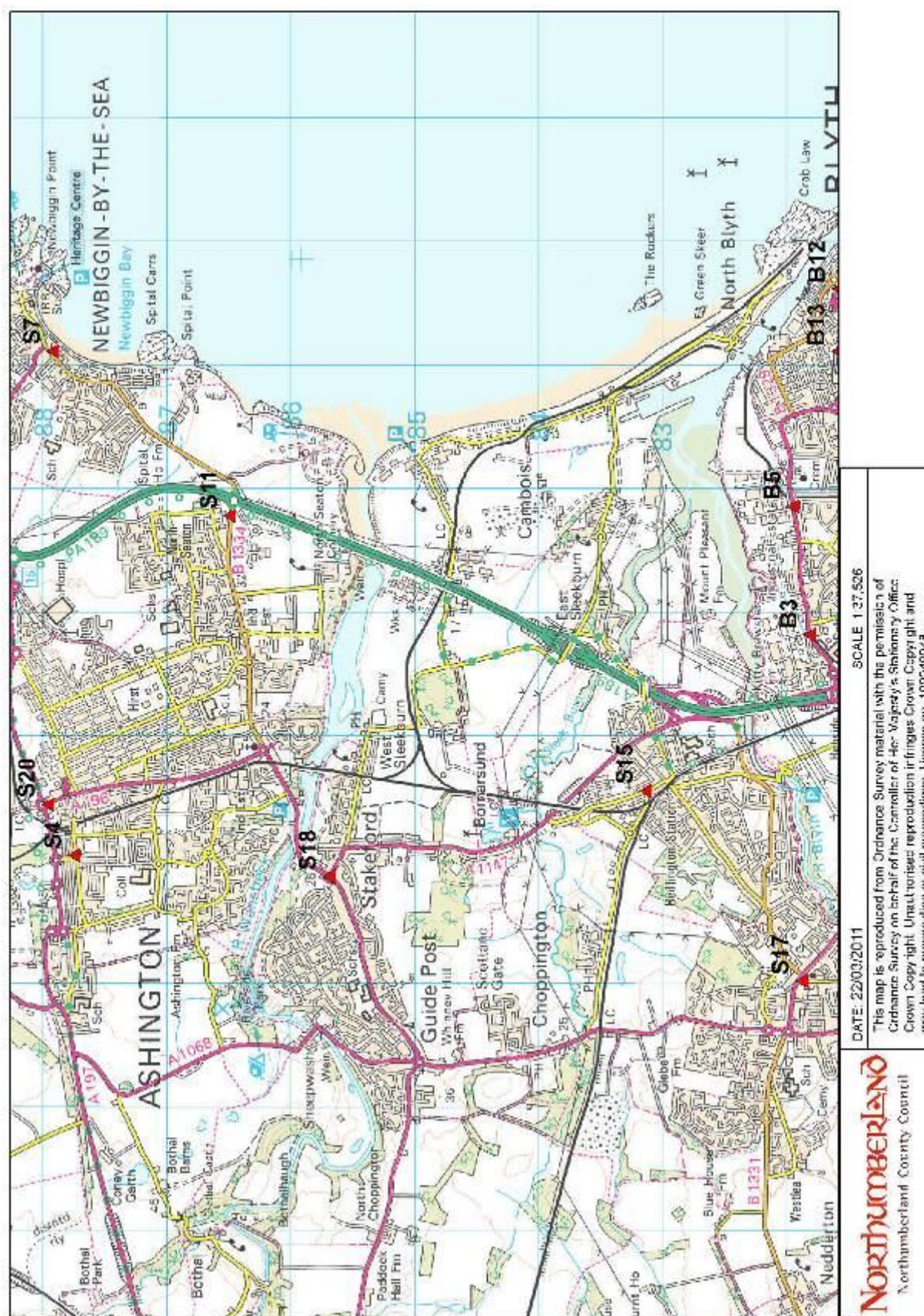
C.4 Blyth Diffusion Tube Locations



C.5 Cramlington Diffusion Tube Locations



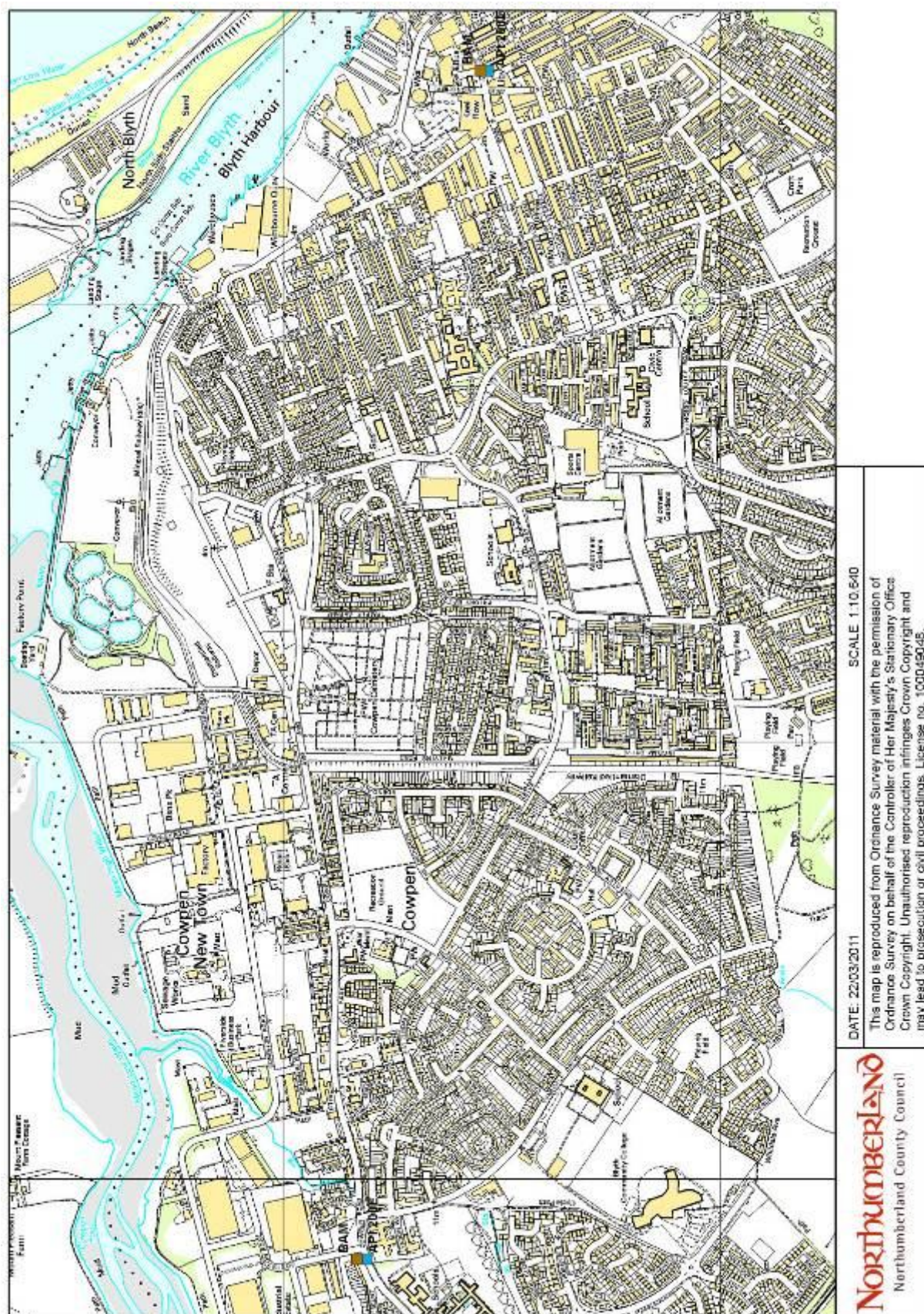
C.6 Wansbeck Diffusion Tube Locations



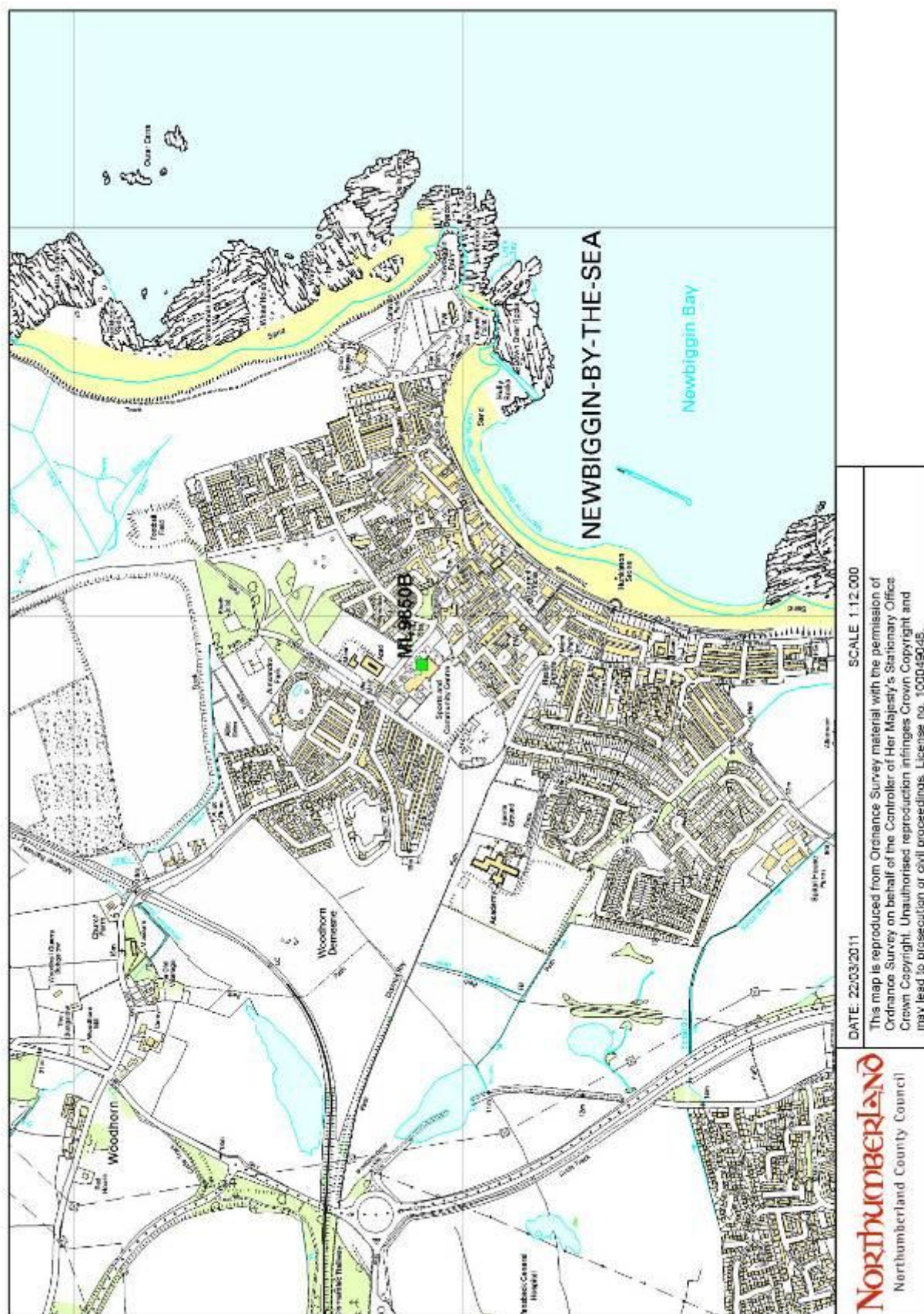
C.7 Blyth and Cramlington VOC Diffusion Tube Locations



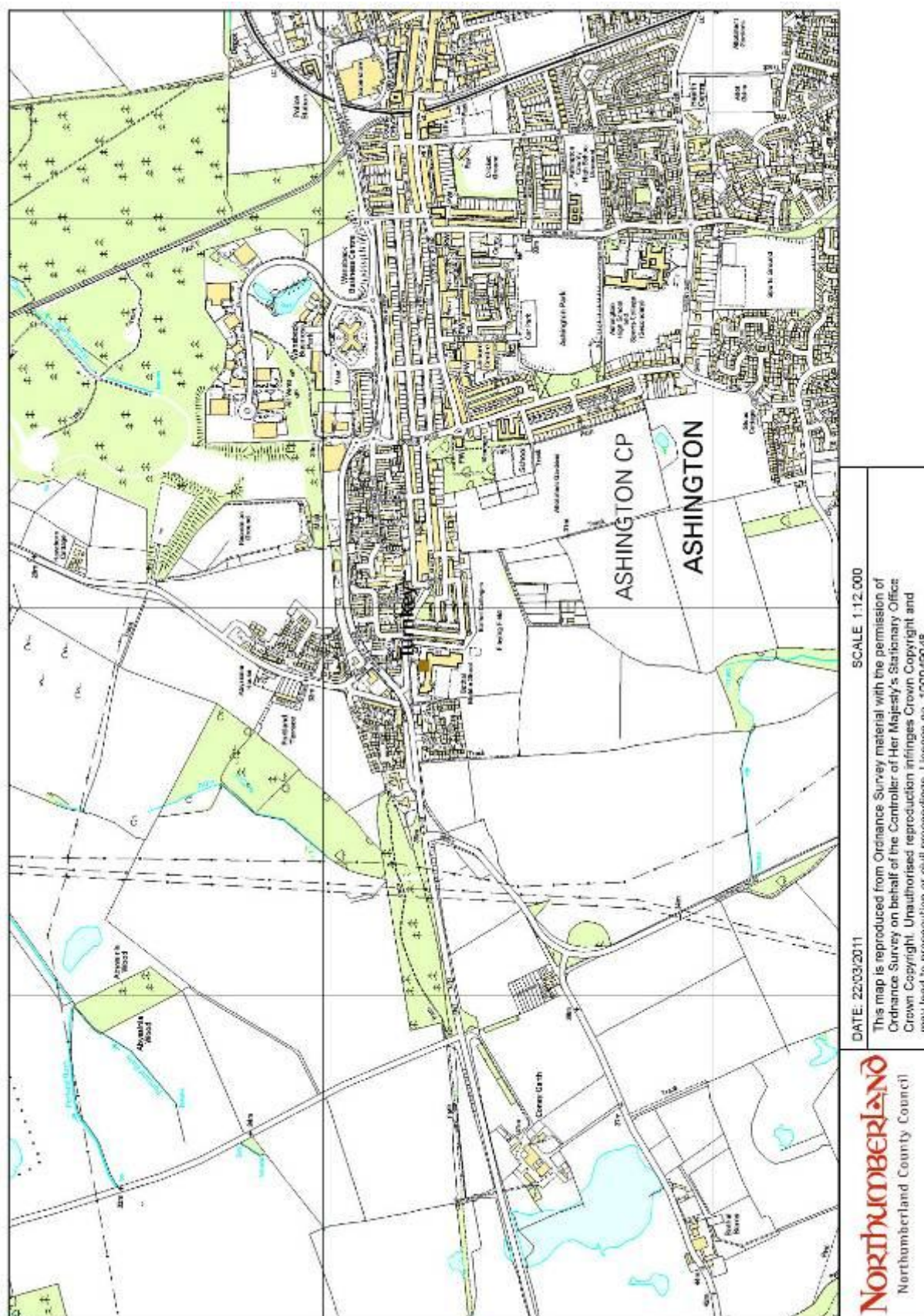
C.8 Blyth Continuous Monitoring Locations



C.9 Newbiggin Continuous Monitoring Locations



C.10 Ashington Continuous Monitoring Locations



Appendix 4 Full Monthly NOx Diffusion Tube Dataset

Site ID	Location	Type	x	y	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Data Capture %	Estimated Average	Comments
Ber1	Marygate	Roadside	399824	652953																
Ber2	Bridge Street	Roadside	399759	652822																
Ber3	Scott's Place	Urban Background	399658	653171																
Ber4	Osborne Road	Urban Background	399082	652600																
Ber5	Main Street, Tweedmouth	Roadside	399437	652022			38		25	24	28	29	26	32	17	46	30	75		
Ber6	Royal Tweed Bridge	Kerbside	399336	652655			23										23	8	19	
Ber7	Castlegate	Roadside	399595	653170			35		26	29	27	33	26	30	19	33	29	75		
1N	Northumberland Hall, Alnwick	Roadside	418600	613300								13	15	15	18	25	17	42	16	
4N	West Acres, Alnwick	Urban Background	418700	613100	16	14											15	17	12	
7N	Bondgate Without, Alnwick	Roadside	418800	613300						24		22	25	24	22	31	24	50	24	
8N	Bondgate Without, Alnwick	Roadside	419025	613074	39	39				29	26	33	33	36	38	46	36	75	31	
9N	Three Tuns Lane, Alnwick	Urban Background	418599	613184	17	19											18	17	14	
B1	Waterloo Road, opp bus station LP (X2)	Roadside	431537	581537	49	33	39	31	25	19	32	35	29	39	39	47	35	100		
B1(2)	Waterloo Road, opp bus station LP (X2)	Roadside	431537	581537	37	46	33	35	23	18	29	27	31	36	40	52	34	100		
B2	Wellington Street, outside Pembroke Court LP		431688	581401	33	24	22										26	25		Removed from programme
B3	Cowpen Road, west ent monitoring station LP	Roadside	428815	581813	39	36	38	36	29	27	30	33	37	41	28	42	35	100		
B4	Kielder Close, outside No 38 LP		429854	580149	26	19	21										22	25		Removed from programme
B5	Cowpen Road, east ent nr Lord Tool Hire LP	Roadside	429850	581947	28	41	28	19	17	14	19	17	18	24	23	28	23	100		
B6	Blyth Civic Centre, flagpole LP	Roadside	430949	581178	33	30	25	21	15	13	13	14	18	24	26	29	22	100		
B7	Tynedale Drive, Briardale Road junction LP	Roadside	429267	581343	28	29	25										27	25		Removed from programme
B8	Beaumont Manor (ASDA) LP & V6		428688	581193	33	28	23	18	14	12	14	18	15	21	25	27	21	100		
B9	Bebside, opp Mansell Terr LP	Roadside	428172	581509	32	32	24										30	25		Removed from programme
B10	Park Farm Villas, Newsham LP	Roadside	430287	578942	36	28	27	15	14	13	14	18	16	24	25	30	22	100		
B11	Blyth YMCA LP	Roadside	431160	581415	40	36	32	30	24	18	25	28	26	29	36	39	30	100		
B12	Bridge Street, opp Job Centre LP	Roadside	431612	581586	42	45	38	36	23	24	24	33	24	30	25	37	32	100		
B13	Health Centre car park LP		431105	581589	25	25	17	23	11	13	11	15	21	26	27	31	20	100		
B14	Keel Row, entrance to car park LP	Roadside	431429	581725	33	39	24										32	25		Removed from programme
B15	South Newsham Road	Roadside						23	15	17	2	44	19	17	26	30	22	75		Added to Programme
C1	High Pit Road, Burton House car park LP (X2)	Roadside	427593	576555	44	43	33	36	25	21	21	24	29	33	56	35	33	100		
C1(2)	High Pit Road, Burton House car park LP (X2)	Roadside	427593	576555	39	38	38	25	22	22	22		26	32	33	38	30	100		
C2	Fernley Villas LP		427507	576843	36	29	19										28	25		Removed from programme
C3	Ruabon Close, Barns Park LP (X2)		426113	575041	35	27	21	18	14	13	12	12	15	22	24	31	20	100		
C3(2)	Ruabon Close, Barns Park LP (X2)		426113	575041	28	25	21	22	13	13	12	12	15	21	18	23	18	100		
C4	Rochford Grove, Barns Park & V5		426020	575057	31	22	21	22	13	13	11	12	17	17	24	26	19	100		
C5	Nayland Road, Parkside LP		426435	577315	32	23	19										25	25		Removed from programme
C6	Lancastrian Drive, dead end & V9		426047	576139	32	23	23	21	10	11	16	13	19	22	25	24	20	100		

C7	Kielder Avenue, Beacon Lane LP		424785	576728	33	27	22	22	12	8	10	11	15	22	25	28	19	100	
C8	Manor Walks, BT Sainsburys and Travellers	Roadside	426548	576990	33	35	17	22	15	15	14	16	23	26	30	38	24	100	
1	Queens Court, Morpeth	Roadside	420125	585679	61	34	24										40	25	Removed from programme
2	Newgate Street/Bullers Green, Morpeth	Roadside	419525	586380	31	40	35	21	21	19	16	16	22	25	41	31	26	100	
3	Police Station, Ponteland	Roadside	416724	572853	41	48	46	37	25	26	24	23	29	32	39	37	34	100	
4	Northern Rock, Bridge Street, Morpeth	Roadside	419947	585937	54	64	48	40	33	33	18	32	33	35	50	45	40	100	
5	Stobhill Social Club, Morpeth	Roadside	420769	584807	22	26	23	18		13	14	14	15	19	22	23	19	100	
3	Bothal Village (LP opposite Joiners Cottage)		423950	586695	42	41											41	16.7	Removed from programme
4	Station Road, Ashington (LP D127 outside of Heron Garage)		427031	587746	38	31											35	91.7	
7	Front St, Newbiggin (LP on steps next to Methodist Church)		431110	587918				20	15	14	13	13	16	23	26	34	19	75.0	
11	North Seaton Roundabout (Sign post off roundabout B1334)		429778	586492	30	27		23	14	14	13	13	16	22	20	24	20	91.7	
12	Brock Lane Junction (LP directly opposite junction)		428552	584741	34	23											29	16.7	Removed from programme
14	Ashington Drive, Choppington (LP outside No 27)		425822	585671	35	24											30	16.7	Removed from programme
15	Ravensworth Car Park, Bedlington (LP on opposite site of the road)		427554	583137	35	24		22	10	12	17	14	21	23	27	26	21	91.7	
17	Front Street East, Bedlington (LP next to shelter at junction of Church Ave)		426014	581879	36	29		23	13	8	10	12	16	23	27	30	21	91.7	
18	Wansbeck Bridge (LP on roundabout next to the care home)		426860	585691	36	37		23	16	16	15	17	24	28	33	41	26	91.7	
20	Portland Park (LP in Car Park)		427442	587959	66	37											52	91.7	
EH1	East Hartford, Ormston St nr bus stop LP		426818	579046	35	26	25										28	25.0	Removed from programme
H1	Hollywell, outside Milbourne Arms LP	Roadside	431738	574477	38	28	30										32	25.0	Removed from programme
SD1	Seaton Delaval, Salvation Army LP	Roadside	430387	575433	38	45	37	40	24	21	23	19	27	33		50	32	100.0	
SD2	Seaton Delaval, Blyth Street LP		430259	575482	27	35	22										28	25.0	Removed from programme
SEG1	Seghill, Bumlea Gardens junction LP		429579	574549	42	27	29										33	25.0	Removed from programme
SS1	Seaton Sluice, top of Colywell Road LP	Roadside	434007	576008	16	29	25										23	25.0	Removed from programme

Appendix 5 Full Monthly VOC (Benzene) Diffusion Tube Dataset

<i>Site ID</i>	<i>Location</i>	<i>TYPE</i>	<i>x</i>	<i>y</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Average</i>	<i>Data Capture</i>
V1	Fisher Lane, lamp post south of bus stop LP	Roadside	424454	578463	0.7	0.9	0.7	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.7	0.7	0.6	100.0
V2	Opposite Avery Dennison factory on LP	Roadside	425584	578166	0.4	0.7	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.5	100.0
V3	Northburn 1st School on cycle track LP		426385	578269	0.5	0.6	0.5										0.5	25.0
V4	Windburgh Drive, last cul-de-sac grass area LP		426527	575118	0.5	0.5	0.5	0.4	0.6	0.6	0.6	0.6	0.4	0.4	0.5	0.5	0.5	100.0
V5	Rochester Green, Barns Park LP		426002	575042	0.4	0.6	0.6	0.4	0.4	0.3	0.4	0.7	0.5	0.5	0.5	0.5	0.5	100.0
V6	Beaumont Manor (ASDA) LP		428688	581193	0.5	0.5	0.5	0.4	0.6	0.8	0.7	0.5	0.5	0.7	0.7	0.6	0.6	100.0
V7	Coniston Rd nr Cowley Rd Depot LP		429765	582107	0.5	0.5	0.5										0.5	25.0
V8	Sudbury Way, Beaconhill Estate LP		425322	576963	0.6	0.7	0.6	0.5	0.5	0.4	0.6	0.6	0.6	0.6	0.6	0.5	0.6	100.0
V9	Lancastrian Road, dead end LP		426047	576139	0.6	0.6	0.5	0.4	0.7	0.5	1	0.9	0.7	0.7	0.7	0.6	0.7	100.0
V10	Northburn Football Club car park LP		425955	578278	1	0.8	0.6	0.5	0.9	0.6	1.8		0.8	0.8	0.9	0.9	0.9	91.7
V11	Crow Hall Rd opp CMP Factory LP		425756	578376	0.9	0.9	0.6	0.5	0.8	0.7	0.6		1	0.9	1	1	0.8	91.7