FOREST OF DEAN DISTRICT COUNCIL

Air Quality Updating and Screening Assessment

Forest of Dean District

2012

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

May 2012

Local Authority Officer	Chris J Ball Environmental Protection & Licensing Officer
Department	Environmental Protection & Licensing
Address	Forest of Dean District Council Council Offices High Street Coleford Gloucestershire GL16 8HG
Telephone	01594 810000
E-mail	chris.ball@fdean.gov.uk
Report Reference number	2012AQUSA
Date	09 May 2012

Executive Summary

In 1995 the Environment Act provided for a National Air Quality Strategy requiring local authorities to carry out Reviews and Assessments of the air quality in their area for seven specific pollutants. **These are; carbon monoxide (CO), benzene, 1,3-butadiene, nitrogen dioxide (NO_2), lead, sulphur dioxide (SO_2) and PM_{10} (Particles under 10µm in diameter).**

This Updating and Screening Assessment concluded the following:

- Three sites in the town of Lydney exceeded the nitrogen dioxide annual mean objective of 40µg/m^3. These sites are within the Lydney Air Quality Management Area, which was declared in July 2010.
- There are no road traffic sources of concern within Forest of Dean District Council's administrative area.
- There are no other transport sources of concern within Forest of Dean District Council's administrative area.
- There are no industrial sources of concern within Forest of Dean District Council's administrative area.
- There are no commercial or domestic sources of concern within Forest of Dean District Council's administrative area.
- There are no fugitive or uncontrolled sources of concern within Forest of Dean District Council's administrative area.
- No detailed assessment is required for any pollutants within Forest of Dean District Council's administrative area.
- Lydney draft Air Quality Action Plan will be submitted in early 2013.
- Forest of Dean District Council will continue to review and assess air quality within the district as part of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995):
    - Progress report - April 2013
    - Progress report - April 2014

Table of Contents

Figures

Tables

Copyright Statement

1.0 Introduction

1.1 Description of Local Authority area

The Forest of Dean is a rural community situated in Gloucestershire. The district is made up of four major towns (Lydney, Coleford, Cinderford and Newent) surrounded by numerous villages, with the remainder of the district comprising of wooded areas and open space. The main industry is manufacturing and primary industry with many light engineering firms. The population is just over 80,000 with approximately 32,000 households. The main routes through the District include the M50 in the north of the District and numerous A-roads (e.g. A48 and the A40) (see map - Figure 1).

There are no major industrial areas within the district or close-by that significantly impacts on air quality. The industries within the district that emit any of the prescribed pollutants are not located close to relevant public exposure. The scale on which they operate do not produce emissions that significantly affect local air quality.

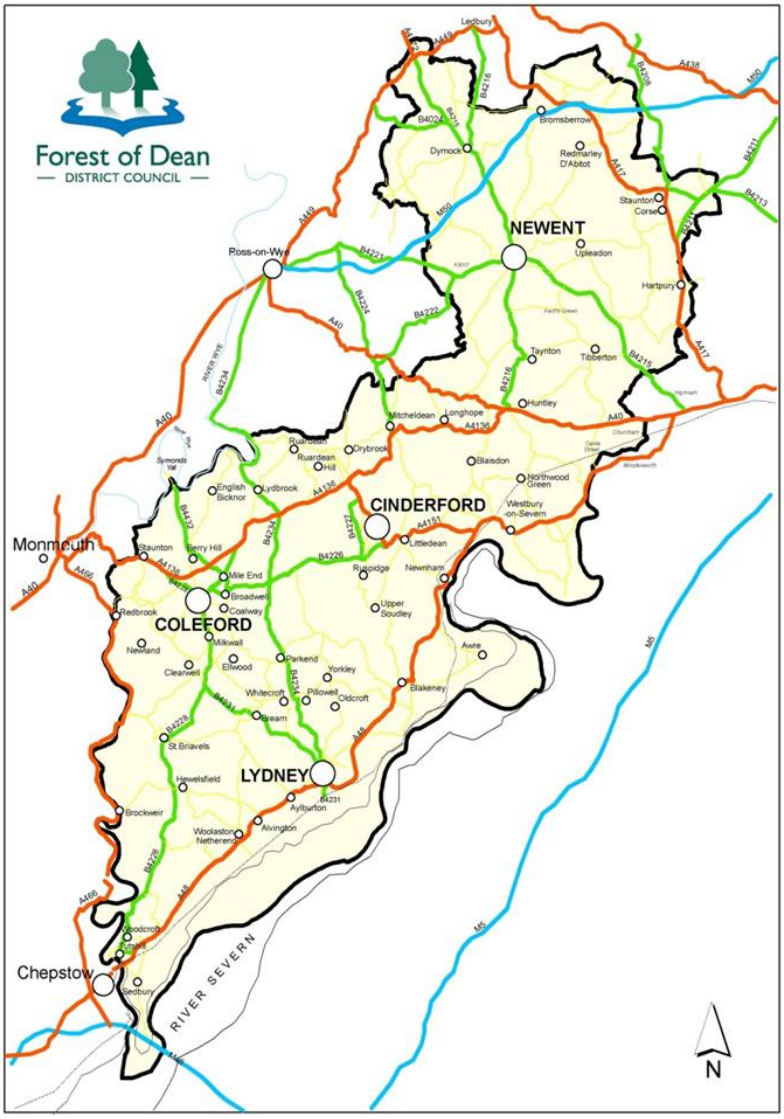


Figure 1 – Forest of Dean district

1.2 Purpose of report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995)[1], the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007[2] and the relevant Policy and Technical Guidance documents[3]. 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 exceedences are 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.

The objective of this Updating and Screening Assessment (USA) is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

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)[4], and are shown in . This table shows the objectives in units of micrograms per cubic metre μg/m^3 (milligrams per cubic metre (mg/m^3) for carbon monoxide)) with the number of exceedences in each year that are permitted (where applicable).

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg/m^3	Running annual mean	31.12.2003
	5.00 μg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/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 μg/m^3	Annual mean	31.12.2004
	0.25 μg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 μg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 μg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Table 1 – Air Quality Objectives

[1] Part IV of the Environment Act (1995)[1] http://www.legislation.gov.uk/ukpga/1995/25/part/IV
[2] Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007[2]
http://www.official-documents.gov.uk/document/cm71/7169/7169_i.pdf
[3] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09); 2009 Policy Guidance LAQM.PG(09)
http://archive.defra.gov.uk/environment/quality/air/airquality/local/guidance/documents/laqm-policy-guidance-part4.pdf
[4] Air Quality (England) (Amendment) Regulations 2002 (SI3043)
http://www.legislation.gov.uk/uksi/2002/3043/pdfs/uksi_20023043_en.pdf

1.4 Summary of previous Review and Assessments

The Forest of Dean District Council has previously undertaken the following review and assessment reports:

Round 2

1. Updating and Screening Assessment 2003 (USA 2003)[5]
2. Progress Report 2004 (PR 2004)[6]
3. Progress Report 2005 (PR2005)[7]

Round 3

1. Updating and Screening Assessment 2006 (USA 2006)[8]
2. Progress Report 2007 (PR 2007)[9]
3. Detailed Assessment 2009 (DA 2009)[10]

Round 4

1. Updating and Screening Assessment 2009 (USA 2009)[11]
2. Progress Report 2010 (PR 2010)[12]
3. Progress Report 2011 (PR2011)[13]

Conclusions of Updating and Screening Assessment 2009[11]

Three sites in the town of Lydney exceeded the nitrogen dioxide annual mean objective of 40µg/m^3. These sites will be within the proposed Lydney Air Quality Management Area to be declared shortly (end of 2009, beginning of 2010). There are no issues for any other pollutants.

There are no road traffic sources of concern within Forest of Dean District Council's administrative area.

There are no other transport sources of concern within Forest of Dean District Council's administrative area.

There are no industrial sources of concern within Forest of Dean District Council's administrative area.

There are no commercial or domestic sources of concern within Forest of Dean District Council's administrative area.

There are no fugitive or uncontrolled sources of concern within Forest of Dean District Council's administrative area.

At the end of 2009, beginning of 2010, the Lydney AQMA will be declared for exceedences of the nitrogen dioxide annual mean objective. A Further Assessment and Air Quality Action Plan will be developed in 2010/11. In April 2010 a Progress Report which forms part of the Local Air Quality Management (LAQM) will be submitted.

[5] Updating and Screening Assessment 2003 (Report), Forest of Dean District Council
[6] Progress Report 2004, Forest of Dean District Council
[7] Progress Report 2005, Forest of Dean District Council
[8] Updating and Screening Assessment 2006 (Report), Forest of Dean District Council
[9] Progress Report 2007, Forest of Dean District Council
[10] Detailed Assessment 2009 (Report), Forest of Dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Detailed_Assessment_Lydney_2008.pdf
[11] Updating and Screening Assessment 2009 (Report), Forest of Dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Updating_and_Screening_Assessment_2009.pdf
[12] Progress Report 2010, Forest of Dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2010.pdf
[13] Progress Report 2011, Forest of Dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2011.pdf

Conclusions of Progress Report 2010[14]

There are four diffusion tube location sites (Ref. LYD01, LYD03, LYD05 and LYD06) within the Forest of Dean District where the annual mean objective of 40μg/m^3 for NO_2 was exceeded in 2009. These locations are all within the Lydney AQMA, which will be declared in July 2010.

NO_2 levels identified in Newnham–on-Severn suggest that there may be a need for further monitoring in this area. The calculated NO_2 annual mean concentration of 37.9μg/m^3 is within 10% of the annual mean objective. It is considered that two further diffusion tube sites will be added to the monitoring round in 2010.

The Forest of Dean District Council will continue to monitor the results from the three NO_2 diffusion tube locations in Newnham-on-Severn and if deemed necessary, will undertake a Detailed Assessment for NO_2 when required.

The levels of NO_2 at all other locations within the District in 2009 are generally comparable with levels from the previous two years.

It is considered that no other pollutants are at levels, which will exceed the air quality objectives.

There are a number of planning developments that have been approved within the District and they are at various stages in their development. These include:

- Land at St Whites Farm, St Whites Road, Cinderford, Gloucestershire - Erection of 169 dwellings with associated garaging/parking facilities. Construction of new vehicular and pedestrian accesses.
- Land South Of Lakeside Avenue, Tutnalls, Lydney, Gloucestershire – Erection of 200 residential units.
- Land South Of Onslow Road, Newent - Erection of 141 dwellings with associated car parking, private amenity space, public open space, landscaping and two vehicular accesses from Onslow Road.

None of these developments have been identified as likely to have an adverse impact on air quality in their area.

The Forest of Dean District Council monitors sites in Whitecroft and St Briavels for SO_2 and O_3, respectively. The results from the diffusion tube analysis would indicate that the levels are in no way comparable to their air quality objectives and therefore, will not be monitored after July 2010.

Monitoring of Gloucestershire's most recent LTP2 targets shows that, whilst there is still work to be done and difficult issues to tackle, sound progress is being made towards providing a safe and sustainable transport system (Annual Progress Reports to the Gloucestershire Local Transport Plans 2009)[15].

[14] Conclusions of Progress Report 2010, Forest of dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2010.pdf
[15] Annual Progress Reports to the Gloucestershire Local Transport Plans 2009, Gloucestershire County Council

Conclusions of Progress Report 2011[16]

There are five locations where the annual mean objective of 40μg/m^3 for NO_2 was exceeded in 2010 - High Street (Ref. LYD01, LYD03 and LYD04), Hill Street (Ref. LYD06) and Bream Road (Ref. LYD09). These locations are all within the Lydney AQMA, which was declared in July 2010.

NO_2 levels in Newnham–on-Severn identified in Progress Report 2010[17] suggested that there may be a need for further monitoring in this area. In 2010, further diffusion tube sites were established.

The Forest of Dean District Council will continue to monitor the results from the four NO_2 diffusion tube locations in Newnham-on-Severn and if deemed necessary, will undertake a Detailed Assessment for NO_2.

The levels of NO_2 at all other locations within the District in 2010 are generally comparable with levels from the previous two years and there are no significant changes in concentrations.

It is considered that no other pollutants are at levels which will exceed the air quality objectives.

There are a number of planning developments that have been approved within the District and they are at various stages in their development. These include:

- Land at Angel Farm, Newland Street, Coleford, Gloucestershire, GL16 8NA – Erection of 100 residential units.
- Land at St Whites Farm, St Whites Road, Cinderford, Gloucestershire - Erection of 169 dwellings with associated garaging/parking facilities. Construction of new vehicular and pedestrian accesses.
- Land South Of Lakeside Avenue, Tutnalls, Lydney, Gloucestershire – Erection of 200 residential units.
- Land South Of Onslow Road, Newent - Erection of 141 dwellings with associated car parking, private amenity space, public open space, landscaping and two vehicular accesses from Onslow Road.

None of these developments have been identified as likely to have an adverse impact on air quality in their area.

The Local transport Plan 'The Gloucestershire Local Transport Plan 2011-2026' (LTP3)[18], to be published April 2011, addresses national transport priorities at the local level and has aligned these to four main themes, which are:-

- A greener, healthier Gloucestershire;
- Sustainable Economic Growth;
- A safer, securer transport system;
- Good access to services.

An updated draft version of 'A County-wide Air Quality Strategy for Gloucestershire (May 2010)[19] has been produced.

[16] Progress Report 2011, Forest of Dean District Council http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2011.pdf
[17] Progress Report 2010, Forest of dean District Council, http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2010.pdf
[18] The Gloucestershire Local Transport Plan 2011-2026' (LTP3), http://www.gloucestershire.gov.uk/ltp3
[19] A County-wide Air Quality Strategy for Gloucestershire (May 2010)

Lydney Air Quality Management Area

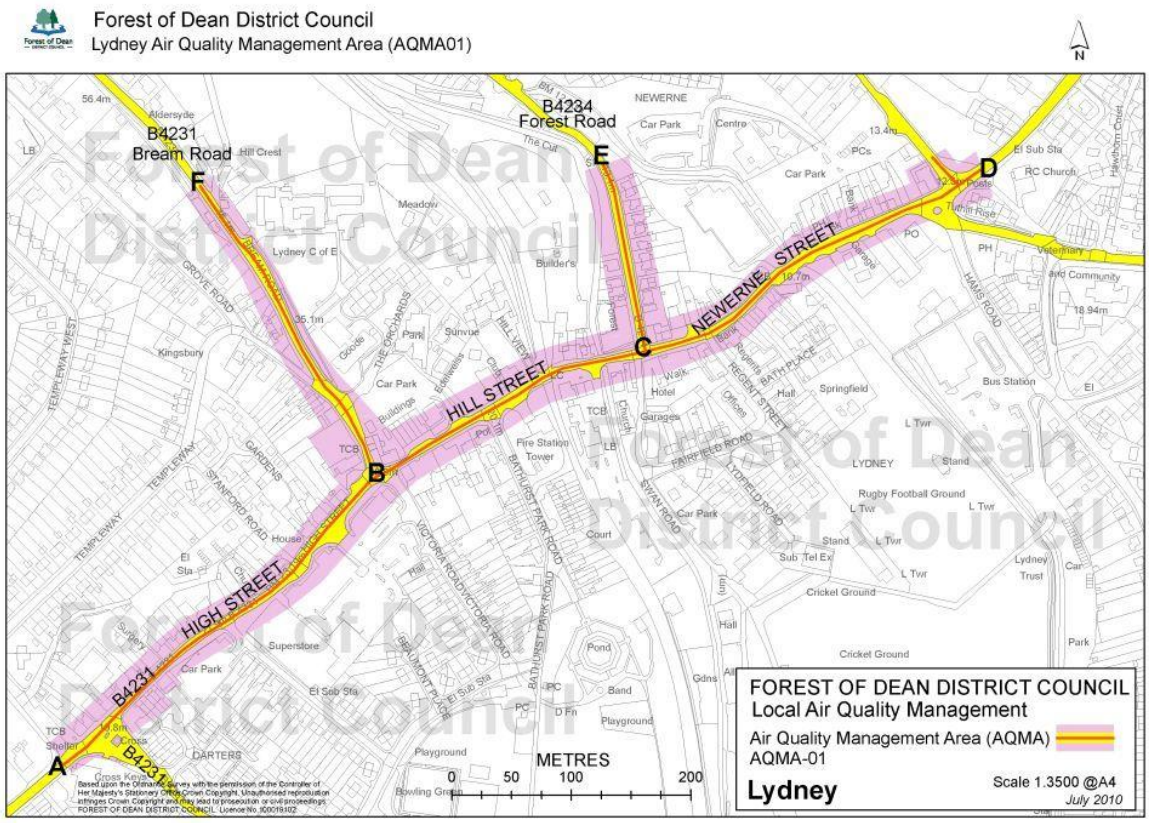


Figure 2 – Lydney Air Quality Management Area boundary[20]

The area shown on the above map (figure 2) outlined is designated as an Air Quality Management Area (the designated area). The designated area in Lydney incorporates roads affronting residential properties in High Street, Hill Street and Newerne Street from Temple Way junction (A) to Albert Street Junction (D); and Bream Road from High Street junction (B) to approximately 75m past the entrance to Lydney C of E Primary School (F); and Forest Road from Hill Street (C) to just past 17 Forest Road (E).

This area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Standards Regulations 2007.

Lydney AQMA was declared July 2010. A Further Assessment was submitted to DEFRA in June 2011.

[20] Detailed Assessment 2009 (Report), Forest of Dean District Council
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Detailed_Assessment_Lydney_2008.pdf

2.0 New Monitoring Data

2.1 Summary of monitoring undertaken

2.1.1 Automatic monitoring sites

Forest of Dean District Council does not undertake any continuous monitoring within its administrative area.

2.1.2 Non-automatic monitoring

The Forest of Dean District Council has been undertaking NO_2 monitoring with diffusion tubes at 25 sites in 2011 (Appendix E - Map of monitoring locations). The diffusion tubes were supplied and analysed by Gradko Environmental Services (QA/QC[21] data can be found in Appendix D). Tubes were prepared using 50µl of 20% Triethanolamine in Water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document[22]. All diffusion tubes are stored, handled and exposed in accordance with the relevant guidance. All diffusion tubes have a monthly exposure period.

Where necessary diffusion tubes with less that 75% (nine months) data has been annualised using the methodology outlined in Box 3.2 of the Technical Guidance (LAQM.TG(09)[23] . There have been no sites with less than 9 months of data capture; therefore no sites have been annualised.

The Forest of Dean District Council does not undertake any co-location studies; so bias adjustment factors were obtained from the National Bias Adjustment Factor Spreadsheet (Version 03/12)[24] (Appendix D).

- 2009 – 0.79 for 4 studies
- 2010 – 0.85 for 7 studies
- 2011 – 0.89 for 26 studies

Table 2 shows non-automatic (diffusion tube) monitoring sites for 2011.

[21] Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 105-113, http://laqm.defra.gov.uk/documents/WASP-NO2-Scheme-for-Rounds-105-113-(April-2009---June-2011).pdf
[22] Investigation of the Effects of Harmonising Diffusion Tube Methodology, 2011, Report for Defra and the Devolved Administrations, AEA
[23] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09); http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf
[24] National Bias Adjustment Factors, Speadsheet No. v.3/12, http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Site Code	Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst case Location
CIN01	Cinderford – 9 St Whites Terrace	Roadside	365458	212855	NO_2	No	Y (<1m)	4m	Yes
CIN02	Cinderford – 6 Berisford Court	Urban Centre	365814	214014	NO_2	No	Y (2m)	1m	Yes
CIN03	Cinderford – 167 High St	Roadside	365291	214732	NO_2	No	Y (2<1m)	1m	Yes
COL01	Coleford – 5 Gloucester Road	Suburban	357629	210787	NO_2	No	Y (<1m)	2m	Yes
HUN02	Huntley - The Red Lion junction	Roadside	372198	219359	NO_2	No	N (<1m)	1m	Yes
LYD01	Lydney – 57 High St	Roadside	363142	203074	NO_2	Yes	Y (<1m)	2m	Yes
LYD02	Lydney – Bridge House, Newerne Street	Urban Centre	363523	203261	NO_2	Yes	Y (<1m)	4m	Yes
LYD03	Lydney – 29 High St	Suburban	363025	202964	NO_2	Yes	Y (<1m)	1m	Yes
LYD04	Lydney – 13 High St	Suburban	362994	202939	NO_2	Yes	Y (<1m)	1m	Yes
LYD05	Lydney - Regents Arcade	Urban Centre	363443	203206	NO_2	Yes	Y (1m)	1m	Yes
LYD06	Lydney - Art/picture gallery (Triplicate 1of3)	Suburban	363189	203110	NO_2	Yes	N (1m)	1m	Yes
LYD08	Lydney – Mid Bream Road	Roadside	363107	203217	NO_2	Yes	Y (<1m)	2m	Yes
LYD09	Lydney – Top Bream Road	Kerbside	363046	203322	NO_2	Yes	Y (<1m)	<1m	Yes
LYD10	Lydney – Old Chip Shop, Forest Road	Roadside	363107	203217	NO_2	Yes	Y (<1m)	2m	Yes
LYD11	Lydney – 15 Forest Road	Kerbside	363046	203322	NO_2	Yes	Y (<1m)	<1m	Yes
LYD12	Lydney – 61 Newerne Street	Urban Centre	363607	203322	NO_2	Yes	Y (<1m)	2m	Yes
LYD13	Lydney – Art/picture gallery (Triplicate 2of3)	Suburban	363189	203110	NO_2	Yes	N (1m)	1m	Yes
LYD14	Lydney – Art/picture gallery (Triplicate 3of3)	Suburban	363189	203110	NO_2	Yes	N (1m)	1m	Yes
MIT01	Mitcheldean – 25 The Merrin	Roadside	366483	218277	NO_2	No	Y (2m)	1m	Yes
NAI01	Nailbridge - Crossroads	Roadside	364555	216226	NO_2	No	N (<1m)	1m	Yes
NEW01	Newent – opposite Clifton House, High Street	Suburban	372058	226159	NO_2	No	N (1m)	1m	Yes
NEW02	Newent – 7 Church Street	Urban Centre	372288	225852	NO_2	No	Y (<1m)	2m	Yes
NOS02	Newnham-on-Severn - High St (Galen House)	Roadside	369038	211590	NO_2	No	Y (<1m)	2m	Yes
NOS03	Newnham-on-Severn - High St (Stirling House)	Roadside	369135	211870	NO_2	No	Y (<1m)	3m	Yes
NOS04	Newnham-on-Severn - High St (6 Mornington Terrace)	Roadside	369200	211929	NO_2	No	Y (<1m)	3m	Yes
NOS05	Newnham-on-Severn - High St (Upper Merton House)	Roadside	369040	211679	NO_2	No	Y (<1m)	12m	Yes
WOS01	Westbury-on-Severn - High St - bus stop timetable	Roadside	371649	214054	NO_2	No	N (5m)	2m	Yes

Table 2 – Non-automatic (diffusion tube) monitoring sites

2.2 Comparison of monitoring results with AQ objectives

2.2.1 Nitrogen Dioxide

Table 3 indicates three locations where the annual mean objective of 40μg/m^3 for NO_2 was exceeded in 2011 (highlighted) - 57 High Street, Lydney (LYD01); Mid Bream Road, Lydney (LYD09); Art/Picture Gallery, Hill Street, Lydney (LYD06). These locations are all within the Lydney Air Quality Management Area which was declared in July 2010. All other monitoring locations were below the annual mean objectives and none of the monitoring sites are close to an annual mean of 60μg/m^3 suggesting that there are no concerns for the 1-hour objective. Forest of Dean District Council will not be undertaking a Detailed Assessment for NO_2 in 2012.

Site Code	Monitoring Locations	Within AQMA	2011 Data Capture %	Data Annualised/ Data distant corrected	2011 NO_2 Conc. (μg/m^3) Adjusted for bias = x.89
CIN01	Cinderford – 9 St Whites Terrace	No	100	No/No	22.8
CIN02	Cinderford – 6 Berisford Court	No	100	No/No	22.5
CIN03	Cinderford – 167 High St	No	92	No/No	21.7
COL01	Coleford – 5 Gloucester Road	No	100	No/No	35.4
HUN02	Huntley - The Red Lion junction	No	100	No/No	20.2
LYD01	Lydney – 57 High St	Yes	100	No/No	**40.8**††
LYD02	Lydney – Bridge House, Newerne Street	Yes	92	No/No	22.8
LYD03	Lydney – 29 High St	Yes	92	No/No	39.2†
LYD04	Lydney – 13 High St	Yes	83	No/No	34.2
LYD05	Lydney - Regents Arcade	Yes	100	No/No	38.2†
LYD06	Lydney - Art/picture gallery (Triplicate 1of3)	Yes	100	No/No	**41.5**††
LYD08	Lydney – Mid Bream Road	Yes	100	No/No	39.6
LYD09	Lydney – Top Bream Road	Yes	100	No/No	**44.6**††
LYD10	Lydney – Old Chip Shop, Forest Road	Yes	100	No/No	26.3
LYD11	Lydney – 15 Forest Road	Yes	100	No/No	16.5
LYD12	Lydney – 61 Newerne Street	Yes	100	No/No	32.0
LYD13	Lydney – Art/picture gallery (Triplicate 2of3)	Yes	100	No/No	**40.1**††
LYD14	Lydney – Art/picture gallery (Triplicate 3of3)	Yes	100	No/No	39.0†
MIT01	Mitcheldean – 25 The Merrin	No	100	No/No	26.2
NAI01	Nailbridge - Crossroads	No	92	No/No	35.7
NEW01	Newent – opposite Clifton House, High Street	No	100	No/No	22.3
NEW02	Newent – 7 Church Street	No	100	No/No	26.2
NOS02	Newnham-on-Severn - High St (Galen House)	No	100	No/No	32.2
NOS03	Newnham-on-Severn - High St (Stirling House)	No	100	No/No	32.1
NOS04	Newnham-on-Severn - High St (6 Mornington Terrace)	No	100	No/No	30.4
NOS05	Newnham-on-Severn - High St (Upper Merton House)	No	100	No/No	26.1
WOS01	Westbury-on-Severn - High St - bus stop timetable	No	100	No/No	23.6

Table 3 – Nitrogen dioxide concentration results

††Concentrations exceeding Air Quality Objectives (>40μg/m^3)
†Concentrations within 10% of Air Quality Objectives (40μg/m^3)

Table 4 shows results of nitrogen dioxide diffusion tube concentrations over a four year period between 2008 and 2011. Results do not indicate any significant trends. A larger dataset would be required in order to make an accurate assessment of trend significance.

Site Code	Monitoring Locations	Site Type	Within AQMA	Annual mean concentrations (μg/m^3) Bias Adjusted*			
				2008 (0.87)*	2009 (0.84)*	2010 (0.85)*	2011 (0.89)*
CIN01	Cinderford – 9 St Whites Terrace	Roadside	No	21.5	22.7	27.8	22.8
CIN02	Cinderford – 6 Berisford Court	Urban	No	22.1	22.1	24.4	22.5
CIN03	Cinderford – 167 High St	Roadside	No	-	22.0	26.5	21.7
COL01	Coleford – 5 Gloucester Road	Suburban	No	-	30.3	36.5	35.4
HUN02	Huntley - The Red Lion junction	Roadside	No	-	24.1	25.6	20.2
LYD01	Lydney – 57 High St	Roadside	Yes	**-**	**47.1**	**46.4**	**40.8**
LYD02	Lydney – Bridge House, Newerne Street	Urban	Yes	-	-	23.9	22.8
LYD03	Lydney – 29 High St	Suburban	Yes	**46.8**	**42.4**	**46.9**	39.2
LYD04	Lydney – 13 High St	Suburban	Yes	**-**	38.0	**40.7**	34.2
LYD05	Lydney - Regents Arcade	Urban	Yes	39.1	**40.2**	39.8	38.2
LYD06	Lydney - Art/picture gallery (Triplicate 1of3)	Suburban	Yes	**43.1**	**43.3**	**46.6**	**41.5**
LYD08	Lydney – Mid Bream Road	Roadside	Yes	-	-	39.7	39.6
LYD09	Lydney – Top Bream Road	Kerbside	Yes	**-**	-	**46.0**	**44.6**
LYD10	Lydney – Old Chip Shop, Forest Road	Roadside	Yes	**-**	-	**-**	26.3
LYD11	Lydney – 15 Forest Road	Kerbside	Yes	-	-	-	16.5
LYD12	Lydney – 61 Newerne Street	Urban	Yes	**-**	-	**-**	32.0
LYD13	Lydney – Art/picture gallery (Triplicate 2of3)	Suburban	Yes	-	-	-	**40.1**
LYD14	Lydney – Art/picture gallery (Triplicate 3of3)	Suburban	Yes	-	-	-	39.0
MIT01	Mitcheldean – 25 The Merrin	Roadside	No	-	28.5	31.5	26.2
NAI01	Nailbridge - Crossroads	Roadside	No	33.5	30.2	35.0	35.7
NEW01	Newent – opposite Clifton House, High Street	Suburban	No	-	24.7	27.4	22.3
NEW02	Newent – 7 Church Street	Urban	No	-	26.6	28.4	26.2
NOS02	Newnham-on-Severn - High St (Galen House)	Roadside	No	-	-	35.7	32.2
NOS03	Newnham-on-Severn - High St (Stirling House)	Roadside	No	-	-	30.0	32.1
NOS04	Newnham-on-Severn - High St (6 Mornington Terrace)	Roadside	No	-	-	-	30.4
NOS05	Newnham-on-Severn - High St (Upper Merton House)	Roadside	No	-	-	-	26.1
WOS01	Westbury-on-Severn - High St - bus stop timetable	Roadside	No	26.7	25.8	27.0	23.6

Table 4 – Nitrogen dioxide concentration results 2008-2011

2.2.2 PM_{10}

Forest of Dean District Council has not undertaken any PM_{10} monitoring within its administrative area since the last Updating and Screening Assessment in 2009.

2.2.3 Sulphur Dioxide

The Forest of Dean District Council has not undertaken any sulphur dioxide monitoring within its administrative area since the last Updating and Screening Assessment in 2009. The usefulness of the data obtained is negligible as the results are in no way comparable to the sulphur dioxide air quality objective.

2.2.4 Benzene

Forest of Dean District Council has not undertaken any benzene monitoring within its administrative area since the last Updating and Screening Assessment in 2009.

2.2.5 Other pollutants monitored

The Forest of Dean District Council has not undertaken any other pollutant monitoring within its administrative area since the last Updating and Screening Assessment in 2009. The usefulness of the data obtained is negligible as the results are in no way comparable to the other pollutants air quality objective.

Carbon Monoxide - Forest of Dean District Council has not undertaken any carbon monoxide monitoring within their administrative area since the last Updating and Screening Assessment in 2009.

Lead - Forest of Dean District Council has not undertaken any lead monitoring within its administrative area since the last Updating and Screening Assessment in 2009.

1,3-Butadiene - Forest of Dean District Council has not undertaken any 1,3-Butadiene monitoring within its administrative area since the last Updating and Screening Assessment in 2009.

Forest of Dean District Council has examined the concentrations from all monitoring locations. Concentrations of NO_2 outside the proposed Lydney AQMA are all below the objective at relevant locations, therefore there is no need to proceed to a Detailed Assessment in 2012/2013.

3.0 Road Traffic Sources

Emissions from road traffic are the most significant source of influence on air quality within Forest of Dean District. Previous reviews have established that levels of NO_2 may be of concern and therefore nitrogen dioxide diffusion tube monitoring takes place at 25 sites throughout the district. There are no roads within the district with a significant percentage of bus or HGVs. There are seven specific areas of concern, assessments of which follow Box 5.3 LAQM.TG(09)[25].

3.1 Narrow congested streets with residential properties close to the kerb

Concentrations of NO_2 are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion - Section A.1 of Box 5.3 of LAQM TG(09)[24]

No other areas that meet the criteria, however NO_2 monitoring network addresses any other areas of concern.

Forest of Dean District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy streets where people may spend 1-hour or more close to traffic

There are some street locations where individuals may regularly spend 1-hour or more, for example, streets with many shops and streets with outdoor cafes and bars - Section A.2 of Box 5.3 of TG(09) [24]. Having reviewed potential locations within Forest of Dean Council's administrative area, no busy streets of concern have been identified since the last round of Updating and Screening Assessment in 2009 where people may spend 1-hour or more close to traffic.

Forest of Dean Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

[24,25] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09); http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

3.3 Roads with a high flow of buses and/or HGVs

Levels of NO_2 and PM_{10} need to be considered where there is an unusually high proportion of buses and/or HGVs - Section A.3 of Box 5.3 of LAQM TG(09)[26]. Having reviewed potential locations within Forest of Dean Council's administrative area, no locations of concern have been identified since the last round of Updating and Screening Assessment in 2009.

Forest of Dean Council confirms that there are no new/newly-identified roads with high flows of buses/HGVs.

3.4 Junctions and busy roads

Levels of NO_2 and PM_{10} need to be considered at busy junctions due to the combined impact of traffic emissions from more than one road and the resultant higher emissions due to stop/start driving. - Section A.4 of Box 5.3 of TG(09)[26]. Having reviewed potential locations within Forest of Dean District Council's administrative area, no busy junctions of concern have been identified since the last round of Updating and Screening Assessment in 2009.

Forest of Dean Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New roads constructed or proposed since the last round of review and assessment

Levels of NO_2 and PM_{10} need to be considered for newly constructed or proposed roads -Section A.5 of Box 5.3 of LAQM TG(09)[26]. Having reviewed potential locations within Forest of Dean District Council's administrative area, no new roads constructed or proposed since the last round of Updating and Screening Assessment in 2009.

Forest of Dean District Council confirms that there are no new/proposed roads.

[26] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09)
http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

3.6 All roads with significantly changed traffic flows

Levels of NO_2 and PM_{10} need to be considered for any roads where there has been a "large" increase in traffic flow. An increase of more than 25% is considered "large" - Section A.6 of Box 5.3 of LAQM TG(09)[27]. Having reviewed traffic flow data within Forest of Dean District Council's administrative area, no roads with a large increase in traffic flow have been identified since the last round of Updating and Screening Assessment in 2009.

Forest of Dean District Council confirms that there are no new/newly-identified roads with significantly changed traffic flows.

3.7 Bus and coach stations

Levels of NO_2, both the annual mean and the 1-hour objective, must be considered for bus stations or sections of bus stations that are not enclosed, and where there is relevant exposure, including at nearby residential properties. - Section A.7 of Box 5.3 of LAQM TG(09)[27]. Forest of Dean District Council has no bus or coach station that meets the assessment criteria.

Forest of Dean District Council confirms that there are no relevant bus stations in the Local Authority area.

[27] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09) http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

4.0 Other Transport Sources

4.1 Airports

Levels of NO_2 from airports must be considered as aircraft are potentially significant sources of Nitrogen Oxides (NO_X) emissions, especially during takeoff - Section B.1 of Box 5.4 of LAQM TG(09)[28]. Forest of Dean District Council has no airports within their administrative area.

Forest of Dean District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (diesel and steam trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of SO_2 close to the point of emission. Recent evidence suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high NO_2 concentrations close to the track. These two potentially significant sources are considered separately below - Section B.2 of Box 5.4 of LAQM TG(09)[28].

4.2.1 Stationary trains

Measurements were made on the Council's GIS mapping system to establish that there are no relevant exposure sites within 15m of the track at Lydney Junction station. Trains are also not regularly stationary for 15 minutes or more. There are no relevant exposure sites within 15m of the track of the Dean Forest Railway, which is a privately owned railway operating steam and diesel locomotives. The railway operates from Lydney to Parkend.

Forest of Dean District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

[28] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09)
http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

4.2.2 Moving trains

National Rail's Timetable Map 2011[29] shows that none of the rail lines with a heavy traffic of diesel passenger trains, as listed in Table 1 of the FAQ Guidance on Assessing Emissions from Railway Traffic[30] pass through its district. Nor is Forest of Dean District Council one of the authorities listed in Table 2 of this document.

Forest of Dean District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (shipping)

Large ships generally burn oils with a high Sulphur content in their main engines (bunker oils). If there are sufficient movements in a port they can give rise to a sufficient number of 15-minute periods above 266 μg/m^3, as to exceed the 15-minute objective for SO_2. Forest of Dean District Council has no commercial ports within their administrative area.

Forest of Dean District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

[29] National Rail's Timetable Map 2011;
http://www.nationalrail.co.uk/system/galleries/download/print_maps/Network_Rail_geographic_map_2011.pdf
[30] Guidance on Assessing Emissions from Railway Locomotives, 2009;
http://laqm.defra.gov.uk/documents/Railway_Locomotives_100209.pdf

5.0 Industrial Sources

5.1 New or proposed industrial installations

Although Industrial sources are unlikely to make a significant local contribution to annual mean concentrations they may be significant in terms of the short-term objectives, especially if there is an impact from several sources. All of the regulated pollutants need to be considered, although those most at risk of requiring further work are SO_2, NO_2, PM_{10} and Benzene – Section C.1 of Box 5.5 of LAQM TG(09)[31].

5.1.1 New/proposed installations for which an air quality assessment has been carried out

There are no new or proposed installations for which an air quality assessment was, or would be required.

Forest of Dean District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing installations where emissions have increased substantially or new relevant exposure has been introduced

There are no existing installations with substantially increased emissions and none with any new relevant exposure introduced.

Forest of Dean District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or significantly changed installations with no previous air quality assessment

There are no new or significantly changed installations with no previous air quality assessments.

Forest of Dean District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

[31] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09) http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

5.2 Major fuel (petrol) storage depots

Major petrol fuel depots could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads – Section C.2 of Box 5.5 of LAQM TG(09)[32]. There are no major fuel (petrol) storage depots within the Local Authority area.

Forest of Dean District Council confirms there are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol stations

Petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads - Section C.3 of Box 5.5 of LAQM TG(09)[32]. Forest of Dean District Council has considered busy roads as defined and all petrol stations located on them. None have relevant exposure within 10 metres of the pumps.

Forest of Dean District Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry farms

There is the potential for localised exceedences of the PM_{10} objectives associated with emissions from certain large poultry farms - Section C.4 of Box 5.5 of LAQM TG(09)[32]. There is one such farm which is permitted by the Environment Agency: Stone End Farm, Churcham, 900,000 Chicken broilers reared within - mechanically side ventilated housing. This is above the criteria of 400,000 birds, however there are no relevant exposures within 100m of the units – see Appendix A.

Forest of Dean District Council confirms that there are no poultry farms meeting the specified criteria**.**

[32] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09) http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

6.0 Commercial and Domestic Sources

6.1 Biomass combustion – individual installations

Biomass burning can lead to an increase in PM_{10} emissions, due to the process of combustion – aerosol formation from volatile materials distilled from the wood is also an issue. Compared to conventional gas-burning, biomass burning can also result in an increase in the overall NO_X emissions due to the fuel-derived portion that is not present in gas combustion - Section D.1a of Box 5.8 LAQM.TG(09)[33]. Forest of Dean District Council received several enquiries during 2011 regarding the necessity for consideration of biomass boilers under the Clean Air Act 1993. All such boilers were well below 50kW.

Forest of Dean District Council confirms that there are no biomass combustion plants in the Local Authority area.

6.2 Biomass combustion – combined impacts

There is the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM_{10} concentrations, particularly in areas where PM_{10} concentrations are close to or above the objectives. The impact of domestic biomass combustion in most areas is thought to be small at the time of writing, but could become more important in future - Section D.1b of Box 5.8 LAQM.TG(09)[33]. There are only a few isolated biomass boilers within Forest of Dean District Council. There are no areas that would meet the criteria as set out in the Technical Guidance LAQM.TG(09)[32]. Technical Guidance: Screening assessment for biomass boilers[34] was also consulted.

Forest of Dean District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic solid-fuel burning

There is the potential in areas where significant coal burning takes place for exceedences of the objectives for SO_2 to occur - Section D.2 of chapter 5 LAQMTG(09)[33]. Having reviewed potential locations within Forest of Dean Council's administrative area, no areas of significant coal burning have been identified since the last round of Updating and Screening Assessment in 2009.

Forest of Dean District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

[33] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09); http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

[34] Technical Guidance: Screening assessment for biomass boilers Report to the Department of Environment, Food and Rural Affairs and the Devolved Administrations, ED48673005/R2655,Issue Number 1, July 2008; http://uk-air.defra.gov.uk/reports/cat18/0806261519_methods.pdf

7.0 Fugitive or Uncontrolled Sources

Potentially elevated levels of PM_{10} can arise from the fugitive emissions from a range of sources including quarrying, stone cutting, gravel extraction and wind-blown dust from stockpiles and dusty surfaces - Section E of Box 5.10 LAQM TG(09)[35].

Having reviewed potential locations within Forest of Dean District Council's administrative area, no locations of concern have been identified since the last round of Updating and Screening Assessment in 2009.

Forest of Dean District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

[35] Local Air quality Management, 2009 Technical Guidance LAQM.TG(09); http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

8.0 Conclusions and Proposed Actions

8.1 Conclusions from new monitoring data

Monitoring has not identified any exceedences at relevant locations outside Lydney Air Quality Management Area (AQMA).

Three sites in the town of Lydney exceeded the nitrogen dioxide annual mean objective of 40µg/m^3. These sites are within the Lydney Air Quality Management Area which was declared in July 2010. There are no issues for any other pollutants.

No Detailed assessment is required.

8.2 Conclusions from assessment of sources

There are no road traffic sources of concern within Forest of Dean District Council's administrative area.

There are no other transport sources of concern within Forest of Dean District Council's administrative area.

There are no industrial sources of concern within Forest of Dean District Council's administrative area.

There are no commercial or domestic sources of concern within Forest of Dean District Council's administrative area.

There are no fugitive or uncontrolled sources of concern within Forest of Dean District Council's administrative area.

No new or significantly changed sources have been identified within the district.

8.3 Proposed actions

The Updating and Screening Assessment has not identified the need for a Detailed Assessment within the district.

Lydney Air Quality Management Area (AQMA) was declared in July 2010, with a subsequent Further Assessment[36] submitted to DEFRA in June 2011. Lydney Air Quality Draft Action Plan will be submitted to DEFRA at the beginning of 2013. Lydney Air Quality Action Plan Progress Reports will be submitted annually as from 2014 as part of the annual review and assessment reports.

In April 2013 a Progress Report which forms part of the Local Air Quality Management (LAQM) will be submitted to DEFRA.

Monitoring programme - existing nitrogen dioxide diffusion tube monitoring sites is reviewed on a continuous basis, and if considered necessary, changes are undertaken, either by relocating existing diffusion tube site, or adding a monitoring site.

[36] Lydney Air Quality Management Area Further Assessment, June 2011
http://www.fdean.gov.uk/media/Assets/EP-Licensing/documents/FoD_FA_2011.pdf

9.0 Bibliography

References utilised in the generation of Updating and Screening Assessment, 2012

Part IV of the Environment Act (1995)[1]
http://www.legislation.gov.uk/ukpga/1995/25/part/IV

Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 [2]
http://www.official-documents.gov.uk/document/cm71/7169/7169_i.pdf

Local Air quality Management, 2009 Technical Guidance LAQM.TG(09)[3, 23,25, 26, 28, 31, 32, 33, 34]
http://www.defra.gov.uk/publications/files/pb13081-tech-guidance-laqm-tg-09-090218.pdf

Air Quality (England) (Amendment) Regulations 2002 (SI3043)[4]
http://www.legislation.gov.uk/uksi/2002/3043/pdfs/uksi_20023043_en.pdf

Updating and Screening Assessment 2003 (Report), Forest of Dean District Council[5]

Progress Report 2004, Forest of Dean District Council[6]

Progress Report 2005, Forest of Dean District Council [7]

Updating and Screening Assessment 2006 (Report), Forest of Dean District Council[8]

Progress Report 2007, Forest of Dean District Council, [footnote[9]]

Detailed Assessment 2009 (Report), Forest of Dean District Council[10, 20]
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Detailed_Assessment_Lydney_2008.pdf

Updating and Screening Assessment 2009 (Report), Forest of Dean District Council[11]
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/ForestofDeanAirQualityUpdatingandScreeningAssessment2009.pdf

Progress Report 2010, Forest of Dean District Council[12,17]
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2010.pdf

Progress Report 2011, Forest of Dean District Council[13,16]
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2011.pdf

Conclusions of Progress Report 2010, Forest of Dean District Council[14]
http://www.fdean.gov.uk/media/Assets/PestControl-FoodSafety/documents/Pollution/Forest_of_Dean_Air_Quality_Progress_Report_2010.pdf

Annual Progress Reports to the Gloucestershire Local Transport Plans 2009, Gloucestershire County Council[15]

The Gloucestershire Local Transport Plan 2011-2026' (LTP3)[18]
http://www.gloucestershire.gov.uk/ltp3

A County-wide Air Quality Strategy for Gloucestershire (May 2010)[19]

Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 105-113[21,40]
http://laqm.defra.gov.uk/documents/WASP-NO2-Scheme-for-Rounds-105-113-(April-2009---June-2011).pdf

Investigation of the Effects of Harmonising Diffusion Tube Methodology, 2011, Report for Defra and the Devolved Administrations, AEA[22,37]
http://uk-air.defra.gov.uk/reports/cat05/1108030957_Harmonisation_Follow-Up_Report_issue_2.pdf

National Bias Adjustment Factors, Speadsheet No. v.3/12[24]
http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

National Rail's Timetable Map 2011[29]
http://www.nationalrail.co.uk/system/galleries/download/print_maps/Network_Rail_geographic_map_2011.pdf

Guidance on Assessing Emissions from Railway Locomotives, 2009[30]
http://laqm.defra.gov.uk/documents/Railway_Locomotives_100209.pdf

Technical Guidance: Screening assessment for biomass boilers Report to the Department of Environment, Food and Rural Affairs and the Devolved Administrations, ED48673005/R2655,Issue Number 1, July 2008[34]
http://uk-air.defra.gov.uk/reports/cat18/0806261519_methods.pdf

Lydney Air Quality Management Area Further Assessment, June 2011[35]
http://www.fdean.gov.uk/media/Assets/EP-Licensing/documents/FoD_FA_2011.pdf

Lydney Air Quality Management Area Further Assessment, June 2011[36]
http://www.fdean.gov.uk/media/Assets/EP-Licensing/documents/FoD_FA_2011.pdf

Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 108-115[38,39]
http://laqm.defra.gov.uk/documents/WASP-NO2-Scheme-for-Rounds-105-113-(April-2009---June-2011).pdf

Gloucestershire Traffic Flow Diagrams 2010, Transport Monitoring Team, Gloucestershire Highways, Gloucestershire County Council[41,42]

10.0 Appendix A: List of Part A1 Permitted Installations

Environmental Agency permitted installations involving Part A1 prescribed activities regulated under Environmental Permitting (England & Wales) Regulations 2007

Permit	Company Name/Address	Description
XP3039GG	BASF Metals Recycling Ltd Valley Road Cinderford Gloucestershire GL14 2PB	S4.2(A)(1)(b) Unless falling within another Section of this Schedule, any manufacturing activity which is likely to result in the release into the air of any hydrogen halide (other than the manufacture of glass or the coating, plating or surface treatment of metal) or which is likely to result in the release into the air or water of any halogen or any of the compounds mentioned in paragraph (a)(vi) (other than the treatment of water). S2.2A(1)(e) Recovering any of the following elements if the activity may result in their release into the air: gallium; indium; palladium; tellurium; thallium and S5.1(A)(1)(e) Unless carried out as part of any other activity in this Part, the incineration of non-hazardous waste in a plant which is not an incineration plant or a co-incineration plant but which has a capacity of 1 tonne or more per hour.
ZP3036LK	Freemans of Newent Ltd Town Farm Gloucester Road Newent Gloucestershire GL18 1HP	S6.8 A (1) (b) Slaughtering animals at plant with a carcass production capacity of more than 50 tonnes per day and S5.3 A(1) (c) (ii) Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by - physico-chemical treatment, not being treatment specified in any paragraph other than paragraph D9 in Annex IIA to Council Directive 75/442/EEC, which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 in that Annex (for example, evaporation, drying, calcination, etc) (D9).
BV1305IV	Surotech International Ltd Hafner House 11 Newent Business Park Gloucester Road Newent Gloucestershire GL18 1DZ	S4.1 A(1) (a) (iii) Producing organic chemicals such as organic compounds containing sulphur, such as sulphides, mercaptans, sulphonic acids, sulphonates, sulphates and sulphones and sulphur heterocyclics and (viii) plastic material, such as polymers, synthetic fibres and cellulose based fibres. S4.2 A(1) (a) (iv) Producing inorganic chemicals such as (iv) salts, such as ammonia chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate, cupric acetate, ammonia phosphomolybdate and (c) Unless falling within any other Section of the Schedule any manufacturing activity involving the use of hydrogen cyanide or hydrogen sulphide.
BP3236LC	Glatfelter Lydney Ltd, Lydney Paper Mill, Church Road, Lydney, Gloucestershire GL15 5EJ	6.1 A(1) (a) Producing, in industrial plant pulp from timber or other fibrous materials and S6.1 A(1)(b) producing in industrial plant paper and board where the plant has a production capacity of more than 20 tonnes per day.
AP3731SA	Pressroom Products Ltd Crucible Close Mushet Industrial Park Coleford, Gloucestershire GL16 8RE	Section 5.4 Part A(1)(a) Recovery of waste; by distillation of oil/organic solvent.
BK9326IX	SmithKline Beecham Plc Royal Forest Factory Coleford Gloucestershire GL16 8JB	Section 6.8 A(1)(d)(ii) – Treating and processing materials intended for the production of food products from vegetable raw materials at plant with a finished production capacity of more than 300 tonnes per day. Section 5.3 A(1)(c)(ii) - Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by - physico-chemical treatment, not being treatment specified in any paragraph other than paragraph D9 in Annex IIA to Council Directive 75/442/EEC, which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 in that Annex (for example, evaporation, drying, calcination, etc.) (D9).

Poultry Farms

Premises	Type of Farm	No. of Birds	Type of ventilation
Ploddy House Poultry Unit, Newent, Gloucestershire	Turkey broilers	52,000	Side vents
Cherry Rock Poultry Unit, Hartpury, Gloucestershire	Chicken broilers	270,000	Side vents
Woolaston Court Poultry Unit, Woolaston, Gloucestershire	Pullets	92,000	Roof vents
Cottrells Barn Poultry Unit, Mitcheldean, Gloucestershire	Pullets	64,000	Half roof & half side vents
Treetops Poultry Unit, Bream, Gloucestershire	Chicken broilers	318,000	Side vents
St Briavels & Severn View, St Briavels, Gloucestershire	Chicken layers	100,000 – caged	Side vents
		13,000 free range	Side vents
Roads Farm, St Briavels, Gloucestershire	Chicken layers	146,000 - caged	Side vents
Hill Farm, Lydney, Gloucestershire	Chicken broilers	110,000	Side vents
Stone End Farm, Churcham, Gloucestershire	Chicken broilers	900,000	Side vents

11.0 Appendix B: List of Part A2 Permitted Installations

Local Authority Pollution Prevention and Control (LAPPC) permitted installations involving Part 2A prescribed activities regulated under the Environmental Permitting (England & Wales) Regulations 2007

Permit	Company Name/Address	Description
PPC(A2)3	Broadmoor Brickworks, Whimsey I.E. Cinderford, Gloucestershire	Manufacture of Heavy Clay Goods (Bricks)
PPC(A2)4	Coleford Brick & Tile, Royal Forest of Dean Brickworks, Cinderford, Gloucestershire	Manufacture of Heavy Clay Goods (Bricks)
PPC(A2)19/92	Federal Mogul Camshafts, Tutnalls, Lydney, Gloucestershire	Ferrous Metal Foundry

12.0 Appendix C: List of Part B Permitted Installations

Local Authority Pollution Prevention and Control (LAPPC) permitted installations involving Part B prescribed activities regulated under the Environmental Permitting (England & Wales) Regulations 2007.

Permit No.	Company Name & Address	Description
PVR/08	Abbotswood Garage, Cinderford, 133, Lower High St, Cinderford, Gloucestershire GL14 2TD	PVR
PVR/04	Alvington Service Station, Main Road, Lydney, Gloucestershire GL15 6BE	PVR
PPC/54	Bardon Concrete, Clearwell Quarries Ltd, Stowe, St. Briavels, Lydney, Gloucestershire, GL15 6QW	Bulk Use of Cement
PPC/67	Beeches Garage, Edge End Road, Mile End, Coleford, Gloucestershire, GL16 7DA	Waste Oil Burner
PPC/32	Berwin Industrial Polymers Ltd, Church Road, Lydney, Gloucestershire. GL15 5FG	Rubber Processes
PPC/43	Bituchem Building Products Ltd, Laymore Road, Forest Vale Industrial Estate. Cinderford, Gloucestershire. GL14 2YH	Roadstone Coating & Bitumen/Tar Processes
PPC/20	Bituchem Asphalt Ltd, Laymore Road, Forest Vale Industrial Estate, Cinderford, Gloucestershire GL14 2YH	Roadstone Coating & Bitumen/Tar Processes
PVR/05	Brierley Service Station, High Street, Brierley, Gloucestershire. GL17 9DL	PVR
PPC(A2)03	Broadmoor Brickworks Ltd, Whimsey Industrial Estate. Cinderford, Gloucestershire. GL14 3JA	Manufacture of Heavy Clay Goods (Bricks)
PPC/51	Buckland Agricultural, Court Farm Workshops Huntley Road, Tibberton, Gloucestershire. GL19 3AF	Waste Oil Burner
PPC/56	C.G. Perrett Plant and Construction, The Leechpool, Bream Road, Lydney, Gloucestershire. GL15 5JW	Mobile Crushing and Screening Plant
PPC/62	Cannop Foundry Ltd, Valley Road, Cinderford, Gloucestershire. GL14 2NX	Ferrous & Non Ferrous Metal Foundry
PPC/01	Cavendish Dry Cleaners Ltd, 4 Cavendish Buildings, Hill Street, Lydney, Gloucestershire. GL15 5HD	Dry Cleaning
PVR/17	Chaxhill Service Station, SRN Services UK Ltd., Chaxhill Services, Westbury-on-Severn, Gloucestershire. GL14 1QW	PVR
PPC/16	Clearwell Quarries Ltd, Stowe Green, St. Briavels, Lydney, Gloucestershire. GL15 6QW	Quarry Processes/ Roadstone Coating
PPC(A2)04	Coleford Brick & Tile Ltd, Royal Forest of Dean Brickworks, Cinderford, Gloucestershire. GL14 3JJ	Manufacture of Heavy Clay Goods (Bricks)
PPC/48	Yew Tree Brake Cemetery, Crematoria Management Ltd., Yew Tree Brake, Cinderford, Gloucestershire. GL14 3HU	Cremation of human remains
PVR/07	Cross Hands Garage, Corse, Hartpury, Gloucestershire. GL19 3BU	PVR
PPC/58	Dean Mowers Ltd, Central Garage, Blakeney, Gloucestershire. GL15 4EB	Waste Oil Burner

Permit No.	Company Name & Address	Description
PVR/09	Elton Service Station, Elton Road Elton, Newnham GL14 1JQ	PVR
PPC/66	FAB Recycling Ltd, Broadmoor Road, Cinderford, Gloucestershire. GL14 2YL	Waste Oil Burner
PPC(A2)19	Federal Mogul Camshaft Castings Ltd, Tutnalls, Lydney, Gloucestershire. GL15 5PX	Ferrous Metal Foundary
PPC/10	Forest Auto Salvage Ltd, Valley Road, Cinderford, Gloucestershire. GL14 2PH	Waste Oil Burner
PPC/65	Forest of Dean Express Asphalt, Stowe, St. Briavels, Gloucestershire. GL15 6QN	Roadstone Coating
PPC/40	Hanson Formpave Ltd, Tufthorn Avenue, Coleford, Gloucestershire. GL16 8PR	Bulk use of Cement
PVR/10	General Garage, Ross Road, Huntley, Gloucestershire. GL19 3EA	PVR
PPC/42	Hanson Aggregates (Drybrook Quarry) Ltd. Hawthorns, Drybrook, Gloucestershire GL17 9BT	Quarry Processes
PVR/11	Highleadon Filling Station, Newent, Gloucestershire. GL18 1HJ	PVR
PPC/68	Grouphomesafe Ltd., Unit 8, Newent Business Park, Newent, Gloucestershire. GL18 1DZ	Di-isocyanate process
PVR/18	Cinderford MOT and Service Centre, Steam Mills Road, Cinderford, Gloucestershire. GL14 3HY	PVR
PVR/02	Lower Lane Superstop, Simon Smith Group, Lower Lane Superstop, Lower Lane, Berry Hill, Coleford, Gloucestershire. GL16 8QQ	PVR
PPC/39	Lydney Newspace Ltd, Unit 30, Lydney Industrial Estate, Harbour Road, Lydney, GL15 4EJ	Coating of Metal and Plastic
PPC/55	Milbury Systems Ltd, Lydney Industrial Estate, Harbour Road, Lydney, Gloucestershire. GL15 4EJ	Bulk Use of Cement
PVR/16	Mitcheldean Garage, New Road, Mitcheldean, Gloucestershire. GL17 0BX	PVR
PPC/63	Mitcheldean MOT Centre, Gloucester Road, Mitcheldean, Gloucestershire. GL17 0DS	Waste Oil Burner
PVR/12	Motorhouse Service Station, Crucible Close, Mushet Industrial Park, Coleford, Gloucestershire. GL16 8RE	PVR
PVR/06	Newent Self-Serve, Meridian Service Station, Gloucester Road, Newent, Gloucestershire. GL18 1HR	PVR
PPC/53	Newspace Containers Ltd New Dunn Works, Coleford, Gloucestershire. GL16 8JD	Coating of Metal and Plastic
PPC/31	Nobel Foods Ltd, Clearwell Farm, The Rocks, Clearwell, Gloucestershire. GL16 8JR	Animal Feed Compounding
PPC/25	P & J Loveridge, 157 High Street, Cinderford, Gloucestershire. GL14 2TF	Waste Oil Burner
PPC/57	Paul Jones Motors, Spout Lane, Coleford, Gloucestershire. GL16 8DP	Waste Oil Burner

Permit No.	Company Name & Address	Description
PPC/50	Rackham Housefloors Ltd, Forest Vale Industrial Estate, Cinderford, Gloucestershire. GL14 2YT	Bulk Use of Cement
PPC/38	Rothdean Ltd, Station Street, Cinderford, Gloucestershire. GL14 2LG	Respraying of Road Vehicles
PPC/05	Severn Valley Woodworks Ltd, Church Lane, Northwood Green, Westbury on Severn, Gloucestershire. GL14 1ND	Timber and Wood Based Products
PPC/37	Staunton Service Station, Staunton, Coleford, Gloucestershire. GL16 8PA	Respraying of Road Vehicles
PVR/14	Steam Mills Garage, Steam Mills, Cinderford, Gloucestershire. GL14 3JD	PVR
PPC/14	Tarmac Western Ltd, Stowfield Quarry, Staunton Road, Coleford, Gloucestershire. GL16 8NS	Quarry Processes/Roadstone Coating/Cement
PVR/15	Tesco Stores Ltd, High Street, Lydney, Gloucestershire, GL15 5TH	PVR
PVR/01	Thompson & Thompson, Cross Hands Garage, Lydney, Gloucestershire. GL15 4LH	PVR

13.0 Appendix D: QA/QC Data

13.1 Diffusion tube bias adjustment factors

The NO_2 diffusion tubes were supplied and analysed by Gradko International Ltd in 2011. Prior to 2011, Bristol Scientific Services were used.

Tubes were prepared using 50µl of 20% triethanolamine in water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document[37]. All diffusion tubes are stored, handled and exposed in accordance with the relevant guidance. They are exposed for one month.

Forest of Dean District Council does not undertake any co-location studies; so bias adjustment factors were obtained from the National Bias Adjustment Factor Spreadsheet (Version v03/12)[38].

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/12

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 spreadhseet 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 at the end of September 2012

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:	Step 2:	Step 3:	Step 4:								
Select the Laboratory that Analyses 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[3] 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[2]	If you have your own co-location study then see footnote[4]. 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** To undo your selection, choose (All) from the pop-up list	**Year[2]** To undo your selection, choose (All)	**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[5]**	**Bias Adjustment Factor (A) (Cm/Dm)**	
Bristol Scientific Services	20% TEA in Water	2009	Rural	Pembrokeshire CC	12	7	6	21.8%	P	**0.82**	
Bristol Scientific Services	20% TEA in Water	2009	K	AEA Tech Intercomparison	11	125	107	17.7%	G	**0.85**	
Bristol Scientific Services	20% TEA in Water	2009	R	Wiltshire Council	11	49	39	25.7%	G	**0.80**	
Bristol Scientific Services	20% TEA in Water	2009	R	Wiltshire Council	10	54	38	42.7%	G	**0.70**	
Bristol Scientific Services	20% TEA in Water	2009		**Overall Factor[3] (4 studies)**				**Use**		**0.79**	

Bias Adjustment 2009

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/12

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 spreadhseet 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 at the end of September 2012

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:	Step 2:	Step 3:	Step 4:								
Select the Laboratory that Analyses 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[3] 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[2]	If you have your own co-location study then see footnote[4]. 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** To undo your selection, choose (All) from the pop-up list	**Year[2]** To undo your selection, choose (All)	**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[5]**	**Bias Adjustment Factor (A) (Cm/Dm)**	
Bristol Scientific Services	20% TEA in Water	2010	R	Wiltshire Council	12	40	35	16.5%	G	**0.86**	
Bristol Scientific Services	20% TEA in Water	2010	R	Wiltshire Council	9	50	40	24.9%	G	**0.80**	
Bristol Scientific Services	20% TEA in Water	2010	R	Wiltshire Council	9	48	42	15.1%	G	**0.87**	
Bristol Scientific Services	20% TEA in Water	2010	R	Wiltshire Council	11	45	36	25.7%	G	**0.80**	
Bristol Scientific Services	20% TEA in Water	2010	B	LB Waltham Forest	12	40	38	6.7%	S	**0.94**	
Bristol Scientific Services	20% TEA in Water	2010	K	Marylebone Road Intercomparison	12	119	93	27.2%	G	**0.79**	
Bristol Scientific Services	20% TEA in Water	2010	R	South Gloucestershire	11	34	31	9.1%	G	**0.92**	
Bristol Scientific Services	20% TEA in Water	2010		**Overall Factor[3] (7 studies)**				**Use**		**0.85**	

Bias Adjustment 2010

[37] Investigation of the Effects of Harmonising Diffusion Tube Methodology, 2011, Report for Defra and the Devolved Administrations, AEA
[38] National Bias Adjustment Factors, Speadsheet No. v.3/12, http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/12

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 spreadhseet 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 at the end of September 2012

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:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses 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[3] 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[2]	If you have your own co-location study then see footnote[4]. 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 (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2011	R	Scarborough Borough Council	12	35	37	-4.7%	G	**1.05**
Gradko	20% TEA in Water	2011	R	Dudley MBC	12	35	28	23.3%	G	**0.81**
Gradko	20% TEA in Water	2011	UB	Dudley MBC	12	28	25	10.0%	G	**0.91**
Gradko	20% TEA in Water	2011	R	Dudley MBC	11	45	40	11.8%	G	**0.89**
Gradko	20% TEA in water	2011	K	South Lakeland District Council	10	41	38	8.3%	G	**0.92**
Gradko	20% TEA in water	2011	R	Gedling Borough Council	11	43	35	24.5%	G	**0.80**
Gradko	20% TEA in water	2011	R	Gateshead	12	39	37	4.9%	P	**0.95**
Gradko	20% TEA in water	2011	R	Gateshead	12	37	36	1.8%	G	**0.98**
Gradko	20% TEA in water	2011	R	Gateshead	10	33	31	5.1%	G	**0.95**
Gradko	20% TEA in water	2011	R	Gosport Borough Council	10	28	25	11.1%	G	**0.90**
Gradko	20% TEA in water	2011	UC	Southampton City Council	12	31	35	-10.8%	G	**1.12**
Gradko	20% TEA in Water	2011	R	Dudley MBC	9	50	51	-1.5%	G	**1.02**
Gradko	20% TEA in water	2011	K	Marylebone Road Intercomparison	12	111	100	11.4%	G	**0.90**
Gradko	20% TEA in water	2011	R	Boston Borough Council	11	57	36	59.6%	P	**0.63**
Gradko	20% TEA in water	2011	UB	Luton Borough Council	11	39	35	11.1%	G	**0.90**
Gradko	20% TEA in water	2011	R	Exeter City Council	11	37	33	15.1%	S	**0.87**
Gradko	20% TEA in water	2011	UB	Belfast City Council	12	36	29	23.5%	G	**0.81**
Gradko	20% TEA in water	2011	R	Bromsgrove District Council (Worce	10	56	53	6.0%	G	**0.94**
Gradko	20% TEA in water	2011	R	Monmouthshire County Council	11	47	40	17.9%	S	**0.85**
Gradko	20% TEA in water	2011	K	New Forest District Council	10	49	42	16.7%	G	**0.86**
Gradko	20% TEA in water	2011	R	New Forest District Council	12	34	26	29.9%	G	**0.77**
Gradko	20% TEA in water	2011	R	Fareham Borough Council	12	39	33	17.4%	G	**0.85**
Gradko	20% TEA in water	2011	R	Rushcliffe BC	11	35	39	-9.5%	G	**1.10**
Gradko	20% TEA in Water	2011	R	Carlisle City Council	12	35	28	24.8%	G	**0.80**
Gradko	20% TEA in Water	2011	O	North Warwickshire Borough Counc	12	48	39	23.0%	G	**0.81**
Gradko	20% TEA in water	2011	R	Wokingham Borough Council	11	41	38	8.6%	G	**0.92**
Gradko	20% TEA in water	2011		**Overall Factor[3] (26 studies)**				**Use**		**0.89**

Bias Adjustment 2011

13.2 QA/QC of Diffusion tube monitoring

Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 105-113[39].
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 NO_2 test sample type that is distributed to participants in a quarterly basis.

WASP NO_2 PT forms an integral part of the UK NO_2 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 NO_2 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

[39] Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 108-115. http://laqm.defra.gov.uk/documents/WASP-NO2-Scheme-for-Rounds-105-113-(April-2009---June-2011).pdf

encountered in actual NO_2 ambient monitoring in the UK when using such diffusion tubes.

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 NO_2 scheme. Information on the interpretation of the zscore 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:

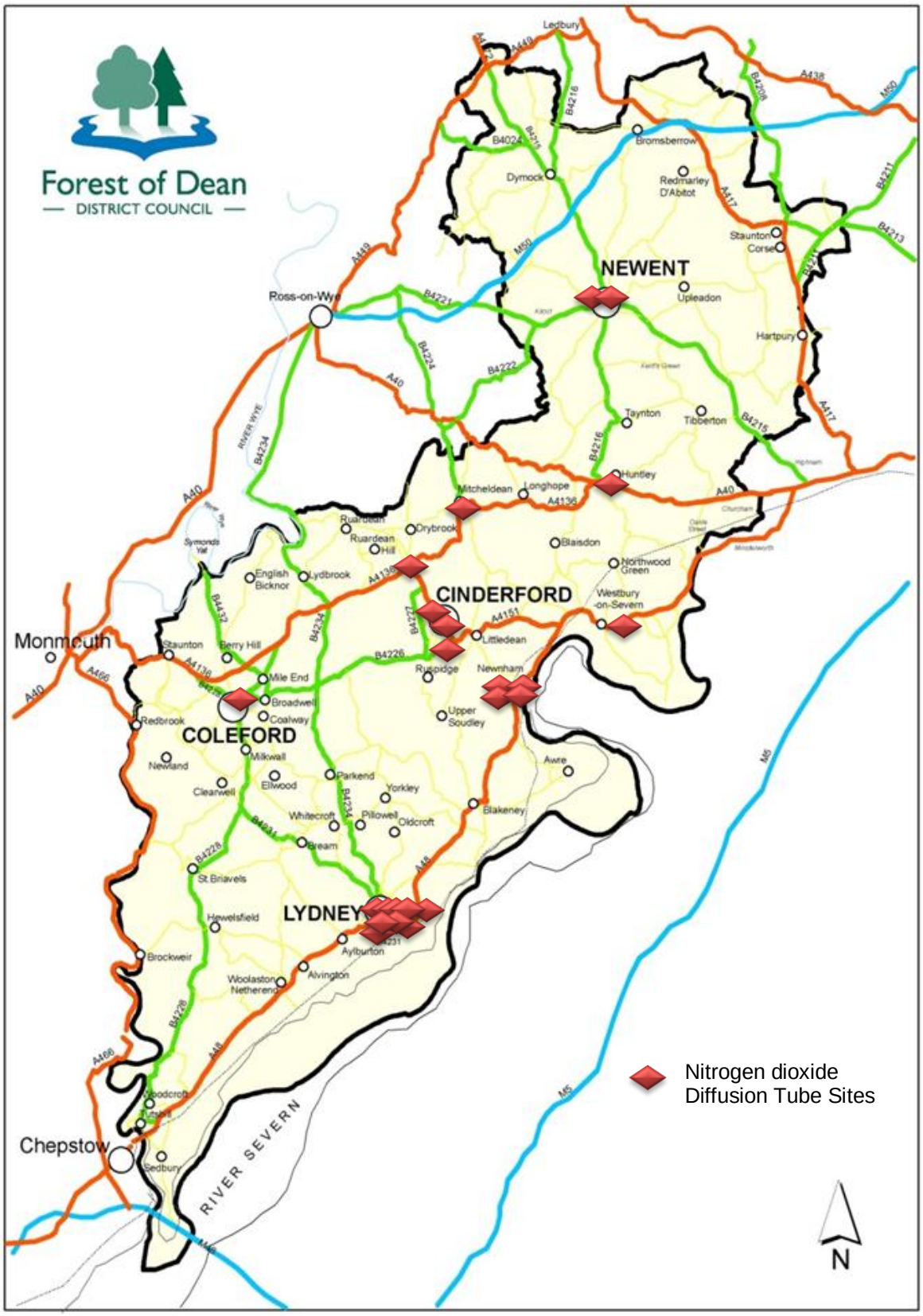
- All monthly performance scores are reported and the previous WASP scoring system, which allowed the lowest performing,
- The use of the z-score allows new entrants or those leaving the WASP scheme to be assessed as the score is not based on a rolling performance indicator,
- All results from UK laboratories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

The following table[40] lists those UK laboratories undertaking LAQM activities that have participated in recent HSL WASP NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory based upon a z-score of < ± 2 as defined above.

	WASP R112 Jan- March 2011	**WASP R112 Jan- March 2011**
Aberdeen Public Analysts	100%	100%
Bristol City Council	100%	100%
Cardiff Scientific Services	100%	100%
Environmental Services Group, Didcot	100%	100%
Edinburgh City Council	100%	100%
Exova	100%	100%
Glasgow Scientific Service	100%	100%
Gradko	**100%**	**100%**
Kent Scientific Services	50%	100%
Kirklees MBC	100%	0%
Lambeth Scientific Services	50%	25%
Lancashire County Analysts	75%	100%
Milton Keynes Council	100%	75%
Northampton Borough Council	100%	100%
Staffordshire County Council	100%	100%
Tayside	100%	100%
University of Essex	100%	100%
West Yorks Analytical Services	75%	75%

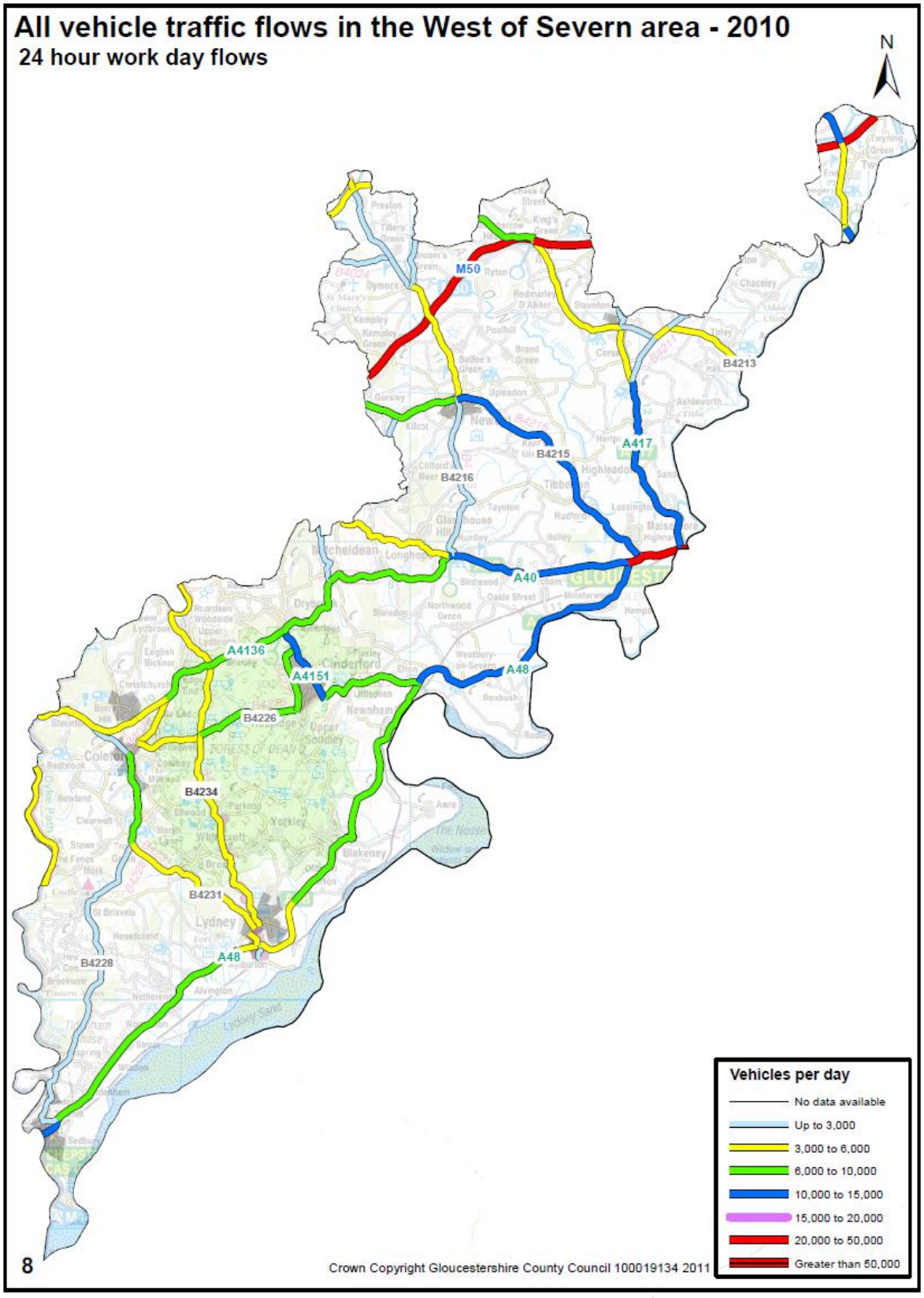
[40] Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 108-115. http://laqm.defra.gov.uk/documents/WASP-NO2-Scheme-for-Rounds-105-113-(April-2009---June-2011).pdf

14.0 Appendix E: Diffusion Tube Monitoring Sites



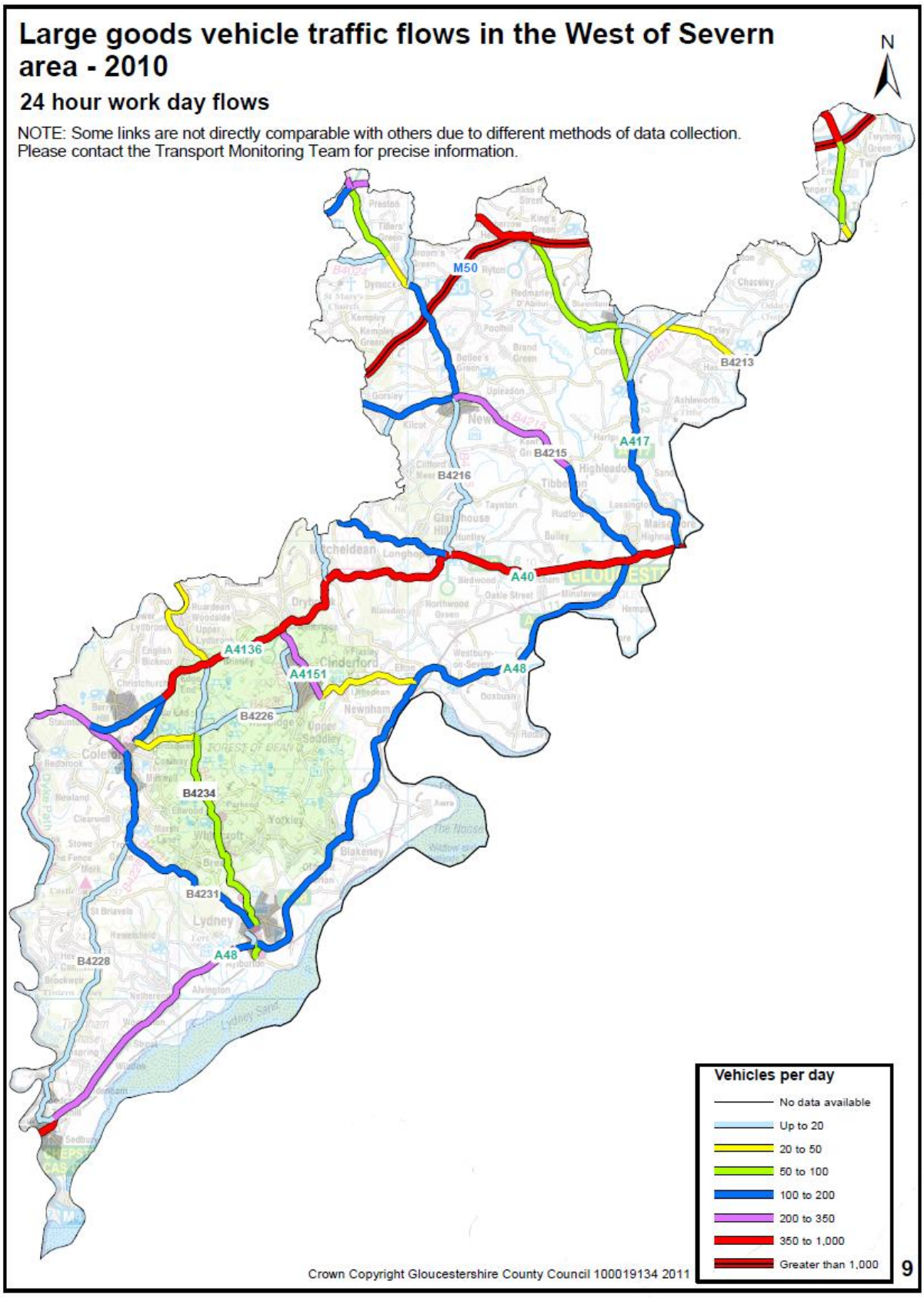
15.0 Appendix F: Other Information

Gloucestershire All vehicle traffic flow diagram 2010[41]



[41]Gloucestershire Traffic Flow Diagrams 2010, Transport Monitoring Team, Gloucestershire Highways, Gloucestershire County Council

Gloucestershire large goods vehicle traffic flow diagram 2010[42]



[42] Gloucestershire Traffic Flow Diagrams 2010, Transport Monitoring Team, Gloucestershire Highways, Gloucestershire County Council