



2015 Updating and Screening Assessment for **Dudley MBC**

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

July 2015

Final Issue

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Report Reference number	DMBC/ESH/1/2015/2
Date	8 th July 2015

Executive Summary

Dudley Metropolitan Borough Council has a statutory duty under the provisions of the Environment Act 1995 to review and assess air quality in its area.

This Updating & Screening Assessment (USA) reviews the results of the borough wide air pollution monitoring programme which currently focuses on the pollutants nitrogen dioxide (NO₂) and fine particles (PM₁₀) and covers the calendar year January to December 2014. Air quality in Dudley has continued to meet national air quality strategy objectives with the exception of NO₂ which is mainly generated from combustion sources such as road vehicles. During 2014, ongoing exceedences of the NO₂ objectives have been confirmed at a number of roadside locations within the borough including the following areas already highlighted in Dudley MBC's Air Quality Plan:

1. Halesowen Road, Netherton
2. Windmill Hill, Cradley,
3. High Street, Pensnett
4. Dudley Street, Sedgley
5. Mill Street, Brierley Hill
6. High Street, Quarry Bank
7. High Street, Wordsley
8. Birmingham Road, Dudley
9. Buffery Road, Dudley

Additionally, further exceedences of the NO₂ objectives have been confirmed at a number of additional roadside locations which were first identified in the 2012 USA report and monitored from 2012 onwards:

10. Castle Hill, Dudley
11. Hall Street, Dudley
12. Burton Road/Eve Lane, Gornal

Further investigation will continue in all twelve of these areas such that appropriate action can be prioritised in future revisions of the action plan.

On a positive note, it should also be noted that seven areas which failed to meet air quality objectives in Dudley in previous years were found to comply with the NO₂ air quality during 2014. These are listed below:

1. Hagley Road, Halesowen
2. Pedmore Road, Lye
3. Amblecote High Street
4. Himley Road, Lower Gornal
5. Stourbridge Road, Halesowen
6. New Road, Stourbridge
7. New Street Dudley (but note closure for part of the year due to essential road works)

This Updating and Screening Assessment has not identified any need for the declaration of additional air quality management areas. Air quality monitoring will be continued during 2015/16 at a number of consolidated locations. The programme will continue to quantify concentrations of NO₂ in order to inform future revisions of the air quality action plan and to confirm that compliance is maintained in areas where improvements have been demonstrated. PM₁₀ will also be monitored to demonstrate ongoing compliance with air quality objectives.

The Council will next be required to submit a combined Annual Progress Report & Action Plan Progress Report in April 2016.

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1 Introduction

1.1 Description of Local Authority Area

Dudley Metropolitan Borough is located centrally in the UK and is surrounded by five other local authorities, namely Sandwell Metropolitan Borough Council (MBC) to the west, Wolverhampton City Council to the north and north west, South Staffordshire Council to the east, Bromsgrove District Council to the south and Birmingham City Council to the south east.

The borough is located within the West Midlands (WM) conurbation, being densely populated with areas of concentrated industry. The West Midlands is comprised of the cities of Birmingham, Coventry and Wolverhampton and the boroughs of Sandwell, Solihull, Walsall and Dudley. Historically, Dudley MBC (DMBC) has worked closely with the other WM Authorities in tackling regional air pollution issues as part of the joint WM air quality group (WMAQG) and more recently under the Defra funded Low Emissions Towns and Cities (LETC) programme.

Dudley Borough covers 38 square miles and has a population of approximately 310,000. Along with Walsall, Wolverhampton and Sandwell, Dudley forms part of the Black Country. This is an amalgamation of towns located along the western side of the conurbation which developed during the industrial revolution to create a continuous urban area; typical examples in Dudley Borough include the strategic town centre of Brierley Hill and the town centres of Dudley, Halesowen and Stourbridge.

The main sources of air pollution in the borough are transportation, emissions from the commercial and domestic sector and local industry.

There are currently over 130 industrial processes operating within Dudley that are regulated under the Environmental Permitting Regulations. These include:

- Eight Part A1 Processes regulated by the Environment Agency including waste management and oil & metal processing activities, and:

- Four Part A2 Processes comprising 2 manufacturers of ceramic products, 2 ferrous foundries and 118 Part B Processes. These categories are currently regulated by DMBC.

Further information on the nature and location of processes regulated by DMBC can be obtained via the following link:

<http://gismo.dudley.gov.uk/public/envProt/Permits/Default.asp>

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), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where 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 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), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic

metre, mg/m³ for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Air Quality Objectives			
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 (PM₁₀) (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

1.4 Summary of Previous Review and Assessments

The latest technical and policy guidance documents LAQM.TG (09) and LAQM.PG(09), issued in February 2009 by the Department of the Environment, Food and Rural Affairs (Defra), set out timescales for submission of the air quality documents required under the LAQM regime [1,2].

The Review & Assessment programme is set out in 3 year cycles and commenced in 2000. DMBC has published a number of documents as part of its ongoing statutory LAQM obligations (Table 2) and previous Review & Assessment reports can be downloaded from DMBC website via the following link:

<http://www.dudley.gov.uk/business/environmental-health/pollution-control/air-quality/>

Table 2 Previously Published LAQM Reports

Dudley LAQM Key Documents			
Year	Title	Submission Date	LAQM Details
2003	Updating & Screening Assessment	Apr-2003	Round 2
2004	Detailed Assessment (DA)	Apr-2004	Round 2
2005	Annual Progress Report (APR)	Apr-2005	Round 2
2006	Updating and Screening Assessment	May-2006	Round 3
2007	Detailed Assessment	Jun-2007	Round 3
2008	Annual Progress Report	May-2008	Round 3
2009	Updating & Screening Assessment	Jul-2009	Round 4
2010	Air Quality Action Plan- Consultation Draft	Feb-2010	-
2010	Further Assessment of Air Quality	Feb-2010	-
2010	Annual Progress Report	Apr-2010	Round 4
2010	Detailed Assessment of PM ₁₀ Emissions From Three Wood Burning Installations	Feb-2011	Round 4
2011	Air Quality Action Plan	Adopted Sept-2011	-
2011	Annual Progress Report	Apr-2010	Round 4
2012	Updating & Screening Assessment	Apr-2012	Round 5
2013	Annual Progress Report	Apr-2013	Round 5
2014	Annual Progress Report	Apr-2014	Round 5

The Dudley Borough AQMA was declared in December 2007 with respect to exceedences of both the annual mean and short term NO₂ Air Quality Objectives. A Further Assessment of Air Quality [3] was submitted to DEFRA in February 2010. This document contains the technical evidence to support the declaration of the AQMA and identified 15 areas of the borough where exceedences of the annual mean NO₂ objective had been positively identified, these are listed in Table 3 and Figure 1, which shows the geographic setting of these locations in relation to the borough AQMA boundary.

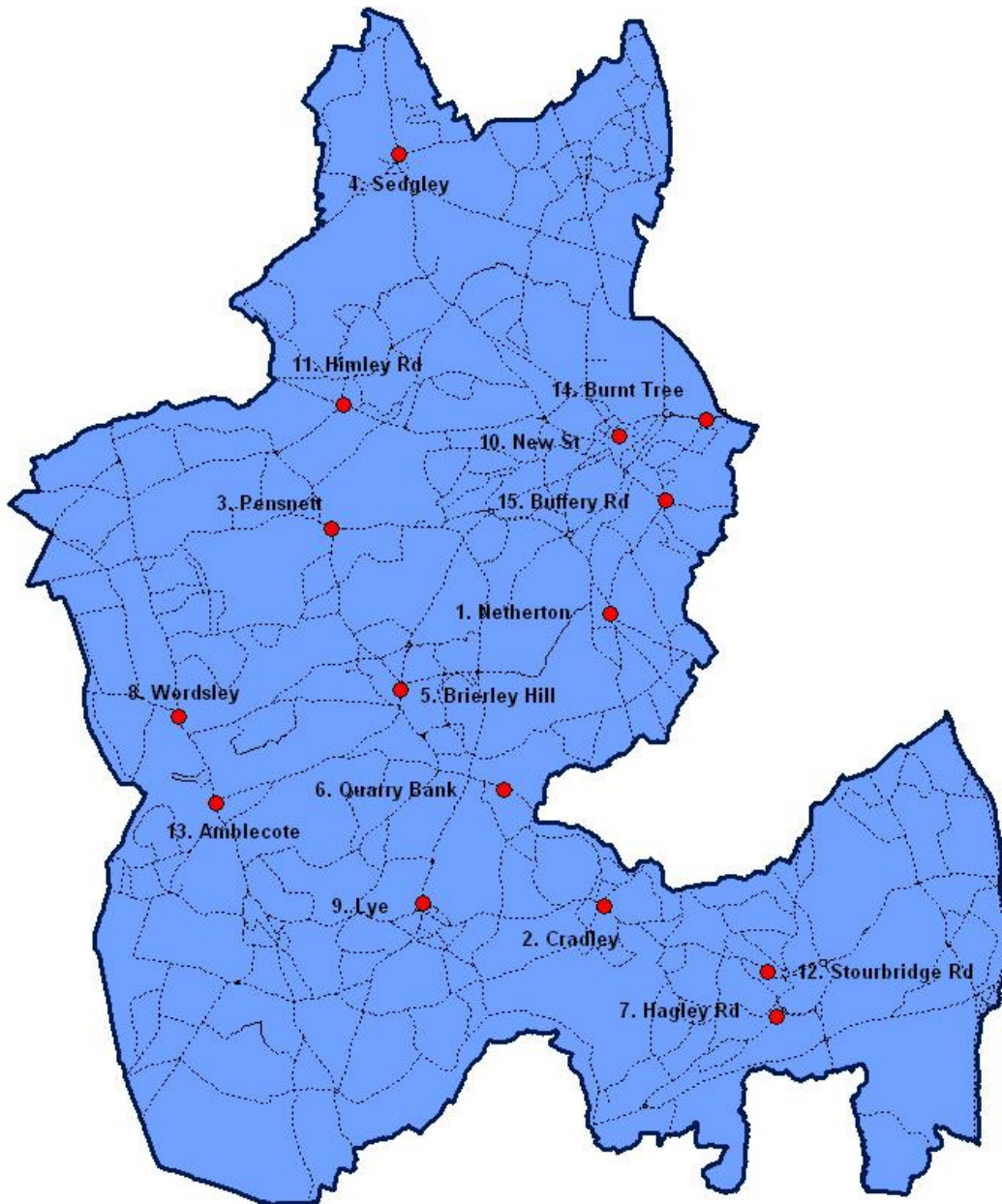
Table 3 Locations Identified In Dudley MBC’s 2010 Further Assessment

DMBC NO₂ Exceedence Areas	
Area	Description
1	Netherton
2	Cradley
3	Pensnett
4	Sedgley
5	Brierley Hill
6	Quarry Bank
7	Hagley Road, Halesowen
8	Wordsley
9	Lye
10	New Street, Dudley
11	Himley Road, Lower Gornal
12	Stourbridge Road, Halesowen
13	Amblecote
14	Birmingham Road near to Burnt Tree Island
15	Buffery Road

Levels of greater than 60µg/m³ NO₂ have been recorded at two of the exceedence locations, Areas 1 and 8. LAQM.TG (09) and LAQM.PG (09) suggest that NO₂ concentrations above this level may give rise to additional exceedences of the short term Air Quality Objective. Automated monitoring since 2011 has not indicated any specific issues in Area 8, leaving Area 1 Netherton as the only area which still requires further investigation.

DMBC adopted and published the AQAP in September 2011 [4].

Figure 1 Map of Dudley Borough AQMA Boundary



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2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

During the 2014 calendar year, there were four automatic monitoring sites in Dudley Borough (Table 4, Figure 2). These were used for monitoring a range of pollutants including nitric oxide, nitrogen dioxide and total oxides of nitrogen (NO/NO₂/NO_x) and fine particulates (PM₁₀).

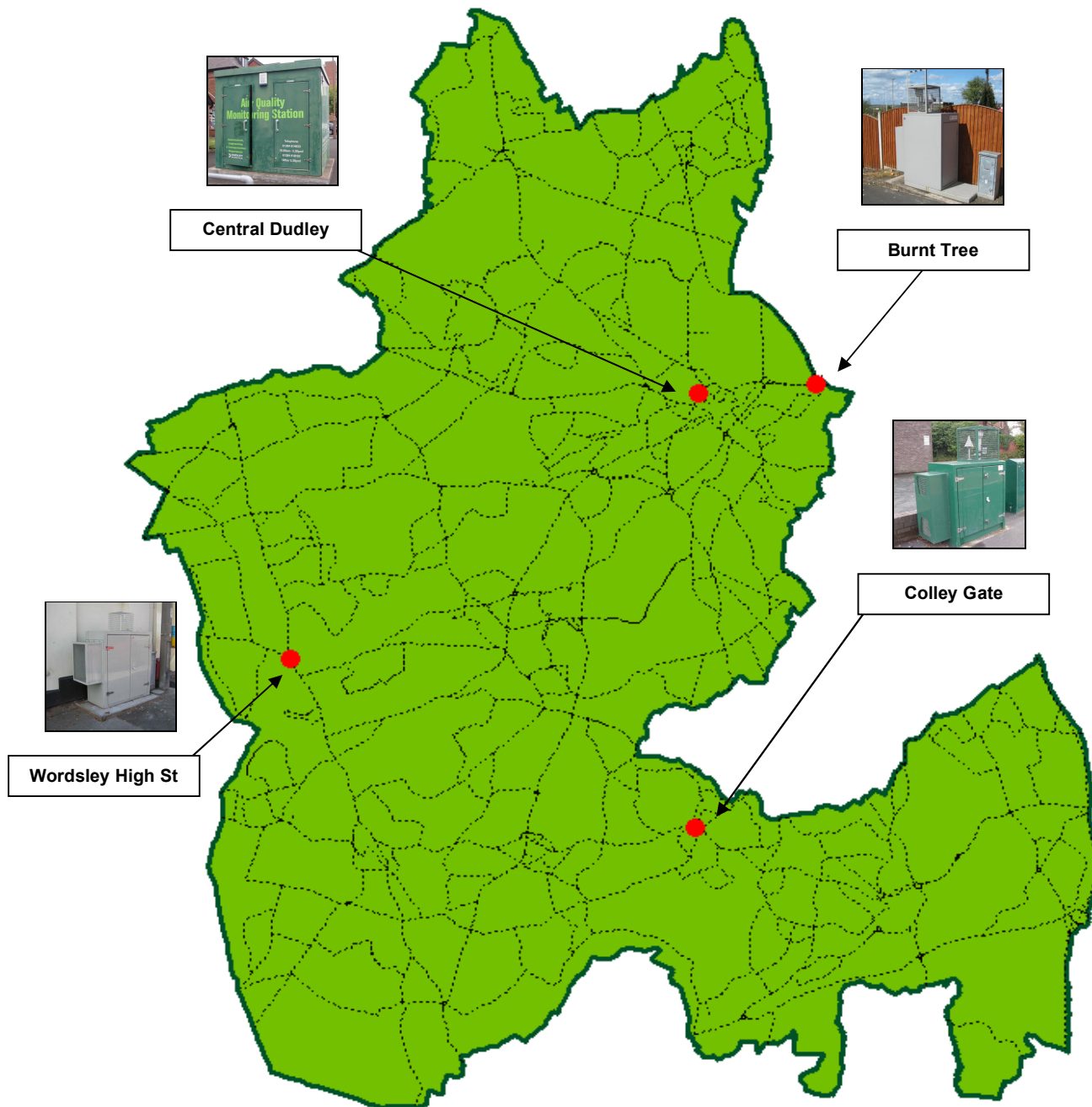
- **Central Dudley, Ednam Road**, monitoring NO/NO₂/NO_x and PM₁₀. Classified as an urban background site, this is the Council's longest running station and has been established at its current location since 1999. The station also monitored black smoke as part of Defra's UK Black Smoke Network until the end of 2011.
- **Colley Gate, Cradley**, monitoring NO/NO₂/NO_x and PM₁₀. This roadside monitoring station has been operational since 2006 and monitors roadside pollution levels in one of the areas where the annual mean NO₂ objective has been exceeded.
- **Burnt Tree, Ernest Road, Dudley**, monitoring NO/NO₂/NO_x and PM₁₀. This roadside monitoring station has been operational since August 2010 and monitors roadside pollution levels indicating that the annual mean NO₂ objective has been exceeded. Data from the station is being used to evaluate impacts from the expansion of a nearby retail store and modification of the local road network which were completed during 2011.
- **Wordsley, High Street**, monitoring NO/NO₂/NO_x. This roadside monitoring station has been operational since April 2011 and monitors roadside pollution levels in one of the areas where the annual mean NO₂ objective has been exceeded.

Full details of these stations can be obtained from the Council website via the following link:

<http://www.dudley.gov.uk/business/environmental-health/pollution-control/air-quality/air-quality-monitoring/monitoring-stations/>

Measurement of NO, NO₂ and NO_x was performed at all stations using API chemiluminescent monitors and PM₁₀ was measured using Tapered Elemental Oscillating Microbalances (or TEOMs) corrected using the King's College Volatile Correction Model (VCM). All monitoring equipment was held within air conditioned enclosures and operated by DMBC personnel using local procedures based on national guidance protocols. Full QA/QC procedures are provided in Appendix A.

Figure 2 Map of Automatic Monitoring Sites



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Table 4 Details of Automatic Monitoring Sites

DMBC Current Instrumental Monitoring Stations								
Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	Monitoring Technique	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?
Central Dudley	Urban background	394291	290460	NO ₂	Chemiluminescent	N	N/A	N/A
Central Dudley	Urban background	394291	290460	PM ₁₀	TEOM _(VCM)	N	N/A	N/A
Colley Gate	Roadside	394243	284626	NO ₂	Chemiluminescent	Y 21	4	N
Colley Gate	Roadside	394243	284626	PM ₁₀	TEOM _(VCM)	Y 21	4	N
Burnt Tree	Roadside	395761	290575	NO ₂	Chemiluminescent	Y 9	9	N
Burnt Tree	Roadside	395761	290575	PM ₁₀	TEOM _(VCM)	Y 9	9	N
Wordsley	Roadside	389134	286893	NO ₂	Chemiluminescent	Y 7	4	N

Notes

1. Relevant exposure includes residential properties, schools, hospitals, care homes etc. Further guidance is provided in LAQM.TG (09) Box 1.4
2. AQMA has been declared on the basis of both the annual and 1-hour mean objectives for NO₂ only
3. All the above areas fall within the Dudley Borough AQMA (2007)

2.1.2 Non-Automatic Monitoring Sites

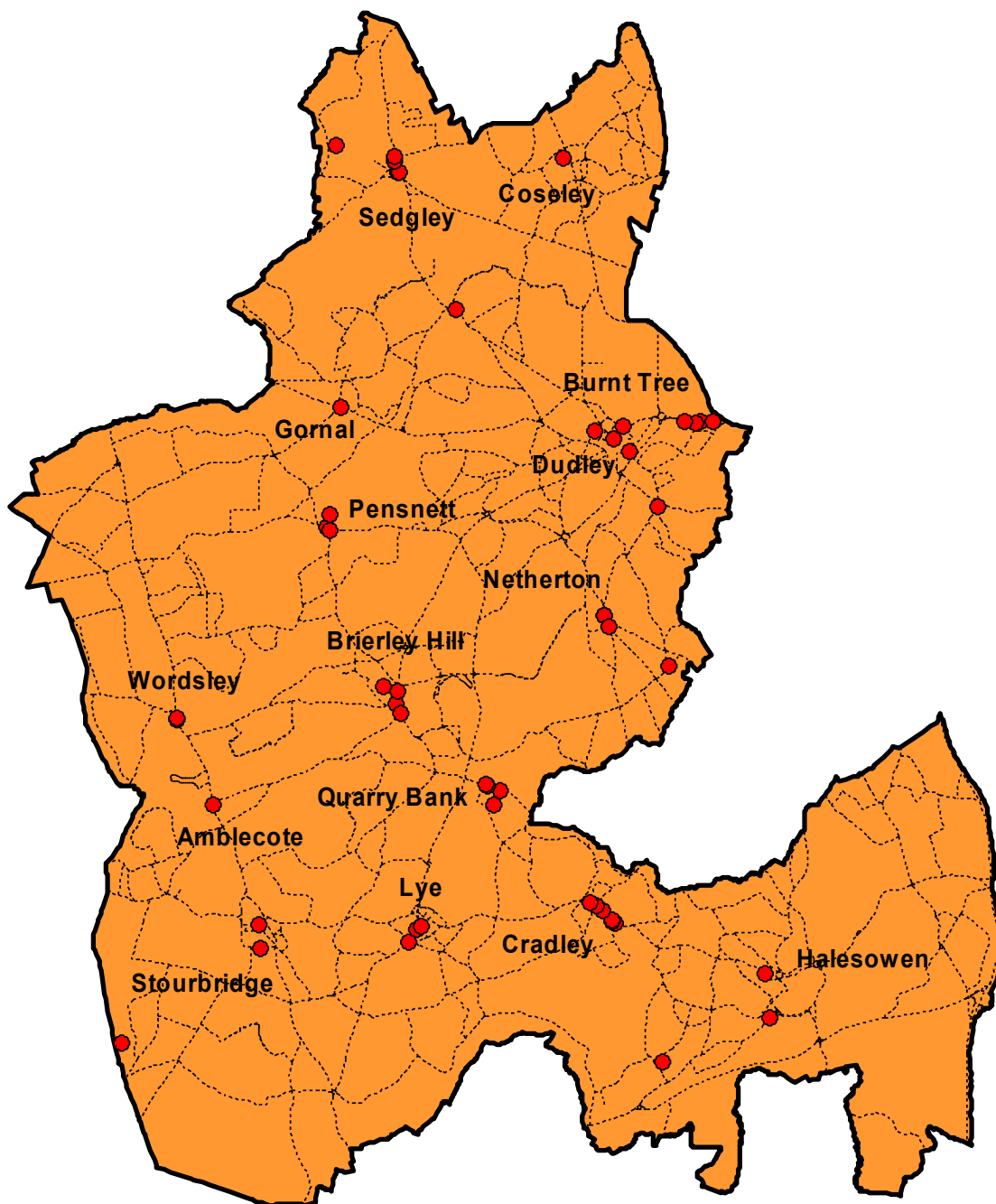
DMBC continues to supplement the monitoring of nitrogen dioxide carried out at the automated sites with a network of diffusion tubes located at strategic points across the borough although there has been a steady contraction in the number of sites monitored in accordance with wider budgetary considerations and rationalisation of staffing resource. During the 2014 calendar year, 51 sites were monitored with a minimum data capture period of 3 months. A full description of monitoring sites is given in Table 5 and illustrated in Figure 3.

DMBC has established an interactive diffusion tube map which gives further information on the geographic location of the diffusion tubes. Measurement data can also be downloaded from this site including data for historic and current diffusion tube surveys. Please follow the link given below:

<http://gismo.dudley.gov.uk/public/envprot/no2/default.asp>

Full details regarding QA/QC procedures are provided in Appendix A.

Figure 3 Map of Non-Automatic Monitoring Sites



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Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites										
Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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?
17b	Evergreen Close, Coseley	UB	393909	293821	NO ₂	Y	N	Y (8m)	N/A	N
13b	Padarn Close, Sedgley	S	391105	293975	NO ₂	Y	N	Y (3m)	N/A	N
32	Dudley Street, Sedgley	R	391853	293650	NO ₂	Y	N	Y (4m)	2.6	Y
32b	Dudley Street, Sedgley	R	391875	293642	NO ₂	Y	N	No	2.7	Y
32e	High Street, Sedgley	R	391823	293788	NO ₂	Y	N	Y(0m)	2.9	Y
32f	High Street, Sedgley	R	391825	293830	NO ₂	Y	N	Y(10m)	1.2	Y
62b	Birmingham Road, Dudley	R	395597	290560	NO ₂	Y	N	Y (0m)	6.5	Y
62d	Birmingham Road, Dudley	R	395542	290556	NO ₂	Y	N	Y(49m)	2.1	N
62e	Birmingham Road, Dudley	R	395402	290568	NO ₂	Y	N	Y(0m)	4.4	Y
62r-t	Ernest Road AQMS	R	395762	290575	NO ₂	Y	Y	Y(10m)	14	Y
53	High Street, Amblecote	R	389593	285840	NO ₂	Y	N	Y(0m)	1.9	Y
16b	High Street, Stourbridge	R	390141	284350	NO ₂	Y	N	Y(0m)	1.3	Y
16m	New Road, Stourbridge	R	390177	284074	NO ₂	Y	N	Y(1m)	2	Y
34a-ac	High Street, Wordsley	R	389135	286893	NO ₂	Y	Y	Y (0.5)	3.2	Y
34ay	High Street, Wordsley	R	389133	286910	NO ₂	Y	N	Y (0)	1.6	Y
21c	Clent View, Stourbridge	S	388457	282895	NO ₂	Y	N	Y(8m)	N/A	N
54	Himley Rd Gornal Wood	R	391159	290740	NO ₂	Y	N	Y(0m)	2.4	Y
57a	Burton Road	R	392576	291949	NO ₂	Y	N	Y(0m)	3.6	Y

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites										
Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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?
10-10b	Central Dudley AQMS	UB	394294	290459	NO ₂	Y	Y	Y(75m)	30	N
63	Castle Hill, Dudley	R	394647	290507	NO ₂	Y	N	Y(2m)	3.7	Y
63c	Hall Street, Dudley	UC	394719	290191	NO ₂	Y	N	Y(3m)	2.0	N
5w	New Street, Dudley	UC	394530	290358	NO ₂	Y	N	Y(0.5m)	1.7	Y
35c	Buffery Road	R	395064	289514	NO ₂	Y	N	Y(0.5)	2.2	Y
19e	Hagley Road Halesowen	R	396462	283211	NO ₂	Y	N	Y(0m)	2.8	Y
3a	Drews Holloway, Halesowen	R	394550	284373	NO ₂	Y	N	Y(0m)	4.3	Y
3bx	Windmill Hill, Halesowen	R	394499	284408	NO ₂	Y	N	Y(0m)	4.7	Y
3c	Windmill Hill, Halesowen	R	394506	284423	NO ₂	Y	N	Y(0m)	4	Y
3e	Windmill Hill, Halesowen	R	394384	284543	NO ₂	Y	N	Y(0m)	2.7	Y
3gx	Windmill Hill, Halesowen	R	394321	284596	NO ₂	Y	N	Y(0m)	2.1	Y
3r-t	Colley Gate AQMS, Halesowen	R	394236	284627	NO ₂	Y	N	No	3.5	N
15a	Stourbridge Road, Halesowen	R	396392	283752	NO ₂	Y	N	Y(0m)	2.4	Y
18	Hawthorne Road, Hayley Green	S	395135	282662	NO ₂	Y	N	Y(0m)	16	N
50d	Pedmore Road, Lye	R	392087	284310	NO ₂	Y	N	Y(0m)	4	Y
50e	Pedmore Road, Lye	R	392005	284144	NO ₂	Y	N	Y(0m)	2.8	Y
51	Morvale Gardens, Lye	UB	392155	284349	NO ₂	Y	N	Y(0m)	18	N
33	High Street, Pensnett	R	390989	289254	NO ₂	Y	N	Y (0m)	6.5	Y

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites										
Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	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?
33p	High Street, Pensnett	R	391017	289224	NO ₂	Y	N	Y (0m)	3.8	Y
33ex	Birds Meadow, Pensnett	S	391027	289410	NO ₂	Y	N	Y (0m)	1.9	N
30	High Street, Quarry Bank	R	393125	286009	NO ₂	Y	N	Y (0m)	2.7	Y
30eX	High Street, Quarry Bank	R	392976	286070	NO ₂	Y	N	Y (3m)	2.3	Y
30g	High Street, Quarry Bank	R	392943	286098	NO ₂	Y	N	Y (0m)	2.3	Y
30t	King Street, Quarry Bank	UB	393038	285843	NO ₂	Y	N	Y (6m)	1.6	N
60	Belper Row, Netherton	UB	395215	287554	NO ₂	Y	N	Y (0m)	2	N
27g	Halesowen Road, Netherton	R	394417	288178	NO ₂	Y	N	Y (0m)	1.5	Y
27gX	Halesowen Road, Netherton	R	394417	288171	NO ₂	Y	N	Y (0m)	1.5	Y
27j	Halesowen Road, Netherton	R	394416	288169	NO ₂	Y	N	Y (0m)	1.6	Y
27p	Halesowen Road, Netherton	R	394474	288029	NO ₂	Y	N	Y (0m)	2.7	Y
14	High Street, Brierley Hill	R	391845	287081	NO ₂	Y	N	Y (40m)	4.8	Y
14a	High Street, Brierley Hill	R	391859	287232	NO ₂	Y	N	Y(0m)	3.1	Y
45c	Mill Street, Brierley Hill.	R	391890	286967	NO ₂	Y	N	Y	1.9	Y
49	Talbot Street, Brierley Hill	UB	391678	287306	NO ₂	Y	N	Y(2m)	1.7	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

During 2014, DMBC undertook continuous monitoring of NO₂ levels at the sites listed in section 2.1.1: Central Dudley, Colley Gate, Burnt Tree and Wordsley. All locations are representative of public exposure. Results of the 2014 monitoring programme are summarised in Table 6 and Table 7. These results have been ratified using LAQM.TG (09) procedures as summarised in Appendix A.

Inspection of data presented in Table 6 and Table 7 indicates:

- Good data capture at all locations (>94% for the period monitored)
- An exceedence of the 40 µg/m³ annual mean NO₂ objective was recorded at Wordsley only
- There has been a small general decrease in NO₂ concentrations at Central Dudley and Colley Gate monitoring stations compared with 2012/13; concentrations at Burnt Tree and Wordsley remain broadly similar
- No more than 18 exceedences of the 200 µg/m³ short term hourly NO₂ objective were recorded at any of the stations

Trend graphs for DMBC's two longest running automated monitoring sites are presented in Figure 4. Both show an encouraging downward trend over each respective evaluation period.

Table 6 Results of Automatic Monitoring of NO₂: Comparison with Annual Mean Objective

NO ₂ Automated Monitoring Results									
Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2014 %	Annual Mean Concentration µg/m ³				
					2010	2011	2012	2013	2014
Central Dudley	Urban Background	Y	N/A	94.7	30.0	24.7	25.8	25.8	23.4
Colley Gate	Roadside	Y	N/A	98.3	44.2	39.0	41.4	38.6	35.3
Burnt Tree	Roadside	Y	N/A	99.3	36.2 ¹	28.0 ²	32.2	30.7	30.9
Wordsley	Roadside	Y	N/A	98.9	N/A	56.3³	58.0	58.9	59.6

Notes

1. Covers the period 30/07/2010 to 31/12/2010 only. Data has been annualised against data sets from Colley Gate and the decommissioned Brierley Hill Rose stations
2. Note that traffic flows on the adjacent road were disrupted for much of these years pending completion of the Burnt Tree junction improvement scheme opened on 17/10/11)
3. Covers the period 25/03/2011 to 31/12/2011 and data is annualised against data set from Colley Gate.

Figure 4 Trends in Annual Mean NO₂ Concentrations measures at Automatic Monitoring Sites

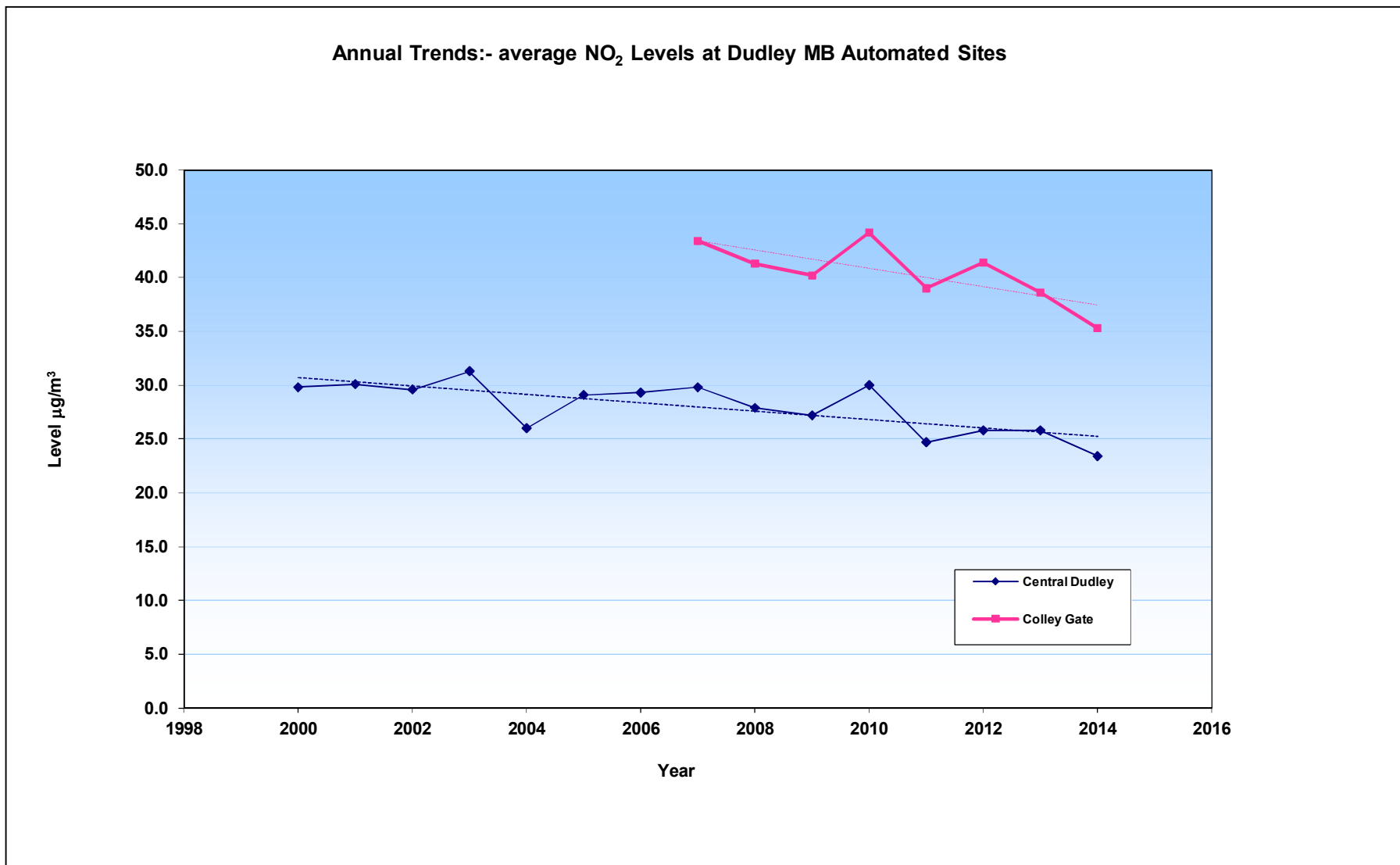


Table 7 Results of Automatic Monitoring for NO₂: Comparison with 1-hour Mean Objective

NO ₂ Automated Monitoring Results									
Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2014 %	Number of Exceedences of Hourly Mean (200 µg/m ³)				
					2010	2011	2012	2013	2014
Central Dudley	Urban Background	Y	N/A	94.7	0	0	0	0	0
Colley Gate	Roadside	Y	N/A	98.3	1	0	0	0	0
Burnt Tree	Roadside	Y	N/A	99.3	4 ^{1,2}	0 ²	0	0	0
Wordsley	Roadside	Y	N/A	98.9	N/A	0 ³	17(200.6) ⁴	5	7

Notes

1. Covers the period 30/07/2010 to 31/12/2010
2. Note that traffic flows on the adjacent road were disrupted for much of this time pending completion of the Burnt Tree junction improvement scheme
3. Covers the period 25/03/2011 to 31/12/2011
4. Where data capture falls below 90%, the 99.8th percentile is quoted in brackets

Diffusion Tube Monitoring Data

Results of the 2014 NO₂ monitoring programme are summarised in Table 8. These results have been bias adjusted using a national bias adjustment factor of 0.91 calculated using spreadsheet version 03/15 (see Appendix A). Exceedences of the 40 µg/m³ annual mean objective for NO₂ are highlighted in bold type and additionally underlined where values are greater than 60 µg/m³. For additional information, the full 2014 diffusion tube data set is provided in Appendix B.

Average results for nitrogen dioxide concentrations measured from diffusion tubes located across the borough are given in Figure 5. Results have been calculated from the mean concentrations measured at roadside and background locations. The results indicate a sharp initial decrease with evidence of a continuing downward trend since 2003. The slight upward trend since 2012 could be due to rationalisation of monitoring sites meaning that a greater fraction of tubes are now located at problematic roadside locations.

Table 8 Results of NO₂ Diffusion Tubes in 2014

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	2014 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.91
17b	Evergreen Close, Coseley	UB	Y	N	12	N/A	N	20.3
13b	Padarn Close, Sedgley	S	Y	N	11	N/A	N	14.1
32	Dudley Street, Sedgley	R	Y	N	12	N/A	N	40.1
32b	Dudley Street, Sedgley	R	Y	N	12	N/A	N	43.6
32e	High Street, Sedgley	R	Y	N	12	N/A	N	40.5
32f	High Street, Sedgley	R	Y	N	12	N/A	N	40.5
62b	Birmingham Road, Dudley	R	Y	N	12	N/A	N	46.4
62d	Birmingham Road, Dudley	R	Y	N	12	N/A	N	32.1
62e	Birmingham Road, Dudley	R	Y	N	12	N/A	N	40.3
62r-t	Ernest Road AQMS	R	Y	CT	12	N/A	N	32.4
53	High Street, Amblecote	R	Y	N	12	N/A	N	35.9
16b	High Street, Stourbridge	R	Y	N	12	N/A	N	31.9
16m	New Road, Stourbridge	R	Y	N	12	N/A	N	38.5
34a-ac	High Street, Wordsley	R	Y	CT	12	N/A	N	47.4
34ay	High Street, Wordsley	R	Y	N	12	N/A	N	58.1
21c	Clent View, Stourbridge	S	Y	N	12	N/A	N	12.7
54	Himley Rd Gornal Wood	R	Y	N	12	N/A	N	39.5
57a	Burton Road	R	Y	N	12	N/A	N	40.4
10-10b	Central Dudley AQMS	UB	Y	CT	12	N/A	N	23.4

Table 8 Results of NO₂ Diffusion Tubes in 2014

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	2014 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.91
63	Castle Hill, Dudley	R	Y	N	12	N/A	N	44.7
63c	Hall Street, Dudley	UC	Y	N	12	N/A	N	42.3
5w	New Street, Dudley	UC	Y	N	12	N/A	N	33.1*
35c	Buffery Road	R	Y	N	12	N/A	N	40.3
19e	Hagley Road Halesowen	R	Y	N	12	N/A	N	35.8
3a	Drews Holloway, Halesowen	R	Y	N	12	N/A	N	40.7
3bx	Windmill Hill, Halesowen	R	Y	N	12	N/A	N	43.6
3c	Windmill Hill, Halesowen	R	Y	N	12	N/A	N	36.1
3e	Windmill Hill, Halesowen	R	Y	N	12	N/A	N	43.7
3gx	Windmill Hill, Halesowen	R	Y	N	12	N/A	N	43.0
3r-t	Colley Gate AQMS, Halesowen	R	Y	CT	12	N/A	N	37.1
15a	Stourbridge Road, Halesowen	R	Y	N	12	N/A	N	39.9
18	Hawthorne Road, Hayley Green	S	Y	N	12	N/A	N	14.4
50d	Pedmore Road, Lye	R	Y	N	12	N/A	N	34.9
50e	Pedmore Road, Lye	R	Y	N	12	N/A	N	39.2
51	Morvale Gardens, Lye	UB	Y	N	12	N/A	N	17.2
33	High Street, Pensnett	R	Y	N	11	N/A	N	36.0
33p	High Street, Pensnett	R	Y	N	12	N/A	N	51.6
33ex	Birds Meadow, Pensnett	S	Y	N	12	N/A	N	21.3

Table 8 Results of NO₂ Diffusion Tubes in 2014

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	2014 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.91
30	High Street, Quarry Bank	R	Y	N	11	N/A	N	54.7
30eX	High Street, Quarry Bank	R	Y	N	12	N/A	N	47.9
30g	High Street, Quarry Bank	R	Y	N	12	N/A	N	38.3
30t	King Street, Quarry Bank	UB	Y	N	12	N/A	N	20.4
60	Belper Row, Netherton	UB	Y	N	12	N/A	N	23.0
27g	Halesowen Road, Netherton	R	Y	N	12	N/A	N	64.7
27gX	Halesowen Road, Netherton	R	Y	N	12	N/A	N	65.5
27j	Halesowen Road, Netherton	R	Y	N	12	N/A	N	59.5
27p	Halesowen Road, Netherton	R	Y	N	12	N/A	N	47.3
14	High Street, Brierley Hill	R	Y	N	12	N/A	N	37.6
14a	High Street, Brierley Hill	R	Y	N	12	N/A	N	34.2
45c	Mill Street, Brierley Hill.	R	Y	N	12	N/A	N	40.9
49	Talbot Street, Brierley Hill	UB	Y	N	12	N/A	N	19.1

*Road closed for 7 months during 2014

Table 9 Results of NO₂ Diffusion Tubes (2010 to 2014)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m ³				
				2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)	2013 (BAF = 0.95)	2014 (BAF = 0.91)
17b	Evergreen Close, Coseley	UB	Y	24.2	20.4	22.4	21.7	20.3
13b	Padarn Close, Sedgley	S	Y	21.0	15.1	17.4	16.0	14.1
32	Dudley Street, Sedgley	R	Y	40.3	40.7	44.4	39.7	40.1
32b	Dudley Street, Sedgley	R	Y	45.4	39.4	46.3	46.1	43.6
32e	High Street, Sedgley	R	Y	44.2	41.8	42.8	42.1	40.5
32f	High Street, Sedgley	R	Y	46.7	43.3	45.1	40.5	40.5
62b	Birmingham Road, Dudley	R	Y	41.6	37.2	47.7	46.3	46.4
62d	Birmingham Road, Dudley	R	Y	40.1	32.7	37.4	36.8	32.1
62e	Birmingham Road, Dudley	R	Y	-	39.7	35.9	38.7	40.3
62r-t	Ernest Road AQMS	R	Y	37.8	31.0	37.4	37.2	32.4
53	High Street, Amblecote	R	Y	41.7	35.1	37.4	37.4	35.9
16b	High Street, Stourbridge	R	Y	35.7	32.6	37.4	29.8	31.9
16m	New Road, Stourbridge	R	Y	-	-	-	40.7	38.5
34a-ac	High Street, Wordsley	R	Y	-	48.0	52.4	49.3	47.4
34ay	High Street, Wordsley	R	Y	65.4	65.3	63.9	59.5	58.1
21c	Clent View, Stourbridge	S	Y	16.6	13.1	14.5	14.1	12.7
54	Himley Rd Gornal Wood	R	Y	40.7	39.2	42.6	37.7	39.5
57a	Burton Road	R	Y	-	40.4	45.1	41.3	40.4
10-10b	Central Dudley AQMS	UB	Y	27.5	24.5	26.5	25.3	23.4
63	Castle Hill, Dudley	R	Y	-	48.6	49.2	51.7	44.7

Table 9 Results of NO₂ Diffusion Tubes (2010 to 2014)

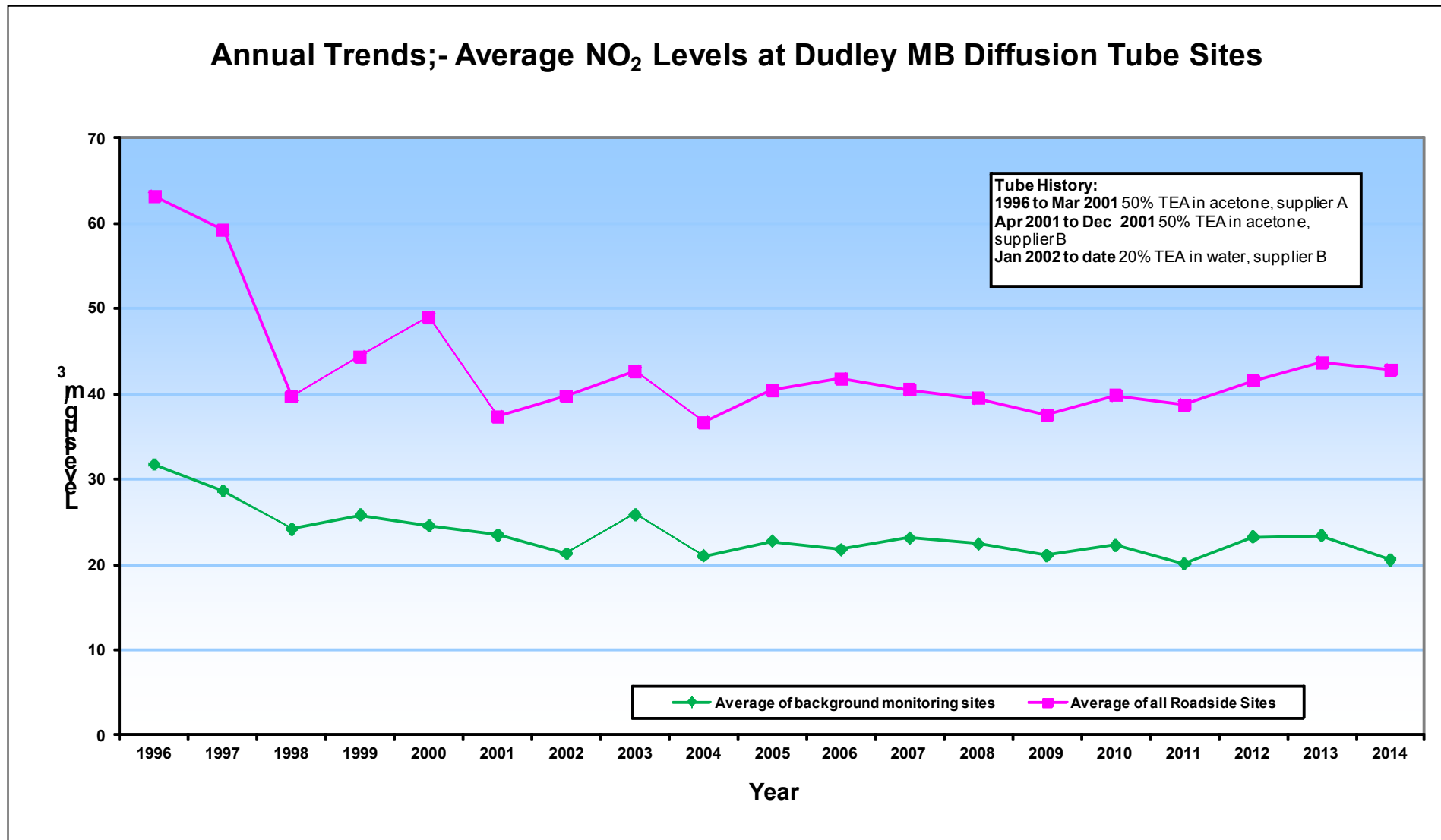
Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m ³				
				2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)	2013 (BAF = 0.95)	2014 (BAF = 0.91)
63c	Hall Street, Dudley	R	Y	-	-	-	40.0	42.3
5w	New Street, Dudley	UC	Y	41.7	38.6	49.2	42.0	33.1*
35c	Buffery Road	R	Y	-	-	50.9	41.4	40.3
19e	Hagley Road Halesowen	R	Y	39.8	36.8	42.8	36.6	35.8
3a	Drews Holloway, Halesowen	R	Y	53.4	50.6	52.3	44.3	40.7
3bx	Windmill Hill, Halesowen	R	Y	47.4	44.6	47.8	44.9	43.6
3c	Windmill Hill, Halesowen	R	Y	43.1	39.1	41.8	39.1	36.1
3e	Windmill Hill, Halesowen	R	Y	47.8	42.7	43.9	45.7	43.7
3gx	Windmill Hill, Halesowen	R	Y	48.1	45.7	46.7	41.2	43.0
3r-t	Colley Gate AQMS, Halesowen	R	Y	42.9	39.8	41.8	38.5	37.1
15a	Stourbridge Road, Halesowen	R	Y	44.6	39.7	45.6	38.5	39.9
18	Hawthorne Road, Hayley Green	S	Y	19.3	14.3	16.7	14.3	14.4
50d	Pedmore Road, Lye	R	Y	41.7	35.9	37.2	37.0	34.9
50e	Pedmore Road, Lye	R	Y	44.6	39.7	32.6	39.1	39.2
51	Morvale Gardens, Lye	UB	Y	22.2	18.3	20.0	19.4	17.2
33	High Street, Pensnett	R	Y	38.7	35.2	38.2	34.5	36.0
33p	High Street, Pensnett	R	Y	54.3	51.0	55.3	50.0	51.6
33ex	Birds Meadow, Pensnett	S	Y	21.4	21.3	23.9	22.3	21.3
30	High Street, Quarry Bank	R	Y	54.8	59.2	57.5	53.1	54.7
30eX	High Street, Quarry Bank	R	Y	51.8	46.0	55.1	46.5	47.9

Table 9 Results of NO₂ Diffusion Tubes (2010 to 2014)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m ³				
				2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)	2013 (BAF = 0.95)	2014 (BAF = 0.91)
30g	High Street, Quarry Bank	R	Y	45.1	39.0	42.3	37.8	38.3
30t	King Street, Quarry Bank	UB	Y	26.8	21.9	24.5	22.3	20.4
60	Belper Row, Netherton	UB	Y	25.7	23.2	25.7	25.2	23.0
27g	Halesowen Road, Netherton	R	Y	59.8	65.3	70.1	62.6	64.7
27gX	Halesowen Road, Netherton	R	Y	63.1	65.6	66.9	66.2	65.5
27j	Halesowen Road, Netherton	R	Y	59.8	57.0	59.5	59.0	59.5
27p	Halesowen Road, Netherton	R	Y	41.7	40.3	46.1	49.8	47.3
14	High Street, Brierley Hill	R	Y	37.8	38.3	38.1	38.3	37.6
14a	High Street, Brierley Hill	R	Y	39.9	36.6	38.7	34.3	34.2
45c	Mill Street, Brierley Hill.	R	Y	35.9	35.8	39.4	40.1	40.9
49	Talbot Street, Brierley Hill	UB	Y	23.9	21.0	23.3	22.3	19.1

*Road closed for 7 months during 2014.

Figure 5 Trends in Annual Mean NO₂ Concentrations measured at Diffusion Tube Monitoring Sites



Evaluation of results confirmed ongoing exceedences in several locations previously identified in earlier rounds of Review & Assessment, including the 2010 Further Assessment, which was based on the 2008 data set. A summary of the current situation is provided in Table 10.

Hagley Road and Stourbridge Road, Halesowen; High Street, Amblecote; New Road, Stourbridge; Pedmore Road, Lye and New Street, Dudley all met the annual mean NO₂ objective during 2014; however the latter location was subject to a road closure for 7 months due to town centre redevelopment.

All areas already fall within the Borough AQMA so there will be no requirement to proceed to Detailed Assessment. The Council proposes to continue monitoring in the more problematic areas to refine future revisions of the action plan.

Table 10 Summary Table Showing 2014 Status of NO₂ Exceedence Areas

Evaluation of DMBC 2014 NO ₂ Diffusion Tube Results			
Area	Description	NO ₂ Exceedences During 2014?	Areas of Exceedence
1	Netherton	Y	Halesowen Rd
2	Cradley	Y	Windmill Hill, Drews Holloway
3	Pensnett	Y	High St.
4	Sedgley	Y	High St., Dudley St.
5	Brierley Hill	Y	Mill Street
6	Quarry Bank	Y	High St.
7	Hagley Road, Halesowen	N	N/A
8	Wordsley	Y	High St.
9	Lye	N	N/A
10	Dudley	N*	N/A
11	Himley Road, Lower Gornal	N	N/A
12	Stourbridge Road, Halesowen	N	N/A
13	Amblecote	N	N/A
14	Birmingham Rd near to Burnt Tree	Y	Birmingham Rd.
15	Buffery Road	Y	Buffery Road
(16)	Dudley	Y	Hall St.
(17)	Dudley	Y	Castle Hill
(18)	Gornal	Y	Burton Road / Eve Lane
(19)	Stourbridge	N	New Road

*Please note road closed for 7 months during 2014 due to town centre redevelopment

2.2.2 PM₁₀

During 2014, DMBC undertook monitoring of PM₁₀ levels at the three automatic monitoring stations in Central Dudley, Colley Gate and Burnt Tree, which are representative of public exposure. Full details of QA/QC protocols and data adjustment are provided in Appendix A. Results of the study are presented in Table 11 and Table 12 and show:

- Good data capture at all locations (>97% for the period monitored)
- There are no exceedences of the annual mean concentration of 40 µg/m³
- No more than 35 24-hour exceedences of 50 µg/m³ PM₁₀ have been recorded at any monitoring stations in Dudley during this period.

Average 7 year trend plots for PM₁₀ concentrations measured at Central Dudley and Colley Gate are presented in Figure 6 and indicate that concentrations have slightly decreased at both locations during this period.

Table 11 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

PM ₁₀ Results										
Site ID	Site Type	Within AQMA?*	Valid Data Capture for monitoring Period %	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m ³				
						2010	2011	2012	2013	2014
Central Dudley	Urban Background	N	N/A	99.2	Y	18.8	19.0	18.3	19.6	17.5
Colley Gate	Roadside	N	N/A	97.3	Y	26.5	25.7	23.2	24.5	21.7
Burnt Tree	Roadside	N	N/A	97.8	Y	N/A	19.3	18.3	20.4	17.9

Notes

All data have been corrected using the volatile correction method (VCM) portal in accordance with LAQM.TG (09).

Corrections were carried out on 04 Mar 2015 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites.

Results prior to 2014 have been re-corrected using the most current FDMS data and may show some differences to data quoted in previous reports. These values supersede any concentrations reported previously.

*AQMA has been declared for NO₂ only

Table 12 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

PM ₁₀ Results										
Site ID	Site Type	Within AQMA?*	Valid Data Capture for monitoring Period %	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m ³)				
						2010	2011	2012	2013	2014
Central Dudley	Urban Background	N	N/A	99.2	Y	1	9	5	6	4
Colley Gate	Roadside	N	N/A	97.3	Y	7	16	12	11	6
Burnt Tree	Roadside	N	N/A	97.8	Y	N/A	7	4	5	5

Notes

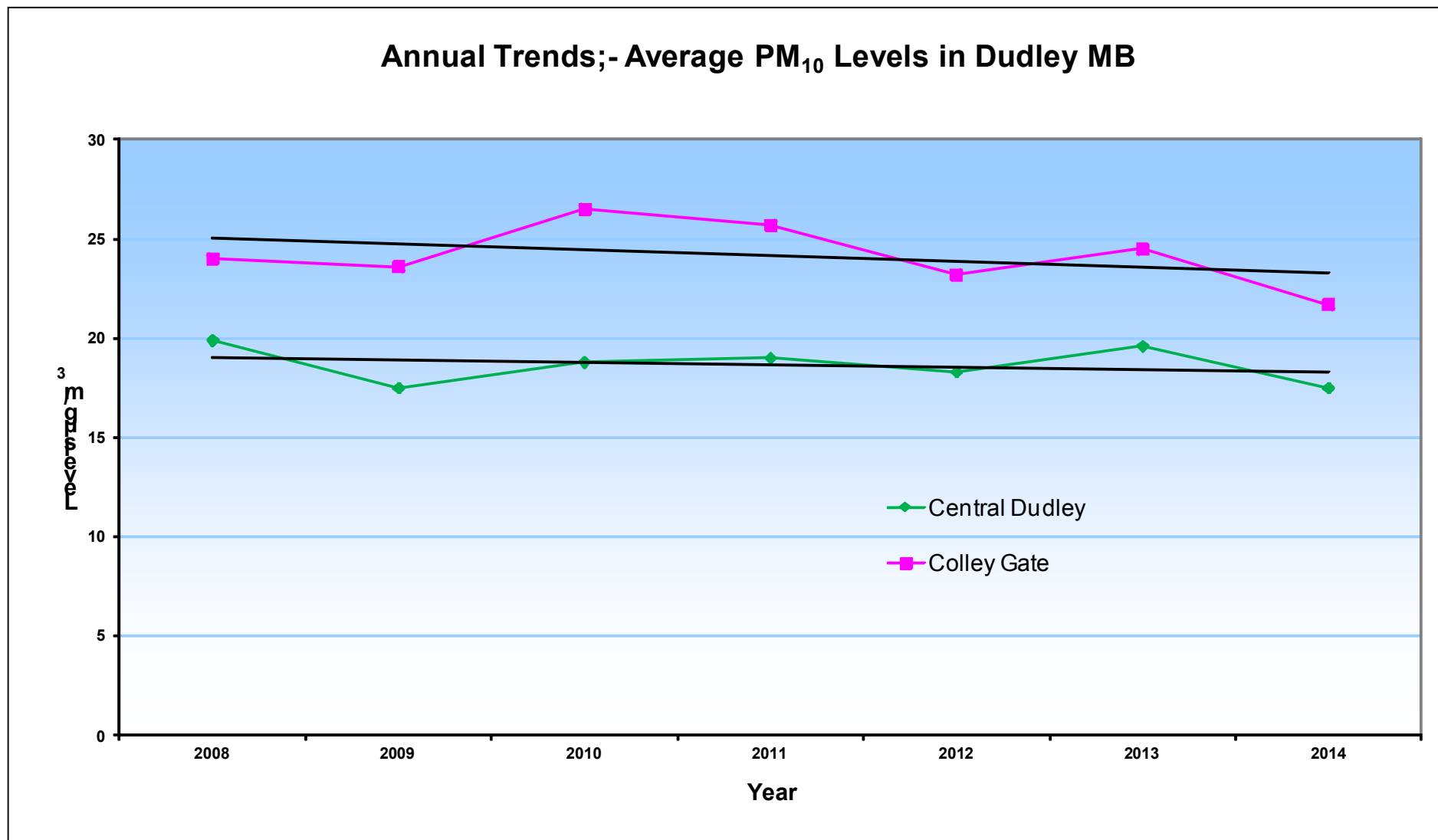
All data have been corrected using the volatile correction method (VCM) portal in accordance with LAQM.TG (09).

Corrections were carried out on 04/03/2015 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites

Results prior to 2014 have been re-corrected using the most current FDMS data and may show some differences to data quoted in previous reports. These values supersede any concentrations reported previously.

*AQMA has been declared for NO₂ only

Figure 6 Trends in Annual Mean PM₁₀ Concentrations



2.2.3 Sulphur Dioxide

There is currently no monitoring for sulphur dioxide within Dudley MB.

2.2.4 Benzene

There is currently no monitoring for benzene within Dudley MB.

2.2.5 Other pollutants monitored

There is currently no monitoring for any other pollutants within Dudley MB.

2.2.6 Summary of Compliance with AQS Objectives

DMBC has examined the results from monitoring in the borough, which has already been declared as an NO₂ Air Quality Management Area with respect to exceedences of the annual mean and hourly NO₂ objectives.

Concentrations of all other pollutants monitored are all below the objectives, therefore there is no need to proceed to a Detailed Assessment for other pollutants.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

DMBC has examined latest traffic flow data from the West Midlands Emission Database (EDB) and Mott McDonald's Spectrum database in parallel with the most recent corporate geographic datasets and has not identified any further narrow congested streets with residential properties close to the kerb. The results of this investigation are therefore summarised as follows:

DMBC 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

Further examination of traffic flows from the West Midlands EDB and the Spectrum database identified over 150 road links where traffic flows exceed 10,000 vehicles per day. These were individually scrutinised in order to identify relevant exposure within 5m of the kerb where people are likely to spend 1-hour or more. No new areas of concern were identified.

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

3.3 Roads with a High Flow of Buses and/or HGVs.

DMBC has examined traffic flows from the West Midlands EDB and Spectrum database to identify roads where:

- The location has not been addressed during previous rounds of Review and Assessment
- There is an unusually high percentage (>20%) of Large Vehicles (LVs) made up of HDVs and buses
- The flow of LVs is greater than 2,500 vehicles per day
- There is relevant exposure within 10m of the road

The results of this investigation are summarised as follows:

DMBC confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

DMBC has considered emissions of NO₂ and PM₁₀ on all busy junctions including any with new exposure. The results of this investigation are summarised as follows:

DMBC 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

DMBC has considered the construction of all new roads greater than 10,000 vehicles per day since the last round of Review & Assessment and has not identified any new roads which fall into this category.

The results of this assessment are summarised as follows:

DMBC confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

DMBC has considered potential NO₂ and PM₁₀ emissions from any roads with significantly changed traffic flows not already covered in sections 3.1-3.5 of this report.

The results of this assessment are summarised as follows:

DMBC confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

DMBC can confirm that no new bus or coach stations have been constructed since the submission of the previous USA. The results of this assessment are therefore summarised as follows:

DMBC confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

DMBC confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

In accordance with the requirements of LAQM.TG (09), DMBC has assessed the potential for the emission of sulphur dioxide from stationary and coal fired locomotives and the emission of NO₂ from moving diesel locomotives.

4.2.1 Stationary Trains

DMBC 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.

4.2.2 Moving Trains

DMBC 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)

DMBC confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

DMBC 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

DMBC 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

Evaluation of newly permitted processes with potential to emit NO₂ or PM₁₀ highlighted several activities which were subjected to further scrutiny; these are summarised in Table 13:

Table 13 Installations Assessed For 2015 USA

DMBC New Installations				
Installation	Process Type	Permit No	Description	Pollutants Assessed
TSS Garage Ltd	B	PB/134	Waste oil burners (<0.4 MW)	PM ₁₀
ET Enterprises Ltd	B	PB/135	Glass	PM ₁₀ , NO _x
M&A Doocey Civil Engineering	B	PB/137	Cement and lime	PM ₁₀
Associated Metal Masters Ltd	B	PB/138	Coating	PM ₁₀
Hickman Industries Ltd	B	PB/139	Timber (reduced fee)	PM ₁₀
Furmanac	B	PB/140	Timber (reduced fee)	PM ₁₀

Assessment of these processes was carried out using nomograms provided in LAQM.TG (09) in conjunction with a review of any related local environmental complaints. The assessments confirmed that either the emission thresholds were unlikely to be exceeded by any of these installations or there was a lack of residential exposure within the area concerned. The results of this exercise are summarised as follows:

DMBC has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

The results of this assessment are summarised as follows:

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

The results of this assessment are summarised as follows:

DMBC confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

DMBC has considered the evidence that potential exceedences of the PM₁₀ objectives may be associated with emissions from poultry farms, notably those in excess of 400,000 birds if mechanically ventilated, 200,000 birds if naturally

Dudley MBC

ventilated and 100, 000 birds from any turkey unit. The results of this assessment are summarised as follows:

DMBC confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

DMBC undertook a thorough review of individual biomass combustion installations rated between 50kW and 20MW as part of the previous USA and there have been no significant changes since the last assessment. The results of this review are therefore summarised as follows:

DMBC has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

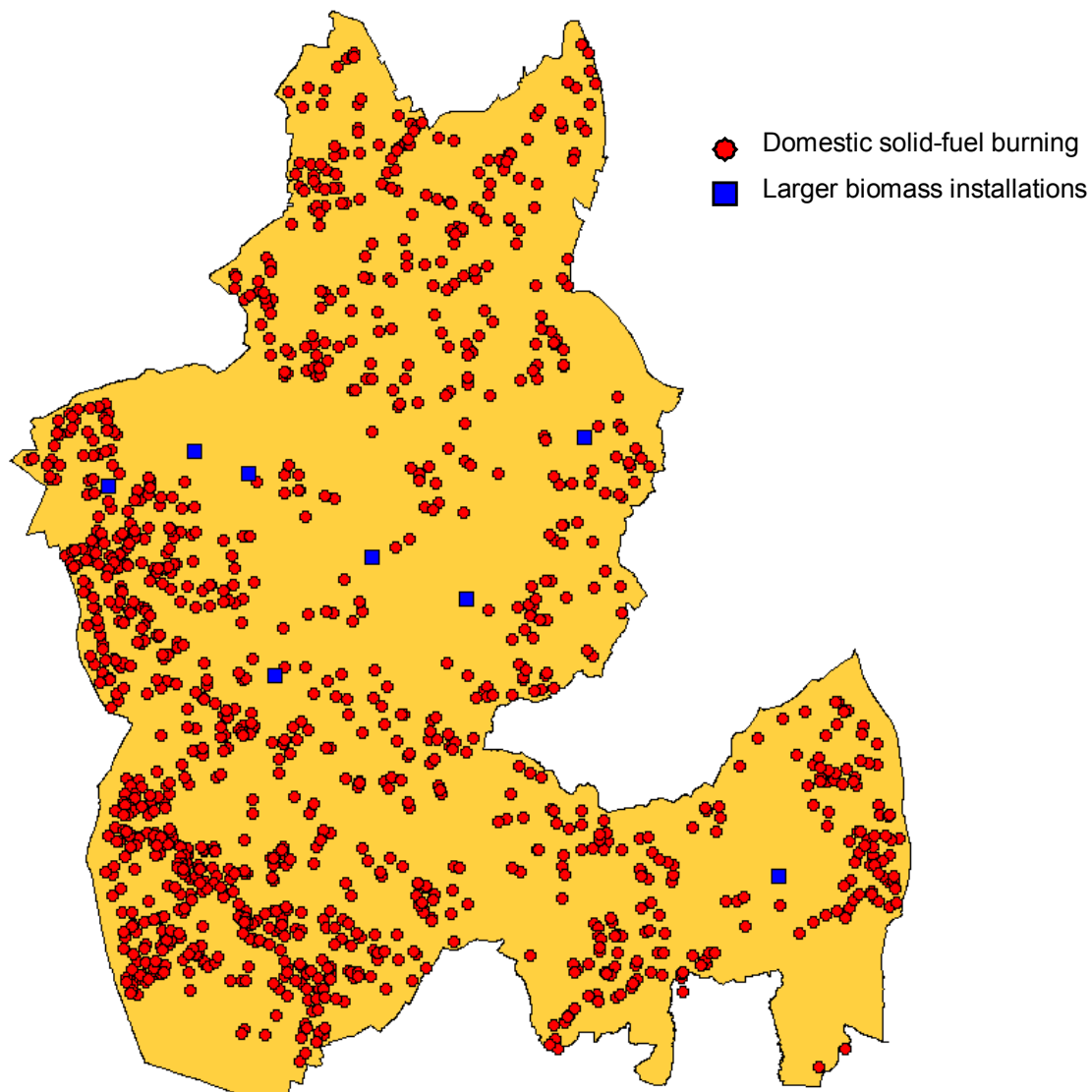
6.2 Biomass Combustion – Combined Impacts

Dudley MBC has considered the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM₁₀ concentrations, particularly in areas where PM₁₀ concentrations are close to, or above, national objectives.

The council has now developed detailed inventories of wood burning appliances and small biomass combustion installations which burn solid matter at a rate of <45.5kg per hour. Spatial analysis of these installations failed to indicate any concentrated clusters which could create potential problems in and around areas where PM₁₀ concentrations are close to, or above, national objectives (Figure 7). The results of the assessment of combined impacts of small biomass installations are therefore summarised as follows:

DMBC has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

Figure 7 Domestic Solid-Fuel burning & Other Biomass Installations



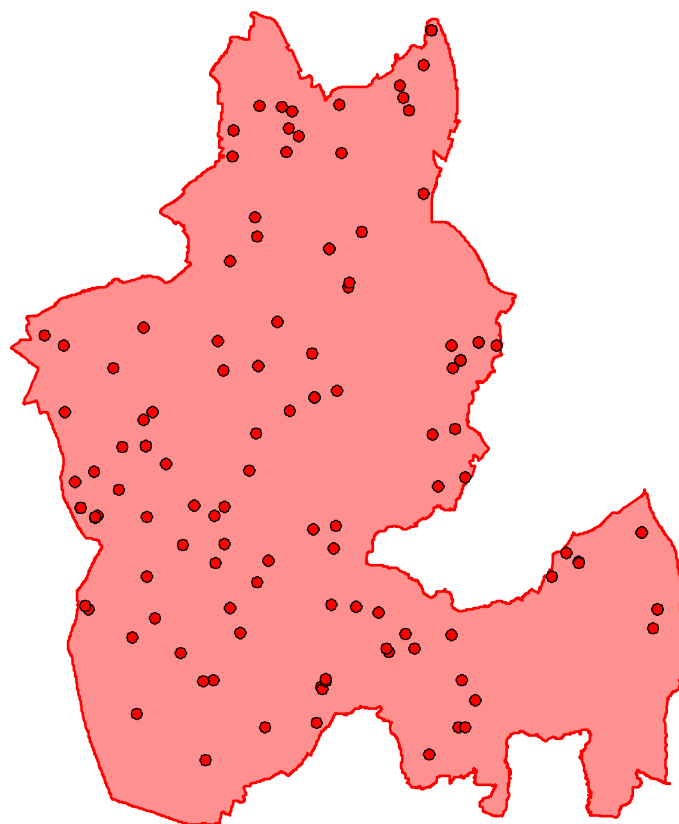
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6.3 Domestic Solid-Fuel Burning

DMBC has evaluated the possibility of exceedences of the objective for sulphur dioxide from domestic solid fuel burning. The Council considered any areas of ~500mx500m where there are more than 50 houses burning coal/smokeless fuel as their primary source of heating or areas where smoke might hang over an area on a winter's evening. The review was extended to include a spatial analysis of all complaints associated with emission of smoke from domestic chimneys since 2002 (See Figure 8). Evaluation of the results indicated that there were no areas in the borough where clusters of complaints were occurring.

DMBC confirms that there are no areas of significant domestic fuel use in the Local Authority area.

Figure 8 Smoke Complaints in Dudley Borough, 2002-2014



7 Fugitive or Uncontrolled Sources

DMBC has considered potential PM₁₀ emissions from quarrying and mineral extraction sites, landfill sites, coal and material stockyards, waste management sites and major construction works. Since the last round of Review & Assessment, there have been no new developments which fall into this category. The results of the assessment are therefore summarised as follows:

DMBC confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

New monitoring data has confirmed ongoing exceedences the annual mean NO₂ objective which all fall within the existing borough wide AQMA:

1. Halesowen Road, Netherton
2. Windmill Hill, Cradley,
3. High Street, Pensnett
4. Dudley Street, Sedgley
5. Mill Street, Brierley Hill
6. High Street, Quarry Bank
7. High Street, Wordsley
8. Birmingham Road, Dudley
9. Buffery Road, Dudley

New monitoring data has also confirmed exceedences of the annual mean NO₂ objective during 2011 in three new locations that had not been confirmed previously:

10. Castle Hill, Dudley
11. Hall Street, Dudley
12. Burton Road/Eve Lane, Gornal

A number of areas where problems were identified previously were demonstrated to comply with the annual mean NO₂ objective during 2014:

1. Hagley Road, Halesowen
2. Pedmore Road, Lye
3. Amblecote High Street
4. Himley Road, Lower Gornal
5. Stourbridge Road, Halesowen
6. New Road, Stourbridge
7. New Street Dudley (but note closure for part of the year due to essential road works)

Annual trends have been found to vary on a site by site basis and there is no evidence of any strong downward trends at any of the sites monitored, or any exceedences of the air quality objectives outside the existing AQMA that would lead to revocation or modification of the existing AQMA boundary.

8.2 Conclusions from Assessment of Sources

The Council has identified no specific requirement to proceed to a Detailed Assessment for any new or significantly changed sources.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified any specific requirements to undertake Detailed Assessment of any new pollutants or to modify DMBC's current AQMA order.

The Council proposes to continue monitoring PM₁₀ and NO₂ during 2015/2016 to conform with ongoing Review & Assessment Requirements and inform future revisions to the action plan.

Following on from the current assessment, DMBC's next course of action will be to submit an update on progress with the action plan during 2015 and a combined Progress Report/Action Plan Progress Report at the end of April 2016.

9 References

1. DEFRA (2009) Local Air Quality Management Technical Guidance LAQM.TG(09)
2. DEFRA (2009) Local Air Quality Management Policy Guidance LAQM.PG(09)
3. DMBC (2010) Further Assessment of Air Quality
4. DMBC (2011) Air Quality Action Plan
5. HSL/BV/NPL (on behalf of DEFRA and the devolved administrations) (2015) "Summary of Laboratory Performance in AIR/WASP NO₂ Proficiency Testing Scheme (April 2013 – February 2015)."

Appendices

Appendix A: QA/QC Data

Appendix B: NO₂ Diffusion Tube Data Set, 2014

Appendix A: QA/QC Data

Diffusion Tube Bias Adjustment Factors

The NO₂ tubes employed by DMBC are supplied and analysed by Gradko International Ltd., Winchester, Hampshire. Full details are provided in Box 1.1

Diffusion Tube Details	
Type Of Tube	Nitrogen Dioxide (NO ₂)
Type of absorbent	Triethanolamine
Method of tube preparation	20% TEA in water
Monitoring site locations	See Table 5.
Exposure dates	Tubes are exposed in accordance with the NETCEN calendar
Exposure duration	One month
Measured concentrations	See Table 8
Bias Adjustment Factor	0.91
Spreadsheet Version Number	03/15

Box 1.1: Nitrogen Dioxide diffusion tube information

Factor from Local Co-location Studies

Data provided by DMBC for use in the national survey is summarised in Box 1.2

DMBC Co Location Study								
Site	Type	Site Type	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)
Central Dudley	20% TEA in Water	UB	12	26	23	11.2%	G	0.90
Colley Gate	20% TEA in Water	R	12	41	35	15.2%	G	0.87
Burnt Tree	20% TEA in Water	R	12	36	31	18.1%	G	0.85
Wordsley	20% TEA in Water	R	12	52	60	-12.6%	G	1.14
							Mean	0.94
							National Factor	0.91

Box 1.2 DMBC Co-Location Data 2014

Discussion of Choice of Factor to Use

Local Authorities are advised to report both the adjustment factor from their local study, and the national bias adjustment factor. Box 1.2 demonstrates that the DMBC locally derived average value of 0.94 was slightly higher than the national bias adjustment factor of 0.91 calculated using spreadsheet version 03/15.

Normally, the decision of which bias adjustment factor to use will depend upon a number of issues that will need to be considered. At the end of the day it will be up to each Local Authority to take account of these factors and set out the reasons for the choice made. DMBC has chosen to use the national factor for the following reasons:

- The survey consists of over 16 tubes exposed over a wide range of settings which differ from the co-location sites employed in Dudley. For example, none of the co-location sites assessed are on a building façade in a canyon-like street.
- The automatic analysers have been operated using local, rather than national, QA/QC procedures.
- During some years, data capture from the automatic analyser has been less than 90%; use of nationally calculated bias adjustment factors enables a consistent approach to be used from one year to the next.

PM Monitoring Adjustment

Data from 01/01/2010 onwards has been corrected using DEFRA's Volatile Correction Model (VCM) web portal. This web portal is funded by DEFRA and is designed for all users of TEOM PM10 measurements. It allows TEOM measurements to be corrected for the loss of volatile components of particulate matter that occur due to the high sampling temperatures employed by this instrument. The resulting corrected measurements have been demonstrated as equivalent to the gravimetric reference equivalent.

Corrections were carried out on 4th March 2014 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites.

Results prior to 2014 have been re-corrected using the most current FDMS data and may show some differences to data quoted in previous reports. These values supersede any concentrations reported previously.

Short-term to Long-term Data adjustment

No short-term to long-term adjustments were performed as all sites monitored conformed to a minimum data capture rate of 75%.

QA/QC of Automatic Monitoring

The chemiluminescent NO₂ analysers are housed in an air-conditioned environment and are operated according manufacturers' instructions. Calibration of instruments is carried out once every two weeks by DMBC personnel. The calibration is performed with zero air from the analyser's internal zero air generators and certificated gas cylinders supplied by BOC. 15-minute averaged data is collected and scaled using the determined calibration factors. All instruments are serviced at 6-monthly intervals by engineers from Environmental Technology plc, and are covered by that firm's service contract.

QA/QC of diffusion tube monitoring

The current test laboratory, Gradko, participates in two centralised QA/QC schemes:

- AIR, which is an independent analytical proficiency-testing (PT) scheme, operated by Laboratory of the Government Chemist (LGC) Standards and supported by the Health and Safety Laboratory (HSL). The scheme, which started in April 2014, combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.
- A monthly field inter comparison exercise

The laboratory demonstrated excellent levels of performance with regard to AIR NO₂ PT performance criteria over the period April 2014 to February 2015 [5], see Box 1.10:

Summary of Gradko Diffusion Tube Performance During 2014				
WASP/AIR NO ₂ PT Round	AR PT AR001	AR PT AR003	AR PT AR004	AR PT AR006
Evaluation Period	April- May 2014	July- Aug 2014	Oct- Nov 2014	Jan- Feb 2015
% of results submitted which were deemed to be satisfactory based upon a z-score of ± 2	100%	100%	100%	100%

Box 1.10 Gradko Summary Performance For AIR NO₂ PT Rounds AR001, AR003, AR004 and AR006

Appendix B: NO₂ Diffusion Tube Data Set, 2014

DMBC NO ₂ Diffusion Tube Data Set, 2014												
Site id	2014 Bias Adjusted NO ₂ Concentrations (µg/m ³)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
17b	22.1	20.1	25.5	17.9	19.0	18.0	14.7	10.1	24.4	21.0	28.9	21.8
13b	16.2	15.1	19.5	11.7		9.7	9.1	6.8	15.8	15.0	18.4	17.4
32	43.9	40.8	42.1	45.4	37.7	34.6	37.3	42.0	40.9	36.1	40.9	39.8
32b	40.4	33.8	60.7	46.8	43.7	40.4	45.6	29.5	58.3	38.8	49.6	35.9
32e	41.1	33.6	51.4	39.3	43.1	42.5	42.9	31.4	50.8	34.3	41.4	34.2
32f	50.1	38.5	48.4	39.0	42.2	39.2	36.1	26.9	45.9	37.3	49.5	33.4
62b	38.5	46.5	52.3	50.9	45.9	45.3	47.0	46.2	52.2	41.7	39.8	49.9
62d	24.3	23.8	39.9	36.3	30.6	36.7	35.9	27.5	45.0	24.8	31.8	29.1
62e	41.4	44.2	43.1	42.8	34.7	35.4	36.2	34.9	41.4	43.8	37.6	47.4
62r-t	26.9	26.2	38.3	32.1	31.8	36.9	36.0	24.0	40.5	26.2	36.4	33.6
53	33.5	36.5	38.3	38.3	37.7	33.0	33.1	29.3	37.3	34.3	40.8	39.0
16b	36.3	32.8	35.1	34.8	30.9	26.8	25.4	25.7	35.1	29.4	30.1	40.1
16m	38.1	41.2	39.0	40.5	33.3	38.7	37.0	31.8	45.0	33.0	44.3	40.3
34a-ac	44.4	44.2	48.0	45.8	46.7	44.9	50.4	41.1	55.0	45.3	54.1	49.2
34ay	<u>66.1</u>	<u>64.2</u>	54.6	57.4	54.3	52.3	54.4	51.2	55.8	<u>60.2</u>	<u>61.6</u>	<u>65.6</u>
21c	15.4	11.4	17.4	14.3	9.3	9.9	8.7	5.6	14.7	11.1	21.9	12.3
54	42.9	44.0	41.6	39.7	37.9	33.0	33.6	34.1	40.2	38.7	39.4	49.2
57a	35.9	30.8	48.7	41.4	38.9	41.2	45.6	33.7	51.0	36.8	47.9	33.3
10-10b	28.2	24.2	29.3	23.6	20.0	19.1	18.5	15.3	25.5	22.6	30.7	24.2
63	46.3	41.3	52.1	40.8	43.8	42.0	47.5	40.1	53.9	37.2	51.4	40.6
63c	43.0	39.9	47.7	45.0	38.4	48.0	37.4	33.3	47.0	49.1	41.8	37.0
5w	34.1	31.3	34.5	30.4	22.7	29.3	23.4	29.2	36.5	42.3	41.0	43.0
35c	44.2	46.8	47.5	38.8	42.1	35.2	33.2	34.6	41.1	37.9	41.9	40.6
19e	37.4	32.4	40.5	38.8	35.8	35.4	34.6	26.7	37.0	35.5	38.6	37.5
3a	33.0	37.4	46.3	45.2	41.7	47.7	40.7	37.7	47.0	41.6	46.0	24.2
3bx	35.6	40.8	51.6	46.1	39.2	42.1	38.9	39.8	45.7	44.9	40.8	57.1
3c	34.5	29.6	41.9	44.3	36.3	40.0	31.2	31.1	45.3	33.9	31.5	33.1
3e	39.9	32.6	48.4	55.7	41.5	48.8	42.7	37.1	52.8	38.9	53.0	33.1
3gx	42.4	44.5	48.2	46.1	41.8	36.7	34.3	42.8	38.8	46.9	45.3	47.8
3r-t	36.1	34.8	39.7	38.3	37.0	36.2	32.2	35.1	38.6	28.3	46.1	42.7
15a	39.8	29.1	46.4	42.0	37.5	42.7	38.2	28.4	45.6	36.8	51.9	40.3
18	16.3	13.1	18.8	14.8	11.2	12.4	10.6	7.8	17.4	12.1	23.1	15.0
50d	30.3	28.2	39.5	33.5	33.9	37.2	36.3	25.2	43.7	37.4	39.8	33.6
50e	37.1	33.6	45.1	40.6	36.7	38.0	37.6	30.0	43.4	38.3	52.9	36.7
51	18.3	15.3		16.7	14.5	14.5	13.0	11.9	20.5	15.8	25.2	23.4
33	35.9	30.9	38.6	38.9	35.5	41.1	33.8	26.8	44.5	30.1	41.3	34.5

DMBC NO ₂ Diffusion Tube Data Set, 2014												
Site id	2014 Bias Adjusted NO ₂ Concentrations (µg/m ³)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
33p	<u>64.5</u>	51.7	54.8	48.8	47.0	44.8	44.8	45.6	53.3	45.5	59.7	58.8
33ex	27.4	22.1	22.8	20.1	15.4		12.0	12.8	20.6	21.4	32.0	27.4
30	56.3	42.3	<u>64.8</u>	<u>60.7</u>	51.3	47.7	47.6	51.2	59.9	48.2	<u>62.6</u>	<u>63.2</u>
30eX	48.5	43.2	54.0	52.1	42.3	39.1	45.1	46.5	53.8	42.0	54.5	53.9
30g	33.7	32.6	44.0	42.5	39.5	35.8	32.6	34.3	45.6	35.0	43.4	40.2
30t	24.4	20.4	25.8	19.8	15.0	17.5	15.1	12.6	21.7	18.8	27.7	25.6
60	26.0	22.8	28.7	23.7	18.5	20.4	16.7	15.0	24.2	22.0	30.2	28.1
27g	<u>61.9</u>	<u>63.0</u>	<u>70.7</u>	<u>68.0</u>	<u>60.5</u>	58.3	<u>62.5</u>	59.6	<u>68.3</u>	57.4	<u>74.6</u>	<u>71.2</u>
27gX	<u>62.8</u>	<u>62.0</u>	<u>68.9</u>	<u>67.3</u>	<u>63.6</u>	<u>60.6</u>	<u>68.3</u>	<u>65.6</u>	<u>69.0</u>	57.6	<u>69.9</u>	<u>70.2</u>
27j	<u>65.2</u>	48.5	59.3	<u>62.1</u>	<u>60.0</u>	<u>60.1</u>	56.3	<u>62.1</u>	<u>66.8</u>	53.8	48.4	<u>72.0</u>
27p	48.4	35.7	52.5	54.8	45.1	47.6	47.8	35.7	<u>63.5</u>	37.1	53.9	45.2
14	41.7	32.5	35.9	40.9	37.5	35.4	33.0	37.1	41.2	36.0	33.0	46.8
14a	37.7	32.7	39.9	37.3	30.1	32.4	34.4	26.0	34.2	32.7	35.2	37.7
45c	33.7	33.1	46.5	42.7	38.7	47.7	43.9	29.5	45.6	36.1	53.7	39.9
49	21.4	19.3	24.3	19.6	16.7	16.0	8.5	11.4	21.6	19.5	29.8	21.4

Notes

- Road Closed
- Data Unavailable