2013 Air Quality Progress Report for Dudley MBC

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

November 2013

Final Issue

Local Authority Officer	G. Hodgkiss L. Fawthrop
Department	Environmental Protection Team
Address	Dudley MBC, Directorate of the Urban Environment, 4 Ednam Road, Dudley, DY1 1HL
Telephone	01384 812345
e-mail	Enviroprotect.due@dudley.gov.uk
Report Reference number	DMBC/EP/1/2012/2
Date	30 November 2013

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 Annual Progress Report (APR) reviews the results of the borough wide air pollution monitoring programme which currently focuses on the pollutants nitrogen dioxide (NO_2) and fine particles (PM_{10}) and covers the calendar year January to December 2012.

Air quality in Dudley has continued to meet national air quality strategy objectives with the exception of NO_2 which is mainly generated from combustion sources such as road vehicles. During 2012, ongoing exceedences of the NO_2 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:

- Halesowen Road, Netherton
- Windmill Hill, Cradley,
- High Street, Pensnett
- Dudley Street, Sedgley
- High Street, Quarry Bank
- Hagley Road, Halesowen
- High Street, Wordsley
- Pedmore Road, Lye
- New Street, Dudley
- Stourbridge Road, Halesowen
- Birmingham Road, Dudley
- Buffery Road, Dudley

Additionally, exceedences of the NO_2 objectives have been confirmed at a number of additional roadside locations which were not featured in the action plan; subsequent revisions will also need to address the following areas:

- Castle Hill, Dudley
- Hall Street, Dudley
- Burton Road/Eve Lane, Gornal

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

It should also be noted that Amblecote High Street, which failed to meet air quality objectives in Dudley in previous rounds of Review & Assessment was found to comply with the NO_2 air quality during 2012.

This report provides updated monitoring results for all of these locations and other areas currently under investigation.

The assessment has not identified any need for the declaration of additional air quality management areas. Air quality monitoring will be continued during 2013/14 at a reduced number of specific locations. The programme will continue to quantify concentrations of NO_2 in order to inform future revisions of the air quality action plan and to confirm that compliance is maintained is areas where improvements have been demonstrated. PM_{10} will also be monitored to demonstrate ongoing compliance with air quality objectives.

The Council is actively participating in the West Midlands Low Emissions Towns and Cities programme and has acted as lead authority in the development of regional best practice air quality & planning policy. Dudley's air quality action plan will require revision once the guidance document is formally adopted which is anticipated will occur at the end of 2013.

The Council will next be required to submit a combined Air Quality & Action Plan Progress Report in April 2014.

Table of Contents

List of Tables

List of Figures

Appendices

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 District 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 six other authorities which comprise the West Midlands include the cities of Birmingham, Coventry and Wolverhampton and the boroughs of Sandwell, Solihull and Walsall. Historically, Dudley MBC (DMBC) has worked closely with the six other WM Authorities in tackling regional air pollution issues and more recently as part of 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 villages and 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 include 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 2010. These include:

- Twelve Part A1 Processes regulated by the Environment Agency including waste management, combustion, metal processing, chemical processing and carbon regeneration activities, and:

- Five Part A2 Processes comprising 3 manufacturers of ceramic products, 2 ferrous foundries and 118 Part B Processes. These activities 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 Progress Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where 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.

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to 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 µg/m^3 (milligrammes per cubic metre, mg/m^3 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 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, 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 of Most Recent Report**	**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	Sep-2012	Round 5

During the previous rounds of Review & Assessment, DMBC declared its first AQMA in 2003 following confirmation of exceedences of the annual mean nitrogen dioxide

(NO_2) objective (AQO) in the Brierley Hill area. NO_2 is one of the oxides of nitrogen (NO_x) identified as having an adverse affect on health by the World Health Organisation (WHO). Oxides of nitrogen can be generated by any combustion process including electricity generation, commercial and domestic heating or by the internal combustion engine, typically associated with motor vehicles.

Following identification of non compliance areas in Brierley Hill, an air quality action plan (AQAP) was published in 2004 which contained a number of key measures to improve air quality. These included the construction of a new parallel route and implementation of local travel plans as part of the Brierley Hill Sustainable Access Network (BHSAN). The parallel route was substantially completed in October 2008 and monitoring of air quality and other proxy indicators continues within the Brierley Hill area to establish the extent of any further remedial action required.

Following the 2004 Detailed Assessment, DMBC declared a second AQMA in Sedgley in May 2005 and a further six areas of exceedence of the annual mean NO_2 AQO were identified in the 2006 USA including Netherton, Cradley, Halesowen, Wordsley, Pensnett, Quarry Bank and Lye.

The 2007 Detailed Assessment confirmed additional new exceedences in Halesowen and Lower Gornal. At this stage, DMBC proposed the creation of a new borough wide AQMA to include the amalgamation of the two existing AQMAs in Brierley Hill and Sedgley. These proposals were subject to consultation with the general public, external stakeholders and via DMBC's local area committee meetings. DEFRA also endorsed these proposals in their feedback on the 2007 Detailed Assessment Report.

The Dudley Borough AQMA was declared in December 2007 with respect to exceedences of both the annual mean and short term NO_2 AQOs. The declaration revoked the former AQMAs in Brierley Hill and Sedgley, thereby enabling DMBC to adopt a more consolidated approach towards the action planning process.

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 identifies 15 areas of the borough where exceedences of the annual mean NO_2 objective have been positively identified. These locations included those identified prior to the borough AQMA declaration and several identified in the subsequent 2008 APR and 2009 USA [4, 5]. Further information is provided in Table 3 and Figure 1, which shows the geographic setting of these locations in relation to the borough AQMA boundary.

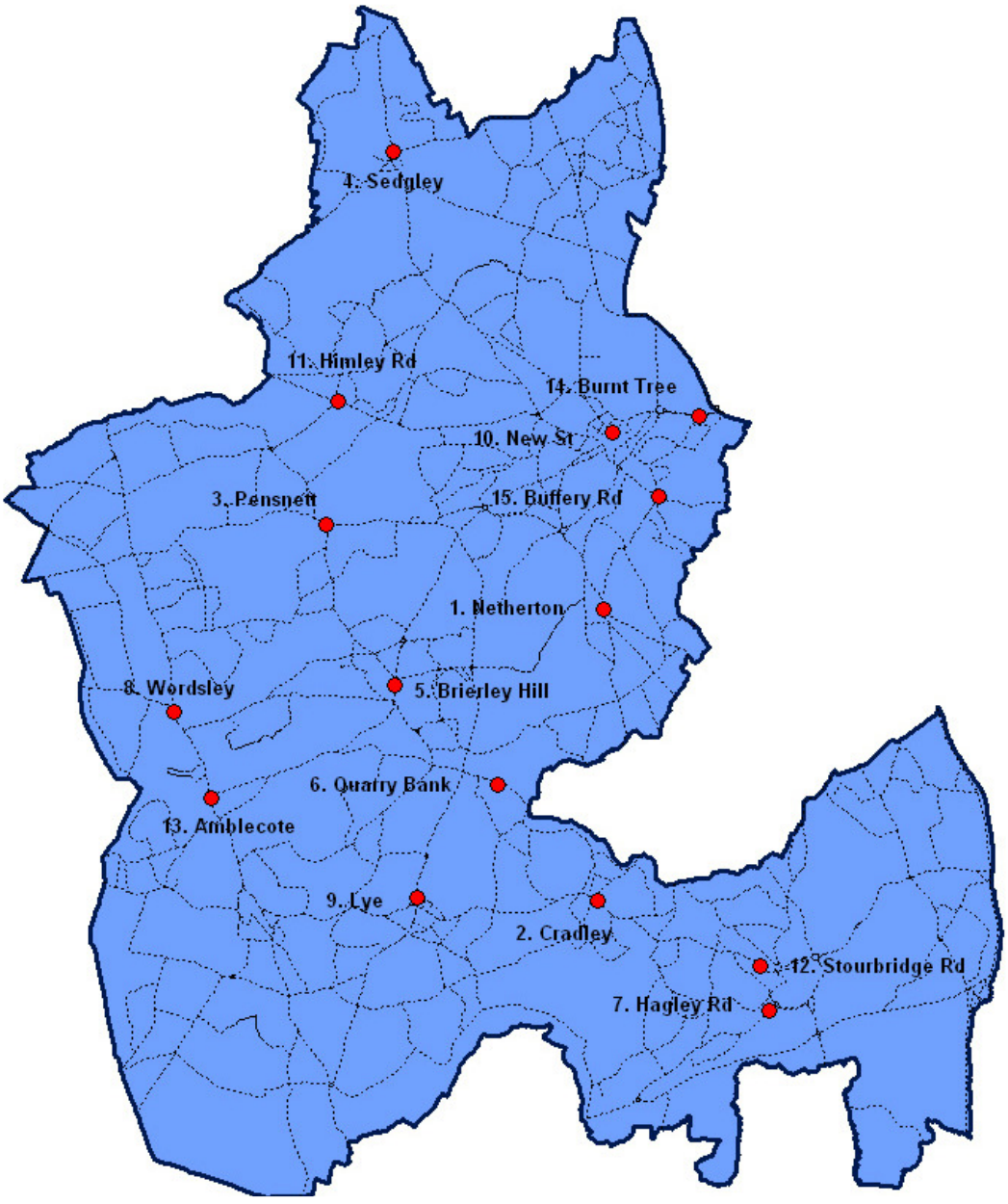
Table 3 Locations Identified In Dudley MBC's 2010 Further Assessment

DMBC NO_2 Exceedence Areas	
Area	**Description**
1	Halesowen Road, Netherton
2	Windmill Hill, Cradley
3	High Street, Pensnett
4	Dudley Street, Sedgley
5	High Street, Brierley Hill
6	High Street, Quarry Bank
7	Hagley Road, Halesowen
8	High Street, Wordsley
9	Pemore Road, Lye
10	New Street, Dudley
11	Himley Road, Lower Gornal
12	Stourbridge Road, Halesowen
13	High Street, Amblecote
14	Birmingham Road near to Burnt Tree Island, Dudley
15	Buffery Road, Dudley

Levels of greater than 60µg/m^3 NO_2 have been recorded at two of the exceedence locations, Areas 1 and 8. LAQM.TG(09) and LAQM.PG(09) suggest that NO_2 concentrations above this level may give rise to additional exceedences of the short term AQO, creating additional risks for receptors that might be exposed for periods of one hour or more (e.g. people shopping in a busy street). The AQMA declaration therefore included exceedences of both NO_2 AQOs as a precautionary measure until further work could be undertaken to investigate possible exceedences of the short term AQO. However, dispersion modelling undertaken as part of the 2010 Further Assessment of air quality was unable to confirm whether exceedences of the short term objective are likely at these locations and further monitoring of NO_2 using automated detectors is required; work on this project has now commenced in Wordsley (Area 8).

DMBC prepared a draft AQAP to address these air quality issues in 2010. Consultation with stakeholders was completed by the end of the year and the action plan was revised to incorporate appropriate modifications at the beginning of 2011. The final version of the action plan was and adopted by the Council in September 2011 [6].

Figure 1 Map of Dudley Borough AQMA Boundary



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

During the 2012 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 ($NO/NO_2/NO_x$) and fine particulates (PM_{10}).

- **Central Dudley, Ednam Road,** monitoring $NO/NO_2/NO_x$ and PM_{10}. 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 $NO/NO_2/NO_x$ and PM_{10}. This roadside monitoring station has been operational since 2006 and monitors roadside pollution levels in one of the areas where the annual mean NO_2 objective has been exceeded.

- **Burnt Tree, Ernest Road, Dudley,** monitoring $NO/NO_2/NOx$ and PM_{10}. This roadside monitoring station has been operational since August 2010 and monitors roadside pollution levels in another area where the annual mean NO_2 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 $NO/NO_2/NO_x$. This roadside monitoring station has been operational since April 2011 and monitors roadside pollution levels in one of the areas where the annual mean NO_2 objective has been exceeded. This has replaced the Brierley Hill Rose station which was decommissioned at the end of 2010.

Full details of current 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, NO_2 and NO_X was performed at all stations using API chemiluminescent monitors and PM_{10} 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 using 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

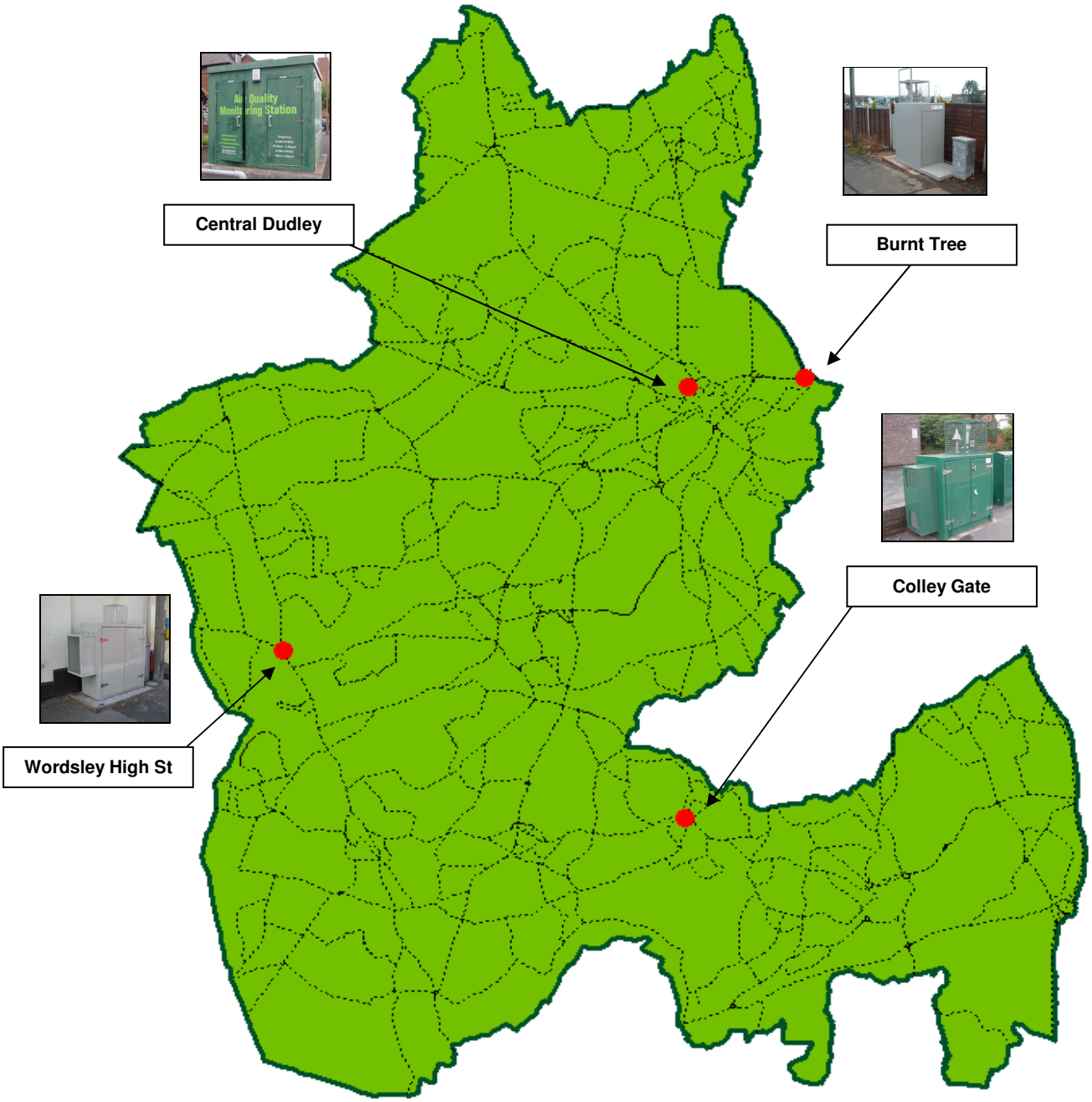


Table 4 Details of Automatic Monitoring Sites

DMBC Current Instrumental Monitoring Stations										
Site Name	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Ht (m)**	**Pollutants Monitored**	**In AQMA**	**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	3.0	NO_2	Y	Chemiluminescent	N	N/A	N/A
Central Dudley	Urban background	394291	290460	3.0	PM_{10}	Y	$TEOM_{(VCM)}$	N	N/A	N/A
Colley Gate	Roadside	394243	284626	2.0	NO_2	Y	Chemiluminescent	Y 21	4	N
Colley Gate	Roadside	394243	284626	2.0	PM_{10}	Y	$TEOM_{(VCM)}$	Y 21	4	N
Burnt Tree	Roadside	395761	290575	2.0	NO_2	Y	Chemiluminescent	Y 9	9	N
Burnt Tree	Roadside	395761	290575	2.0	PM_{10}	Y	$TEOM_{(VCM)}$	Y 9	9	N
Wordsley	Roadside	389134	286893	3.0	NO_2	Y	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 NO_2 only*

2.1.2 Non-Automatic Monitoring Sites

DMBC continues to supplement monitoring 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 2012 calendar year, 99 sites were monitored for NO_2 only 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. Sites monitored for the first time are indicated in red. The number of diffusion tubes was further reduced to 70 at the end of the 2012 calendar year; therefore it should be noted that there are likely to be further reductions in site numbers in subsequent Review & Assessment reports.

DMBC has established an interactive diffusion tube map which gives further information on the geographic location of the diffusion tubes. Historic measurement data can also be downloaded from this site including data from discontinued 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

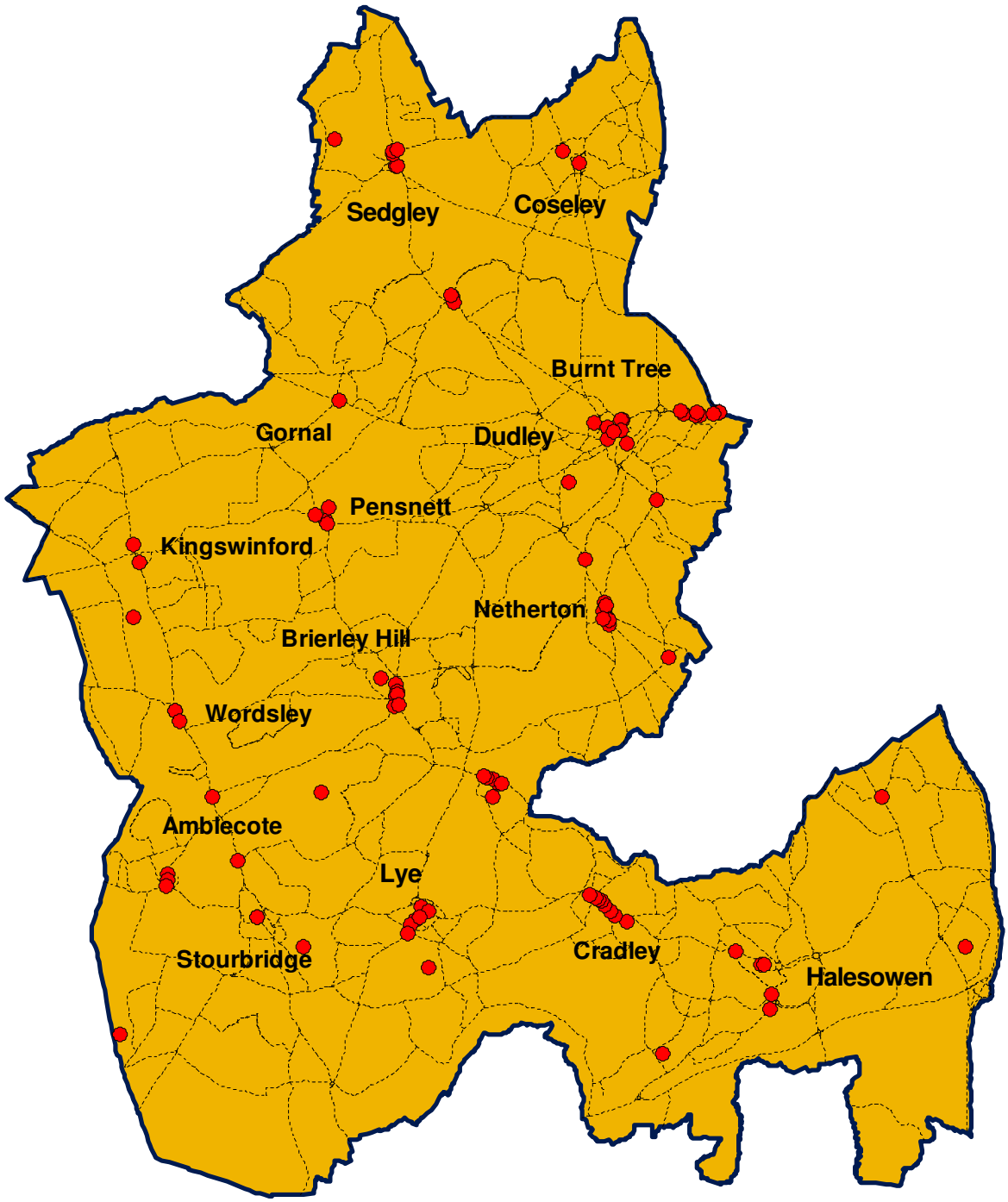


Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites											
Site Ref	**Site Name**	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Height (m)**	**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?**
20	Castle Street Coseley	R	394117	293687	3.2	NO_2	Y	N	Y (8m)	1.3	Y
17b	Evergreen Close, Coseley	UB	393909	293821	2.7	NO_2	Y	N	Y (8m)	N/A	N
13b	Padarn Close, Sedgley	S	391105	293975	3.0	NO_2	Y	N	Y (3m)	N/A	N
32	Dudley Street, Sedgley	R	391853	293650	3.0	NO_2	Y	N	Y (4m)	2.6	Y
32b	Dudley Street, Sedgley	R	391875	293642	3.1	NO_2	Y	N	No	2.7	Y
32e	High Street, Sedgley	R	391823	293788	3.3	NO_2	Y	N	Y(0m)	2.9	Y
32f	High Street, Sedgley	R	391825	293830	2.9	NO_2	Y	N	Y(10m)	1.2	Y
32r	Bilston Street, Sedgley	R	391867	293840	2.8	NO_2	Y	N	Y (0m)	4.1	Y
62a	Birmingham Road, Dudley	R	395831	290595	2.5	NO_2	Y	N	Y(0m)	13	Y
62b	Birmingham Road, Dudley	R	395597	290560	2.5	NO_2	Y	N	Y (0m)	6.5	Y
62c	Birmingham Road, Dudley	R	395842	290599	2.0	NO_2	Y	N	Y(0m)	10	Y
62d	Birmingham Road, Dudley	R	395542	290556	3.0	NO_2	Y	N	Y(49m)	2.1	N
62e	Birmingham Road, Dudley	R	395402	290568	2.0	NO_2	Y	N	Y(0m)	4.4	Y
62fx	Birmingham Road, Dudley	R	395562	290586	3.0	NO_2	Y	N	N	0.9	N
62g	Castlegate Drive, Dudley	R	395367	290611	3.0	NO_2	Y	N	N	13	N
62r-t	Ernest Road AQMS	R	395762	290575	2.0	NO_2	Y	Y	Y(10m)	14	Y
52	High Street, Amblecote	R	389913	285055	1.7	NO_2	Y	N	Y(0m)	4.8	Y
53	High Street, Amblecote	R	389593	285840	3.2	NO_2	Y	N	Y(0m)	1.9	Y
16j	Stourbridge bus station	UC	390141	284350	2.6	NO_2	Y	N	N	1.3	N
16b	High Street, Stourbridge	R	390141	284350	2.6	NO_2	Y	N	Y(0m)	1.3	Y

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites											
Site Ref	**Site Name**	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Height (m)**	**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?**
34a-ac	High Street, Wordsley	R	389135	286893	3.0	NO_2	Y	Y	Y (0.5)	3.2	Y
34ay	High Street, Wordsley	R	389133	286910	2.7	NO_2	Y	N	Y (0)	1.6	Y
34d	High Street, Wordsley	R	389181	286772	3.1	NO_2	Y	N	Y (25m)	2.6	Y
31bx	Barnett Lane, Kingswinford	S	388616	288054	3.0	NO_2	Y	N	No	1.4	N
31g	Moss Grove, Kingswinford	R	388615	288958	2.1	NO_2	Y	N	Y(0m)	5.7	Y
31m	Market Street, Kingswinford	R	388696	288735	2.9	NO_2	Y	N	Y9(m)	2.9	Y
21c	Clent View, Stourbridge	S	388457	282895	3.0	NO_2	Y	N	Y(8m)	N/A	N
21d	High Street, Wollaston	R	389047	284883	2.9	NO_2	Y	N	Y(0m)	1.7	Y
21e	High Street, Wollaston	R	389043	284804	3.0	NO_2	Y	N	Y(0m)	2.6	Y
21f	High St/ Bridgnorth Rd,Wollaston	R	389033	284742	3.0	NO_2	Y	N	Y(4m)	1.8	Y
54	Himley Rd Gornal Wood	R	391159	290740	3.0	NO_2	Y	N	Y(0m)	2.4	Y
57	Eve Lane	R	392543	292021	2.0	NO_2	Y	N	Y(0m)	4.7	Y
57a	Burton Road	R	392576	291949	3.0	NO_2	Y	N	Y(0m)	3.6	Y
57b	Eve Lane	R	392539	292048	3.0	NO_2	Y	N	Y(7.4m)	2.4	Y
10-10b	Central Dudley AQMS	UB	394294	290459	3.0	NO_2	Y	Y	Y(75m)	30	N
63	Castle Hill, Dudley	R	394647	290507	3.0	NO_2	Y	N	Y(2m)	3.7	Y
63a	The Broadway, Dudley	R	394618	290505	3.0	NO_2	Y	N	N	2.7	Y
63b	Hall Street, Dudley	R	394707	290207	3.0	NO_2	Y	N	Y(1m)	2.6	Y
63d	Dudley Bus Station	UC	394622	290377	3.4	NO_2	Y	N	N	N/A	N
5s	New Street, Dudley	UC	394458	290409	3.0	NO_2	Y	N	Y(10m)	1.6	Y
5mx	High Street, Dudley	UC	394469	290264	3.2	NO_2	Y	N	No	22	N

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites											
Site Ref	**Site Name**	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Height (m)**	**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?**
5w	New Street, Dudley	UC	394530	290358	3.0	NO_2	Y	N	Y(0.5m)	1.7	Y
35a	Buffery Road	R	395064	289514	3.1	NO_2	Y	N	Y(0.5)	2.2	Y
19e	Hagley Road Halesowen	R	396462	283211	3.4	NO_2	Y	N	Y(0m)	2.8	Y
19x	Regent Close, Halesowen	B	392263	283721	3.0	NO_2	Y	N	Y (12m)	1.6	N
19t	Halesowen Bus Station	R	396484	283397	3.0	NO_2	Y	N	N	N/A	N
3k	Drews Holloway, Halesowen	B	394699	284291	3.0	NO_2	Y	N	Y(12m)	47	N
3a	Drews Holloway, Halesowen	R	394550	284373	2.8	NO_2	Y	N	Y(0m)	4.3	Y
3bx	Windmill Hill, Halesowen	R	394499	284408	2.4	NO_2	Y	N	Y(0m)	4.7	Y
3c	Windmill Hill, Halesowen	R	394506	284423	3.0	NO_2	Y	N	Y(0m)	4	Y
3d	Windmill Hill, Halesowen	R	394423	284504	2.4	NO_2	Y	N	Y(0m)	3.9	Y
3e	Windmill Hill, Halesowen	R	394384	284543	2.6	NO_2	Y	N	Y(0m)	2.7	Y
3g	Windmill Hill, Halesowen	R	394348	284571	2.4	NO_2	Y	N	Y(0m)	0.9	Y
3gx	Windmill Hill, Halesowen	R	394321	284596	3.3	NO_2	Y	N	Y(0m)	2.1	Y
3r-t	Colley Gate AQMS, Halesowen	R	394236	284627	2.0	NO_2	Y	N	No	3.5	N
15	Stourbridge Road, Halesowen	R	396353	283768	3.3	NO_2	Y	N	Y(0m)	3	Y
15a	Stourbridge Road, Halesowen	R	396392	283752	3.0	NO_2	Y	N	Y(0m)	2.4	Y
15b	Stourbridge Road, Halesowen	R	396040	283927	2.3	NO_2	Y	N	Y(35m)	1.5	N
24	King Charles Road, Halesowen	S	398864	283989	2.0	NO_2	Y	N	Y (0m)	11	N
24a	Long Lane, Halesowen	R	397836	285837	3.1	NO_2	Y	N	Y (0m)	2.6	Y
18	Hawthorne Road, Hayley Green	S	395135	282662	1.8	NO_2	Y	N	Y(0m)	16	N
11	High St, Lye	R	392172	284482	3.0	NO_2	Y	N	Y(5m)	2.3	Y
11b	High St, Lye	R	392248	284426	3.2	NO_2	Y	N	Y(0m)	1.4	Y

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites											
Site Ref	**Site Name**	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Height (m)**	**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?**
50d	Pedmore Road, Lye	R	392087	284310	3.2	NO_2	Y	N	Y(0m)	4	Y
50x	Pedmore Road, Lye	R	392042	284251	2.9	NO_2	Y	N	Y(0m)	10.8	Y
50e	Pedmore Road, Lye	R	392005	284144	3.3	NO_2	Y	N	Y(0m)	2.8	Y
51	Morvale Gardens, Lye	UB	392155	284349	2.0	NO_2	Y	N	Y(0m)	18	N
4	Junction Road, Stourbridge	UB	390718	283979	2.0	NO_2	Y	N	Y(0m)	N/A	N
33	High Street, Pensnett	R	390989	289254	2.2	NO_2	Y	N	Y (0m)	6.5	Y
33k	Tansey Green Road, Pensnett	R	390870	289328	3.1	NO_2	Y	N	Y (0m)	4.2	Y
33p	High Street, Pensnett	R	391017	289224	2.9	NO_2	Y	N	Y (0m)	3.8	Y
33ex	Birds Meadow, Pensnett	S	391027	289410	3.0	NO_2	Y	N	Y (0m)	1.9	N
2	Penrith Close, Amblecote	S	390932	285887	1.5	NO_2	Y	N	Y(0m)	N/A	N
30	High Street, Quarry Bank	R	393125	286009	***3.5***	NO_2	Y	N	Y (0m)	2.7	Y
30dx	High Street, Quarry Bank	R	393038	286060	2.8	NO_2	Y	N	Y (0m)	3.4	Y
30eX	High Street, Quarry Bank	R	392976	286070	2.8	NO_2	Y	N	Y (3m)	2.3	Y
30g	High Street, Quarry Bank	R	392943	286098	2.9	NO_2	Y	N	Y (0m)	2.3	Y
30m	High Street, Quarry Bank	R	393162	285997	3.0	NO_2	Y	N	Y (0m)	2.4	Y
30t	King Street, Quarry Bank	UB	393038	285843	2.7	NO_2	Y	N	Y (6m)	1.6	N
36	Blowers Green Road, Dudley	UB	393981	289733	2.0	NO_2	Y	N	No	N/A	N
60	Belper Row, Netherton	UB	395215	287554	3.0	NO_2	Y	N	Y (0m)	2	N
64	Cinder Bank, Netherton	R	394182	288773	3.0	NO_2	Y	N	Y (0.2m)	6.1	Y
27f	Cradley Road, Netherton	R	394484	287962	3.0	NO_2	Y	N	Y (0m)	2.8	Y
27b	Halesowen Road, Netherton	R	394429	288239	3.0	NO_2	Y	N	Y (0m)	6	Y
27c	Halesowen Road, Netherton	R	394439	288070	3.0	NO_2	Y	N	No	1.1	Y

Table 5 Details of Non-Automatic Monitoring Sites

Diffusion Tube Sites											
Site Ref	**Site Name**	**Site Type**	**X OS Grid Ref**	**Y OS Grid Ref**	**Inlet Height (m)**	**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?**
27g	Halesowen Road, Netherton	R	394417	288178	2.7	NO_2	Y	N	Y (0m)	1.5	Y
27gX	Halesowen Road, Netherton	R	394417	288171	2.7	NO_2	Y	N	Y (0m)	1.5	Y
27j	Halesowen Road, Netherton	R	394416	288169	2.7	NO_2	Y	N	Y (0m)	1.6	Y
27k	Halesowen Road, Netherton	R	394415	288137	3.1	NO_2	Y	N	Y (3m)	2.5	Y
27n	Halesowen Road, Netherton	R	394435	288201	3.2	NO_2	Y	N	Y (0m)	5	Y
27p	Halesowen Road, Netherton	R	394474	288029	2.9	NO_2	Y	N	Y (0m)	2.7	Y
27q	Castleton Street, Netherton	R	394411	288046	2.9	NO_2	Y	N	Y (0m)	1.4	N
27t	Halesowen Road, Netherton	R	394466	288037	3.0	NO_2	Y	N	Y (0m)	2.4	Y
14	High Street, Brierley Hill	R	391845	287081	3.1	NO2	Y	N	Y (40m)	4.8	Y
14a	High Street, Brierley Hill	R	391859	287232	3.0	NO_2	Y	N	Y(0m)	3.1	Y
14b	High Street, Brierley Hill	R	391870	287149	2.9	NO_2	Y	N	No	1	Y
14d	High Street, Brierley Hill	R	391863	287101	2.8	NO_2	Y	N	Y (1m)	2.1	Y
47	High Street, Brierley Hill	R	391840	286954	2.8	NO_2	Y	N	Y (4m)	3.8	Y
45c	Mill Street, Brierley Hill.	R	391890	286967	3.0	NO_2	Y	N	Y	1.9	Y
49	Talbot Street, Brierley Hill	UB	391678	287306	3.1	NO_2	Y	N	Y(2m)	1.7	N

Notes-

Sites indicated in red were established during the 2012 calendar year to investigate new areas of concern identified in the previous round of Review & Assessment

2.2 Comparison of Monitoring Results with Air Quality Objectives

Automatic Monitoring Data

During 2012, DMBC undertook continuous monitoring of NO_2 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 2012 monitoring programme are summarised in Table 6 and Table 7. These data have been ratified using LAQM.TG (09) procedures as summarised in Appendix 1.

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

- Good data capture at all locations (>90% for the period monitored)
- Exceedences of the 40 µg/m^3 annual mean NO_2 objective were recorded at Colley Gate and Wordsley
- There has been a small general increase in NO_2 concentrations at all monitoring stations compared with 2011.
- No exceedences of the short term NO_2 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 NO_2: 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 2012 %	Annual Mean Concentration µg/m^3				
					2008	2009	2010	2011	2012
Central Dudley	Urban Background	Y	N/A	95.5	27.9	27.2	30.0	24.7	25.8
Colley Gate	Roadside	Y	N/A	94.8	**41.3**	**40.2**	**44.2**	39.0	**41.4**
Burnt Tree	Roadside	Y	N/A	99.3	N/A	N/A	36.2 [1]	28.0 [2]	32.2
Wordsley	Roadside	Y	N/A	85.0	N/A	N/A	N/A	**56.3**[3]	**58.0**

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 NO_2 Concentrations measures at Automatic Monitoring Sites

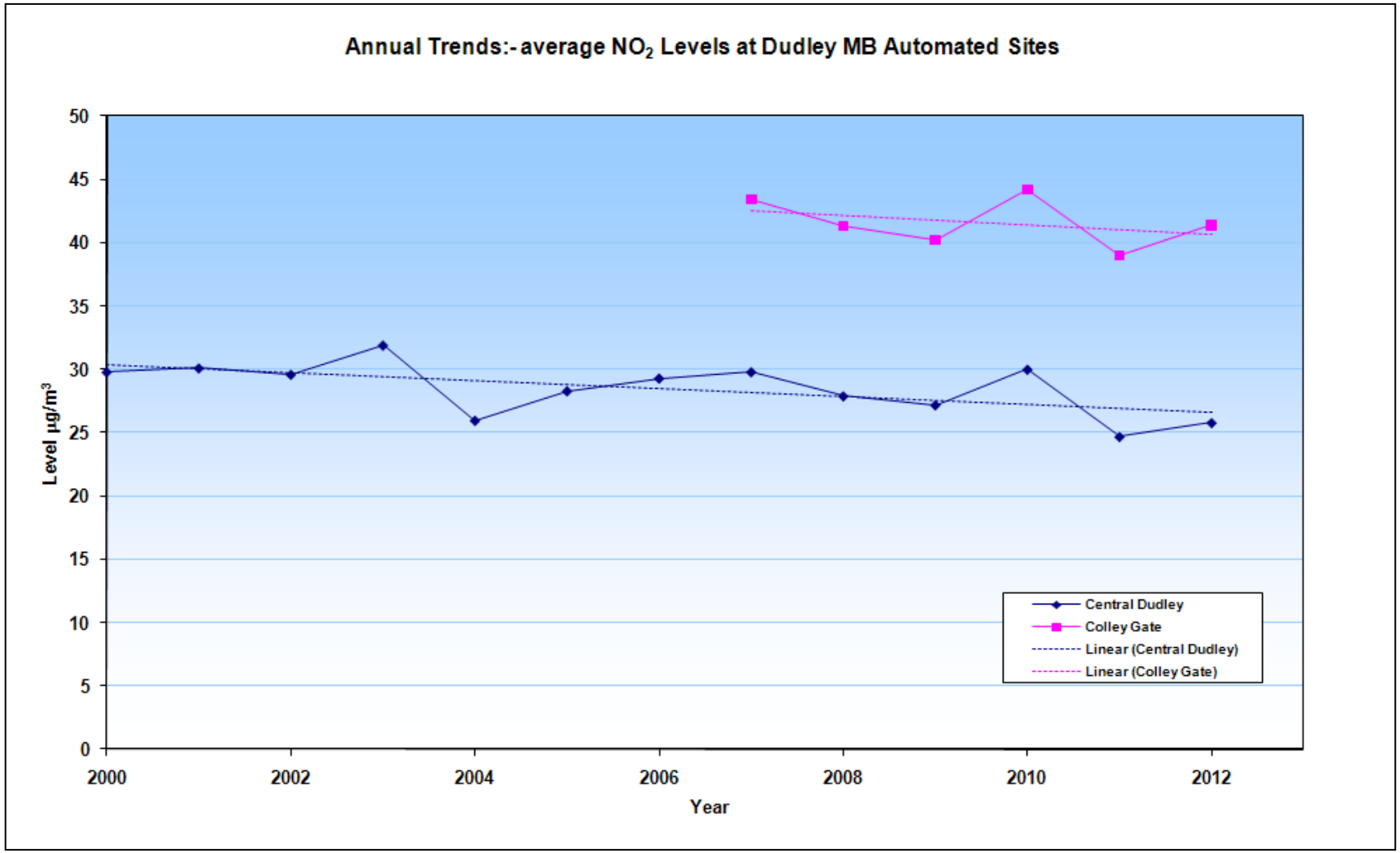


Table 7 Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

NO_2 Automated Monitoring Results									
Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 %[b]	Number of Exceedences of Hourly Mean (200 µg/m^3)				
					2008	2009	2010	2011	2012
Central Dudley	Urban Background	Y	N/A	95.5	1	0	0	0	0
Colley Gate	Roadside	Y	N/A	94.8	1	0	1	0	0
Burnt Tree	Roadside	Y	N/A	99.3	N/A	N/A	4[1,2]	0 [2]	0
Wordsley	Roadside	Y	N/A	85.0	N/A	N/A	N/A	0[3]	17(200.6)

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 2012 NO_2 monitoring programme are summarised in Table 8. These data have been bias adjusted using a national bias adjustment factor of 0.97 calculated using spreadsheet version 03/13 (see Appendix A). Exceedences of the 40 $\mu g/m^3$ annual mean objective for NO_2 are highlighted in bold type and additionally underlined where values are greater than 60 $\mu g/m^3$. For additional information, the full 2012 diffusion tube data set is provided in Appendix B.

Table 8 Results of NO_2 Diffusion Tubes in 2012

Diffusion Tube Results						
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Full Calendar Year Data Capture 2012 (Number of Months)	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97
20	Castle Street Coseley	R	Y	N	10	29.5
17b	Evergreen Close, Coseley	UB	Y	N	11	22.4
13b	Padarn Close, Sedgley	S	Y	N	11	17.4
32	Dudley Street, Sedgley	R	Y	N	11	**44.4**
32b	Dudley Street, Sedgley	R	Y	N	11	**46.3**
32e	High Street, Sedgley	R	Y	N	11	**42.8**
32f	High Street, Sedgley	R	Y	N	10	**45.1**
32r	Bilston Street, Sedgley	R	Y	N	11	**40.7**
62a	Birmingham Road, Dudley	R	Y	N	11	35.3
62b	Birmingham Road, Dudley	R	Y	N	11	**47.7**
62c	Birmingham Road, Dudley	R	Y	N	11	37.0
62d	Birmingham Road, Dudley	R	Y	N	10	37.4
62e	Birmingham Road, Dudley	R	Y	N	6	35.9
62fx	Birmingham Road, Dudley	R	Y	N	11	**51.1**
62g	Castlegate Drive, Dudley	R	Y	N	11	**41.4**
62r-t	Ernest Road AQMS	R	Y	CT	11	37.4
52	High Street, Amblecote	R	Y	N	11	37.9
53	High Street, Amblecote	R	Y	N	11	37.4
16j	Stourbridge bus station	UC	Y	N	7	30.7
16b	High Street, Stourbridge	R	Y	N	11	37.4
34a-ac	High Street, Wordsley	R	Y	CT	11	**52.4**
34ay	High Street, Wordsley	R	Y	N	10	**63.9**
34d	High Street, Wordsley	R	Y	N	4	38.2

Table 8 Results of NO_2 Diffusion Tubes in 2012

Diffusion Tube Results						
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Full Calendar Year Data Capture 2012 (Number of Months)	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97
31bx	Barnett Lane, Kingswinford	S	Y	N	7	21.6
31g	Moss Grove, Kingswinford	R	Y	N	6	26.7
31m	Market Street, Kingswinford	R	Y	N	6	34.8
21c	Clent View, Stourbridge	S	Y	N	11	14.5
21d	High Street, Wollaston	R	Y	N	4	34.3
21e	High Street, Wollaston	R	Y	N	4	30.6
21f	High St. /Bridgnorth Rd, Wollaston	R	Y	N	4	32.8
54	Himley Rd Gornal Wood	R	Y	N	5	**42.6**
57	Eve Lane	R	Y	N	4	31,8
57a	Burton Road	R	Y	N	9	**45.1**
57b	Eve Lane	R	Y	N	4	28.7
10-10b	Central Dudley AQMS	UB	Y	CT	11	26.5
63	Castle Hill, Dudley	R	Y	N	11	**49.2**
63a	The Broadway, Dudley	R	Y	N	11	**43.6**
63b	Hall Street, Dudley	R	Y	N	3	**46.4**
63d	Dudley Bus Station	UC	Y	N	11	**40.7**
5s	New Street, Dudley	UC	Y	N	3	36.6
5mx	High Street, Dudley	UC	Y	N	11	33.0
5w	New Street, Dudley	UC	Y	N	9	**49.2**
35a	Buffery Road	R	Y	N	5	**50.9**
19e	Hagley Road Halesowen	R	Y	N	5	**42.8**
19x	Regent Close, Halesowen	UB	Y	N	9	28.2
19t	Halesowen Bus Station	R	Y	N	11	26.4

Table 8 Results of NO_2 Diffusion Tubes in 2012

Diffusion Tube Results						
Site ID	**Location**	**Site Type**	**Within AQMA ?**	**Triplicate (T) or Collocated (C) Tube**	**Full Calendar Year Data Capture 2012 (Number of Months)**	**2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97**
3k	Drews Holloway, Halesowen	UB	Y	N	11	21.0
3a	Drews Holloway, Halesowen	R	Y	N	11	**52.3**
3bx	Windmill Hill, Halesowen	R	Y	N	11	**47.8**
3c	Windmill Hill, Halesowen	R	Y	N	11	**41.8**
3d	Windmill Hill, Halesowen	R	Y	N	4	35.1
3e	Windmill Hill, Halesowen	R	Y	N	11	**43.9**
3g	Windmill Hill, Halesowen	R	Y	N	4	**48.7**
3gx	Windmill Hill, Halesowen	R	Y	N	11	**46.7**
3r-t	Colley Gate AQMS, Halesowen	R	Y	CT	11	**41.8**
15	Stourbridge Road, Halesowen	R	Y	N	11	**40.0**
15a	Stourbridge Road, Halesowen	R	Y	N	10	**45.6**
15b	Stourbridge Road, Halesowen	R	Y	N	4	**41.2**
24	King Charles Road, Halesowen	S	Y	N	4	18.7
24a	Long Lane, Halesowen	R	Y	N	4	32.4
18	Hawthorne Road, Hayley Green	S	Y	N	11	16.7
11	High St, Lye	R	Y	N	4	34.9
11b	High St, Lye	R	Y	N	11	38.7
50d	Pedmore Road, Lye	R	Y	N	11	37.2
50x	Pedmore Road, Lye	R	Y	N	11	**40.6**
50e	Pedmore Road, Lye	R	Y	N	11	32.6
51	Morvale Gardens, Lye	UB	Y	N	11	20.0
4	Junction Road, Stourbridge	UB	Y	N	4	17.9
33	High Street, Pensnett	R	Y	N	11	38.2

Table 8 Results of NO_2 Diffusion Tubes in 2012

Diffusion Tube Results						
Site ID	Location	Site Type	Within AQMA ?	Triplicate (T) or Collocated (C) Tube	Full Calendar Year Data Capture 2012 (Number of Months)	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97
33k	Tansey Green Road, Pensnett	R	Y	N	11	39.9
33p	High Street, Pensnett	R	Y	N	11	**55.3**
33ex	Birds Meadow, Pensnett	S	Y	N	11	23.9
2	Penrith Close, Amblecote	S	Y	N	4	16.9
30	High Street, Quarry Bank	R	Y	N	11	**57.5**
30dx	High Street, Quarry Bank	R	Y	N	11	35.3
30eX	High Street, Quarry Bank	R	Y	N	9	**55.1**
30g	High Street, Quarry Bank	R	Y	N	11	**42.3**
30m	High Street, Quarry Bank	R	Y	N	11	**47.5**
30t	King Street, Quarry Bank	UB	Y	N	11	24.5
36	Blowers Green Road, Dudley	UB	Y	N	4	22.8
60	Belper Row, Netherton	UB	Y	N	11	25.7
64	Cinder Bank, Netherton	R	Y	N	11	33.6
27f	Cradley Road, Netherton	R	Y	N	11	39.1
27b	Halesowen Road, Netherton	R	Y	N	4	33.8
27c	Halesowen Road, Netherton	R	Y	N	11	40.4
27g	Halesowen Road, Netherton	R	Y	N	11	**70.1**
27gX	Halesowen Road, Netherton	R	Y	N	11	**66.9**
27j	Halesowen Road, Netherton	R	Y	N	11	**59.5**
27k	Halesowen Road, Netherton	R	Y	N	4	**40.3**
27n	Halesowen Road, Netherton	R	Y	N	11	33.8
27p	Halesowen Road, Netherton	R	Y	N	11	**46.1**
27q	Castleton Street, Netherton	R	Y	N	5	26.6

Table 8 Results of NO_2 Diffusion Tubes in 2012

Diffusion Tube Results						
Site ID	**Location**	**Site Type**	**Within AQMA ?**	**Triplicate (T) or Collocated (C) Tube**	**Full Calendar Year Data Capture 2012 (Number of Months)**	**2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97**
27t	Halesowen Road, Netherton	R	Y	N	11	**42.8**
14	High Street, Brierley Hill	R	Y	N	11	38.1
14a	High Street, Brierley Hill	R	Y	N	11	38.7
14b	High Street, Brierley Hill	R	Y	N	6	**40.1**
14d	High Street, Brierley Hill	R	Y	N	11	32.7
47	High Street, Brierley Hill	R	Y	N	11	30.0
45c	Mill Street, Brierley Hill.	R	Y	N	11	39.4
49	Talbot Street, Brierley Hill	UB	Y	N	10	23.3

Notes

Where data capture was less than 9 months, data from sites at Central Dudley and Burnt Tree were used to annualise data as per box 3.2 of LAQM.TG (09)

Table 9 Results of NO_2 Diffusion Tubes (2008 to 2012)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
				2008 (BAF = 0.90)	2009 (BAF = 0.90)	2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)
20	Castle Street Coseley	R	Y	32.8	31.5	31.7	27.7	29.5
17b	Evergreen Close, Coseley	UB	Y	23.4	22.1	24.2	20.4	22.4
13b	Padarn Close, Sedgley	S	Y	21.6	17.8	21.0	15.1	17.4
32	Dudley Street, Sedgley	R	Y	**42.7**	**41.9**	**40.3**	**40.7**	**44.4**
32b	Dudley Street, Sedgley	R	Y	**41.4**	**42.8**	**45.4**	39.4	**46.3**
32e	High Street, Sedgley	R	Y	**42.5**	**42.6**	**44.2**	**41.8**	**42.8**
32f	High Street, Sedgley	R	Y	**45.8**	**44.6**	**46.7**	**43.3**	**45.1**
32r	Bilston Street, Sedgley	R	Y	38.4	36.2	**42.2**	36.4	**40.7**
62a	Birmingham Road, Dudley	R	Y	33.6	35.0	34.5	28.9	35.3
62b	Birmingham Road, Dudley	R	Y	**42.3**	**42.6**	**41.6**	37.2	**47.7**
62c	Birmingham Road, Dudley	R	Y	-	-	37.8	33.8	37.0
62d	Birmingham Road, Dudley	R	Y	-	-	**40.1**	32.7	37.4
62e	Birmingham Road, Dudley	R	Y	-	-	-	39.7	35.9
62fx	Birmingham Road, Dudley	R	Y	-	-	-	-	**51.1**
62g	Castlegate Drive, Dudley	R	Y	-	-	39.8	38.8	**41.4**
62r-t	Ernest Road AQMS	R	Y	-	-	37.8	31.0	37.4
52	High Street, Amblecote	R	Y	37.8	36.2	39.1	32.6	37.9
53	High Street, Amblecote	R	Y	**40.5**	**40.1**	**41.7**	35.1	37.4
16j	Stourbridge bus station	UC	Y	-	-	-	-	30.7
16b	High Street, Stourbridge	R	Y	36.0	34.7	35.7	32.6	37.4
34a-ac	High Street, Wordsley	R	Y	-	-	-	**48.0**	**52.4**
34ay	High Street, Wordsley	R	Y	**63.1**	**59.6**	**65.4**	**65.3**	**63.9**
34d	High Street, Wordsley	R	Y	**43.9**	**41.7**	**44.7**	**41.6**	38.2

Table 9 Results of NO_2 Diffusion Tubes (2008 to 2012)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
				2008 (BAF = 0.90)	2009 (BAF = 0.90)	2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)
31bx	Barnett Lane, Kingswinford	S	Y	26.0	-	20.7	20.5	21.6
31g	Moss Grove, Kingswinford	R	Y	29.5	29.0	29.8	26.7	26.7
31m	Market Street, Kingswinford	R	Y	35.6	35.6	39.9	34.6	34.8
21c	Clent View, Stourbridge	S	Y	13.3	15.1	16.6	13.1	14.5
21d	High Street, Wollaston	R	Y	-	-	39.1	39.5	34.3
21e	High Street, Wollaston	R	Y	-	-	35.2	33.0	30.6
21f	High St. /Bridgnorth Rd, Wollaston	R	Y	-	-	38.3	35.5	32.8
54	Himley Rd Gornal Wood	R	Y	**44.1**	39.7	**40.7**	39.2	**42.6**
57	Eve Lane	R	Y	-	-	-	-	31,8
57a	Burton Road	R	Y	-	-	-	**40.4**	**45.1**
57b	Eve Lane	R	Y	-	-	-	-	28.7
10-10b	Central Dudley AQMS	UB	Y	25.1	26.7	27.5	24.5	26.5
63	Castle Hill, Dudley	R	Y	-	-	-	**48.6**	**49.2**
63a	The Broadway, Dudley	R	Y	-	-	-	**47.5**	**43.6**
63b	Hall Street, Dudley	R	Y	-	-	**45.1**	37.9	**46.4**
63d	Dudley Bus Station	UC	Y	-	-	-	36.6	**40.7**
5s	New Street, Dudley	UC	Y	38.1	**41.5**	**40.3**	39.5	36.6
5mx	High Street, Dudley	UC	Y	36.1	36.4	32.7	30.4	33.0
5w	New Street, Dudley	UC	Y	**41.0**	**41.7**	**41.7**	38.6	**49.2**
35a	Buffery Road	R	Y	-	-	-	-	**50.9**
19e	Hagley Road Halesowen	R	Y	**42.0**	**44.1**	39.8	36.8	**42.8**
19x	Regent Close, Halesowen	UB	Y	-	-	-	19.4	28.2
19t	Halesowen Bus Station	R	Y	-	-	-	26.8	26.4
3k	Drews Holloway, Halesowen	UB	Y	-	21.3	23.3	19.5	21.0

Table 9 Results of NO_2 Diffusion Tubes (2008 to 2012)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
				2008 (BAF = 0.90)	2009 (BAF = 0.90)	2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)
3a	Drews Holloway, Halesowen	R	Y	**52.9**	**49.8**	**53.4**	**50.6**	**52.3**
3bx	Windmill Hill, Halesowen	R	Y	-	-	**47.4**	**44.6**	**47.8**
3c	Windmill Hill, Halesowen	R	Y	**43.5**	39.4	**43.1**	39.1	**41.8**
3d	Windmill Hill, Halesowen	R	Y	**47.3**	**40.8**	**44.2**	38.2	35.1
3e	Windmill Hill, Halesowen	R	Y	**42.8**	**43.7**	**47.8**	**42.7**	**43.9**
3g	Windmill Hill, Halesowen	R	Y	**55.5**	**51.2**	**51.7**	**48.8**	**48.7**
3gx	Windmill Hill, Halesowen	R	Y	**49.8**	**48.9**	**48.1**	**45.7**	**46.7**
3r-t	Colley Gate AQMS, Halesowen	R	Y	**44.0**	**40.7**	**42.9**	39.8	**41.8**
15	Stourbridge Road, Halesowen	R	Y	**45.6**	**41.4**	**41.0**	38.0	**40.0**
15a	Stourbridge Road, Halesowen	R	Y	**40.9**	37.8	**44.6**	39.7	**45.6**
15b	Stourbridge Road, Halesowen	R	Y	**43.4**	**42.4**	**42.9**	**40.7**	**41.2**
24	King Charles Road, Halesowen	S	Y	19.9	19.9	21.4	17.5	18.7
24a	Long Lane, Halesowen	R	Y	39.8	37.2	37.6	36.0	32.4
18	Hawthorne Road, Hayley Green	S	Y	15.5	16.0	19.3	14.3	16.7
11	High St, Lye	R	Y	39.2	35.7	39.3	34.0	34.9
11b	High St, Lye	R	Y	37.5	35.9	38.8	35.2	38.7
50d	Pedmore Road, Lye	R	Y	**42.3**	35.5	**41.7**	35.9	37.2
50x	Pedmore Road, Lye	R	Y	30.6	31.1	32.1	27.5	**40.6**
50e	Pedmore Road, Lye	R	Y	**43.1**	**41.5**	**44.6**	39.7	32.6
51	Morvale Gardens, Lye	UB	Y	20.5	20.3	22.2	18.3	20.0
4	Junction Road, Stourbridge	UB	Y	19.4	18.8	20.1	16.4	17.9
33	High Street, Pensnett	R	Y	36.4	34.6	38.7	35.2	38.2
33k	Tansey Green Road, Pensnett	R	Y	38.5	37.6	**44.3**	36.7	39.9
33p	High Street, Pensnett	R	Y	**54.8**	**53.2**	**54.3**	**51.0**	**55.3**

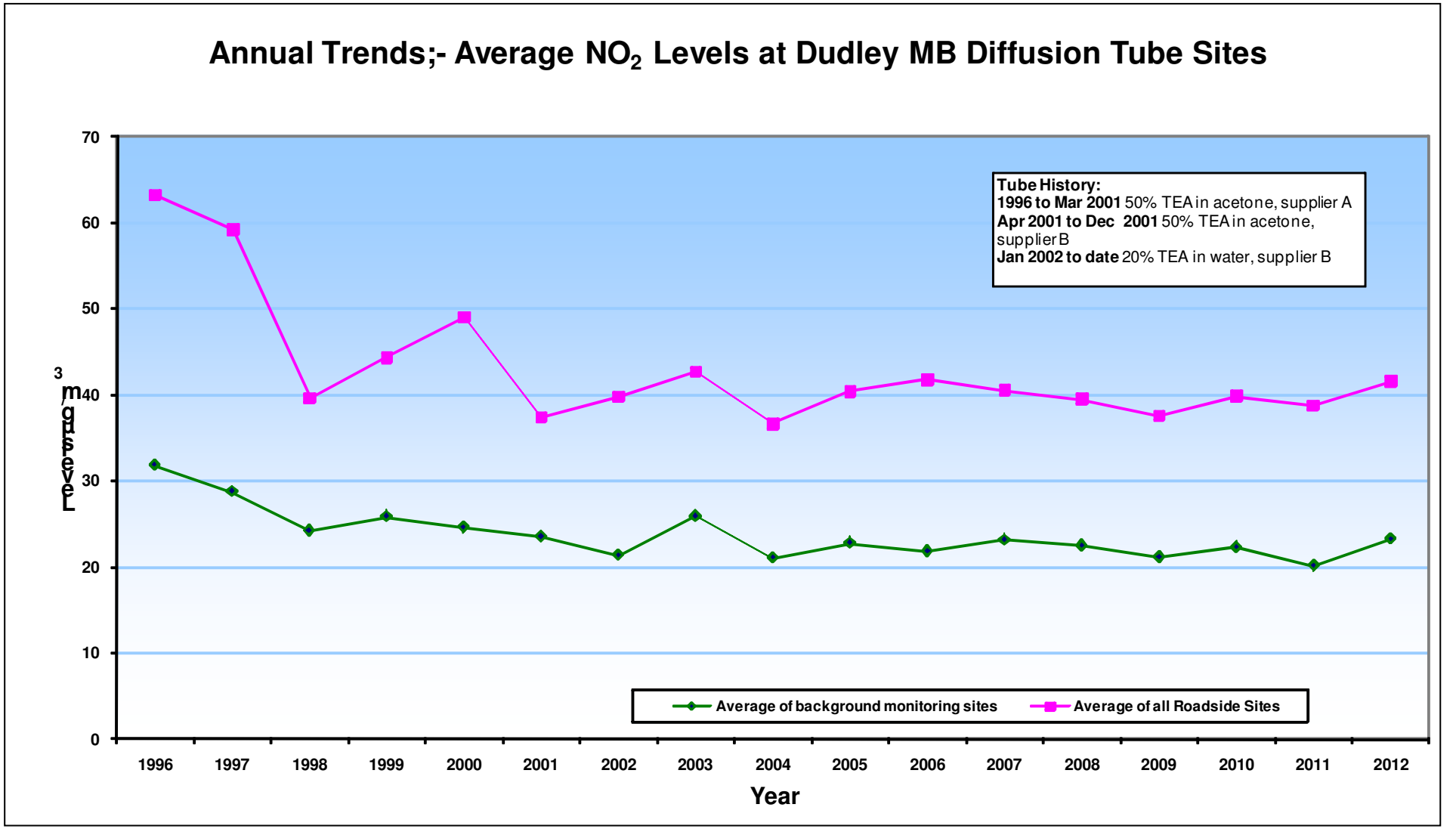
Table 9 Results of NO_2 Diffusion Tubes (2008 to 2012)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
				2008 (BAF = 0.90)	2009 (BAF = 0.90)	2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)
33ex	Birds Meadow, Pensnett	S	Y	22.8	21.7	21.4	21.3	23.9
2	Penrith Close, Amblecote	S	Y	17.8	17.6	18.6	15.2	16.9
30	High Street, Quarry Bank	R	Y	**50.8**	**49.5**	**54.8**	**59.2**	**57.5**
30dx	High Street, Quarry Bank	R	Y	35.2	34.5	38.3	31.3	35.3
30eX	High Street, Quarry Bank	R	Y	**45.2**	**49.9**	**51.8**	**46.0**	**55.1**
30g	High Street, Quarry Bank	R	Y	**42.1**	**41.4**	**45.1**	39.0	**42.3**
30m	High Street, Quarry Bank	R	Y	**51.1**	**46.3**	**47.5**	**45.9**	**47.5**
30t	King Street, Quarry Bank	UB	Y	24.2	22.4	26.8	21.9	24.5
36	Blowers Green Road, Dudley	UB	Y	23.2	23.5	22.8	20.4	22.8
60	Belper Row, Netherton	UB	Y	25.2	25.0	25.7	23.2	25.7
64	Cinder Bank, Netherton	R	Y	-	-	-	-	33.6
27f	Cradley Road, Netherton	R	Y	37.2	37.9	**48.3**	36.9	39.1
27b	Halesowen Road, Netherton	R	Y	38.6	36.9	**41.9**	35.5	33.8
27c	Halesowen Road, Netherton	R	Y	35.7	38.4	**42.4**	38.3	40.4
27g	Halesowen Road, Netherton	R	Y	**60.2**	**61.0**	**59.8**	**65.3**	**70.1**
27gX	Halesowen Road, Netherton	R	Y	**63.8**	**61.8**	**63.1**	**65.6**	**66.9**
27j	Halesowen Road, Netherton	R	Y	**59.0**	**52.5**	**59.8**	**57.0**	**59.5**
27k	Halesowen Road, Netherton	R	Y	**50.8**	**47.9**	**46.0**	**47.9**	**40.3**
27n	Halesowen Road, Netherton	R	Y	30.4	34.6	34.7	32.3	33.8
27p	Halesowen Road, Netherton	R	Y	**42.1**	**43.1**	**41.7**	**40.3**	**46.1**
27q	Castleton Street, Netherton	R	Y	31.5	28.6	30.9	25.7	26.6
27t	Halesowen Road, Netherton	R	Y	-	**42.1**	**48.0**	**40.3**	**42.8**
14	High Street, Brierley Hill	R	Y	**46.3**	39.1	37.8	38.3	38.1
14a	High Street, Brierley Hill	R	Y	**44.0**	39.9	39.9	36.6	38.7

Table 9 Results of NO_2 Diffusion Tubes (2008 to 2012)

Diffusion Tube Results								
Site ID	Location	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
				2008 (BAF = 0.90)	2009 (BAF = 0.90)	2010 (BAF = 0.92)	2011 (BAF = 0.89)	2012 (BAF = 0.97)
14b	High Street, Brierley Hill	R	Y	**52.0**	**45.0**	**42.3**	**43.0**	**40.1**
14d	High Street, Brierley Hill	R	Y	36.2	34.9	36.6	30.1	32.7
47	High Street, Brierley Hill	R	Y	36.6	33.7	34.9	28.9	30.0
45c	Mill Street, Brierley Hill.	R	Y	**42.8**	36.9	35.9	35.8	39.4
49	Talbot Street, Brierley Hill	UB	Y	23.3	21.5	23.9	21.0	23.3

Figure 5 Trends in Annual Mean NO_2 Concentrations measured at Diffusion Tube Monitoring Sites



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. It should also be noted that changes of supplier and tube type are indicated on the graph and may also have contributed toward the sharp downward trend prior to 2002.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 is provided in Table 10:

Table 10 Summary Table Showing 2012 NO_2 Exceedence Areas

Evaluation of DMBC 2012 NO_2 Diffusion Tube Results			
Area	**Description**	**NO_2 Exceedences During 2012?**	**Areas of Exceedence**
1	Netherton	Y	Halesowen Rd
2	Cradley	Y	Colley Gate, Windmill Hill, Drews Holloway
3	Pensnett	Y	High St.
4	Sedgley	Y	High St., Dudley St., Bilston St.
5	Brierley Hill	Y	High St.
6	Quarry Bank	Y	High St.
7	Hagley Road, Halesowen	Y	Hagley Rd.
8	Wordsley	Y	High St.
9	Lye	Y	Pedmore Rd
10	Dudley	Y	New St.
11	Himley Road, Lower Gornal	Y	N/A
12	Stourbridge Road, Halesowen	Y	Stourbridge Rd.
13	Amblecote	N	High St.
14	Birmingham Rd near to Burnt Tree	Y	Birmingham Rd.
15	Buffery Road	Y	Buffery Road
New	Dudley	Y	Hall St.
New	Dudley	Y	Castle Hill
New	Gornal	Y	Burton Road / Eve Lane

The 2012 data indicated that one area, Amblecote High Street, which previously exceeded the NO_2 air quality objective achieved compliance during 2012.

One exceedence was identified in the Brierley Hill area (but with no relevant residential exposure)

Additional areas of exceedence included Dudley (Hall Street and Castle Hill) and in Gornal at the junction between Eve Lane and Burton Road.

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.

2.2.1 PM_{10}

During 2012, DMBC undertook monitoring of PM_{10} 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 (>90% for the period monitored)
- There no exceedences of the annual mean concentration of 40 µg/m^3
- There are no more than 35 24-hour exceedences of 50 µg/m^3
- There are no 90th percentile of 24-hour concentrations that exceed 50 µg/m^3

Average 5 year trend plots for PM_{10} concentrations measured at Central Dudley and Colley Gate are presented in Figure 6 and indicate that concentrations have remained broadly static over this period.

Table 11 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

PM_{10} Results										
Site ID	Site Type	Within AQMA?*	Valid Data Capture for monitoring Period %	Valid Data Capture 2012 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m^3				
						2008	2009	2010	2011	2012
Central Dudley	Urban Background	N	N/A	98.6	Y	19.9	17.5	18.8	19.0	18.5
Colley Gate	Roadside	N	N/A	99.5	Y	24.0	23.6	26.5	25.7	23.2
Burnt Tree	Roadside	N	N/A	96.2	Y	N/A	N/A	N/A	19.3	18.4

Notes

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

Corrections were carried out on 16 April 2013 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites.

Results prior to 2012 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 NO_2 only

Table 12 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

PM_{10} Results										
Site ID	Site Type	Within AQMA?*	Valid Data Capture for monitoring Period %	Valid Data Capture 2012 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m^3)				
						2008	2009	2010	2011	2012
Central Dudley	Urban Background	N	N/A	98.6	Y	12	6	3	9	10
Colley Gate	Roadside	N	N/A	99.5	Y	15	9	7	16	14
Burnt Tree	Roadside	N	N/A	96.2	Y	N/A	N/A	N/A	7	18

Notes

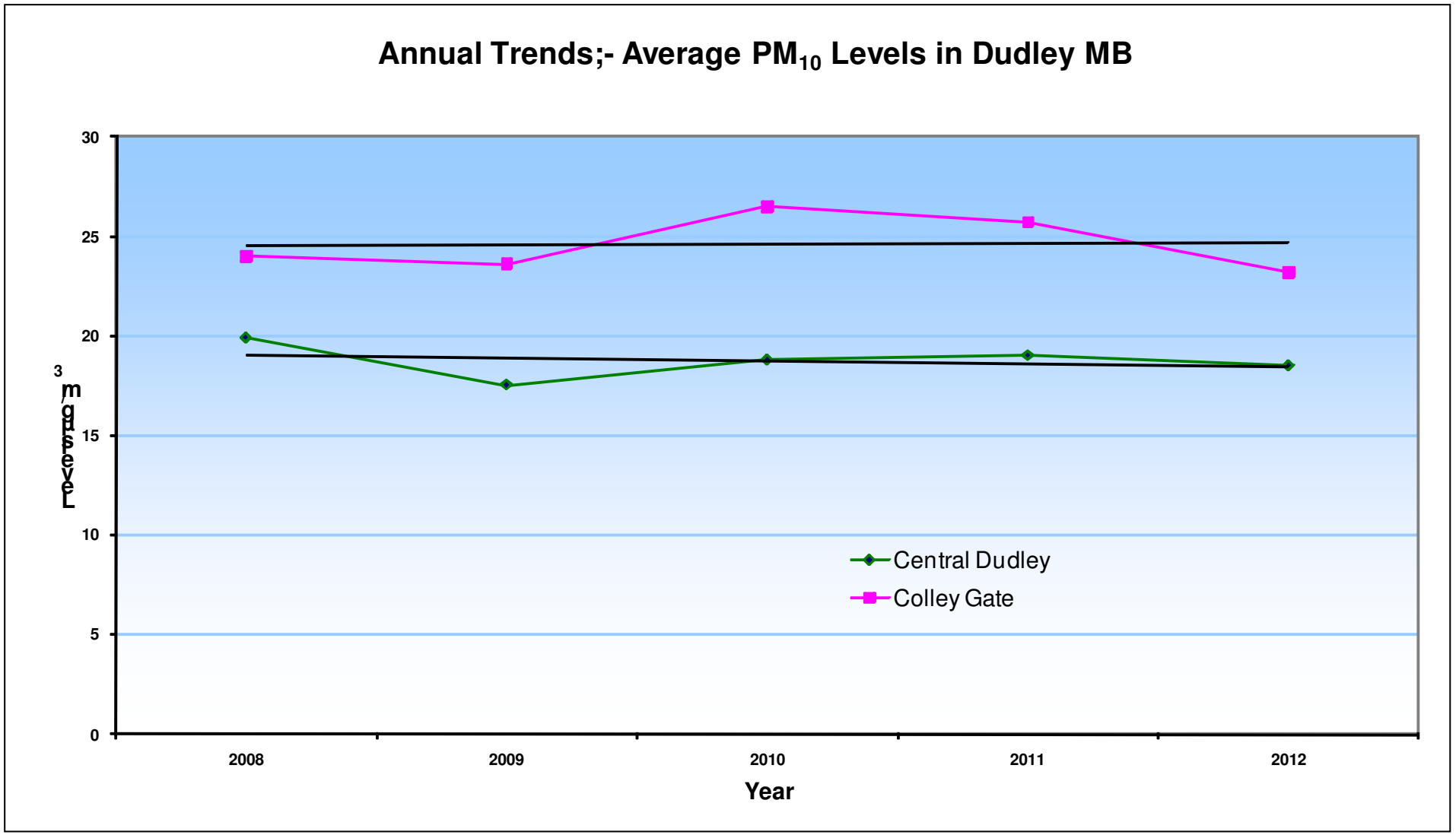
All data have been corrected using the volatile correction method (VCM) portal in accordance with LAQM.TG(09).

Corrections were carried out on 16 April 2013 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites

Results prior to 2012 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 NO_2 only

Figure 6 Trends in Annual Mean PM_{10} Concentrations



2.2.2 Sulphur Dioxide

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

2.2.3 Benzene

There is currently no monitoring for benzene within Dudley MB.

2.2.4 Other pollutants monitored

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

2.2.5 Summary of Compliance with AQS Objectives

DMBC has examined the results from monitoring in the borough, which has already been declared as an NO_2 Air Quality Management Area with respect to exceedences of the annual mean and hourly NO_2 objectives. There are no exceedences outside the NO_2 AQMA therefore there is no need to proceed to Detailed Assessment for NO_2.

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 New Local Developments

3.1 Road Traffic Sources

DMBC has carried out an evaluation of any relevant road traffic pollution sources included in the following checklist:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

The Council can confirm that there have been no significant developments in any of these areas since the completion of the last USA.

3.2 Other Transport Sources

DMBC has carried out an evaluation of any relevant transport pollution sources included in the following checklist:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

The Council can confirm that there have been no significant developments in any of these areas since the completion of the last USA.

3.3 Industrial Sources

DMBC has carried out an evaluation of any relevant industrial pollution sources contained in the following checklist:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

The Council can confirm that there have been no significant developments in any of these areas since the completion of the last USA.

3.4 Commercial and Domestic Sources

DMBC has carried out an evaluation of any commercial and domestic sources contained in the following checklist:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.

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 PM_{10} concentrations are close to, or above, national objectives.

The Council can therefore confirm that there have been no significant developments in any of these areas since the completion of the last USA.

3.5 New Developments with Fugitive or Uncontrolled Sources

DMBC has carried out an evaluation of the following fugitive or uncontrolled pollution sources:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc.
- Other potential sources of fugitive particulate emissions.

Issue of a new permit for a mobile crusher/screener at WCL Quarries (Ketley Quarry, PB/133) was identified in the 2012 USA. Following a number of dust complaints, further investigations were undertaken with the conclusion that no further Detailed Assessment was required.

Demolition of existing Crown Centre, Stourbridge and multi-storey car park and construction of new large retail store (A1), small retail units (A1-A5) and offices (B1) with associated highway works, servicing and car parking (P10/1429) was identified in the 2012 USA. Following a number of dust complaints, further investigations were undertaken with the conclusion that no further Detailed Assessment was required.

The Council can confirm that there have been no other significant developments in any of these areas since the completion of the last USA.

The results of the assessment of new development by DMBC is therefore summarised as follows:

DMBC confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

DMBC confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

The West Midlands Local Authorities recognise that pollution is a trans-boundary issue, requiring coordinated activity to redress poor air quality. In 2011, the West Midlands Authorities initiated the Low Emission Towns and Cities Programme (LETCP) to develop an overarching Low Emission Strategy (LES) to reduce road transport emissions through the design and delivery of evidence-based municipal policies and the creation of public private partnerships. Further details and relevant documents can be viewed here:

http://cms.walsall.gov.uk/de/print/index/low_emissions_towns_and_cities_programme.htm

Working closely with Centro, the LETCP seeks to build on measures in LTP3. The programme aims to encourage a reduction in vehicle use and a modal shift to sustainable public transport, targeting a reduction in vehicle emissions through the accelerated uptake of cleaner fuels and technologies and discouragement of the use of high emission vehicles. The overall goal of the LES is to improve emissions and reduce concentrations of NO_2 and particulates while also seeking to exploit the synergies of CO_2 and noise reduction, where possible, through the transformation of the West Midlands vehicle fleet. The LES has the potential to influence the emissions of the proportion of the national fleet whose journeys originate in, transit or terminate in the region. The LES acknowledges that transformation of the vehicle fleet will require the provision of low emission vehicle infrastructure and incentives for low emission vehicle take-up. Policies and measures that discourage the use of high emission vehicles may however be required to meet pollution reduction goals. In taking policies forward the LES will look at the economic impacts and benefits of intervention policies, seeking 'win-win' opportunities.

The LETCP is part-funded by DEFRA and includes resource provision from West Midlands local authorities and partner organisations; the relevant themes are described in sections 4.1 to 4.6.

4.1 Low Emission Zone Feasibility Study

Building on the Birmingham City Council's Air Quality Action Plan measure to investigate the potential for introducing Low Emission Zones (LEZs), the LES includes provision for a technical study into the feasibility of creating a transferable LEZ model for the West Midlands.

The study will assess the benefits and dis-benefits of emission control policies on key vehicle types for each scenario, including cost benefit analysis and potential costing for implementing LEZ schemes as well as a Health Impact Assessment (HIA) of the most effective intervention measures.

4.2 Procurement Guidance

Building on pioneering fleet management at Coventry City Council, the guidance develops themes in green fleet procurement, highlighting the following key policies and benefits:

- Local sourcing (reduced vehicle mileage)
- Sustainable fleet demonstration, specification and contract award criteria, including Government Buying Standards considerations
- Development of Whole Life Cost model, including damage costs of environmental impact
- Innovation of procurement
- Development of public private partnerships
- Partnership working with Sustainability West Midlands

4.3 Planning Guidance

Based on an innovative approach to planning at Dudley Council, developing clear and consistent policy across the West Midlands that is designed to:

- Protect residents of future development schemes from exposure to poor air quality.
- Promote simplified assessment criteria and definition of sustainability

• Incorporate mitigation measures as standard, in line with the National Planning Policy Framework (NPPF) to help counter cumulative impacts

• Apply a procedure for evaluating additional requirements for mitigation and compensation using damage cost analysis

4.4 Low Emission Vehicle and Infrastructure Plan

This work will build on LTP3 and the findings of the LEZ Feasibility Study to work with partner organisations to develop:

• A bus emission strategy

• Emission agreements as part of the LTP3 Freight Strategy development

• Initiatives aimed at improving taxi emissions as part of a licensing review

• An infrastructure plan to facilitate uptake of low emission vehicles both in the public and private sector

4.5 Health Awareness Campaign

In line with the Government White Paper the LETCP will work with Public Health Authorities, the Health Protection Agency (HPA), schools, and the National Health Service (NHS) to develop an awareness campaign regarding the impacts of air pollution. This work will build on the findings of the LEZ Study HIA.

4.6 Delivery programme

The LETCP will develop a delivery programme for policies and measures identified in the LES, including targets and criteria for evaluating effectiveness. Whilst the LETCP is scheduled to complete at the end of 2014, further funding will be sought for programme continuation. It is intended that the work of the LETCP will provide a platform for wider funding and inward investment. Subject to consultation, final guidance is expected to be published by the LETCP in 2014 as part of the West Midlands Low Emissions Strategy.

Execution of the project will help to identify any deficiencies in current planning policy and inform the future development of Dudley's air quality strategy. It is envisaged that this will reinforce Dudley's planning policy in the areas of air quality, climate change and sustainability, encompassing current supplementary planning documentation and the implementation of the community infrastructure levy (CIL) from 2014 onwards.

5 Planning Applications

Planning applications with potential air quality impacts are presently screened in accordance with Section 6.2 of this document. A summary of approved applications which were reviewed for potential air quality impacts during the 2012 calendar year is provided in Table 13. Further information on each application is available via DMBC online planning and building control. This can be accessed via the following link:

http://www2.dudley.gov.uk/swiftlg/apas/run/Wphappcriteria.display

Table 13 New Developments With Potential AQ Impacts

Summary of Planning Applications Screened During 2012 with potential AQ impacts					
Type of Development	**Location**	**Ref**	**Type**	**Decision**	**Comments**
Demolition of vacant petrol filling station and erection of new health centre with associated parking	High Oak, Pensnett	P12/0218	Full	Approved	Conditions for provision of electric charging point(s) & cycle storage
Erection of new health centre to include a retail pharmacy and associated car parking	Jackson Street, Lye	P12/0462	Full	Approved	Conditions for provision of electric charging point(s) & cycle storage
Demolition of existing buildings and erection of Foodstore (A1), car park and petrol filling station together with associated access works, servicing and landscaping	Trindle Road, Dudley	P12/0581	Full	Approved	Conditions for provision of electric charging point(s) & cycle storage Condition for provision of Low Emission Strategy / dust management plan
Erection of new foodstore (A1), petrol filling station and associated car parking and delivery areas.	Stallings Lane, Kingswinford	P12/0666	Full	Approved	Conditions for provision of electric charging point(s) & cycle storage Condition for provision of dust management plan
Erection of 80 dwellings with associated access (amended proposal)	Brettel Lane, Brierley Hill	P12/0701	Full	Pending	Recommended conditions for provision of electric charging point(s) & cycle storage
Erection of three storey hotel with ancillary cafe and car parking.	Castle Gate, Dudley	P12/0772	Full	Approved	Conditions for provision of electric charging point(s)

Table 13 New Developments With Potential AQ Impacts

Summary of Planning Applications Screened During 2012 with potential AQ impacts					
Type of Development	**Location**	**Ref**	**Type**	**Decision**	**Comments**
Demolition of existing office and retail accommodation. Erection of food store (A1) with associated petrol filling station, car parking, landscaping, highway improvements to Flood Street and Oakeywell Street	Falcon House, Dudley	P12/1107	Full	Approved	Conditions for provision of electric charging point(s) & cycle storage Condition for provision of Low Emission Strategy / dust management plan
Variation of Condition 36 to amend design and layout of previously approved application P10/1429	Crown Centre, Stourbridge	P12/1235	Full	Approved	Conditions for provision of electric charging point(s) & cycle way
Demolition of existing buildings. Erection of an Advanced Conversion Technology (ACT) and Anareobic Digestion (AD) facility comprising of a pyrolysis plant, digestion facility and education centre with parking, landscaping, retaining structures and associated works	Moor Street, Brierley Hill	P12/1287	Full	Pending	In progress
Erection of a Portal (learning and access hub) with associated works to include pedestrian swing bridge (over canal), car park improvements and landscaping	Birmingham New Road, Dudley	P12/1354	Full	Approved	Conditions for provision of electric charging point(s) & cycle parking
Part A: Full planning permission for the development of 120 apartment retirement village with communal facilities and associated parking in a part single and part three-storey building. Part B: Outline application for the erection of 11 no. Dwellings	Cradley, Halesowen	P12/1447	Full	Approved	Conditions for provision of electric charging point(s)

6 Air Quality Planning Policies

Once completed, the LETC Good Practice Planning Guidance document will be available via the following link:

http://cms.walsall.gov.uk/de/print/index/low_emissions_towns_and_cities_programme.htm

Following formal adoption of the plan in 2014, it is likely that there will be some modification of local air quality planning policy to attain a consistency with the guidance and the National Planning Policy Framework. Dudley MBC proposes to revise the action plan at this point to include an update on local air quality planning policy.

7 Local Transport Plans and Strategies

7.1 West Midlands Local Transport Strategy

7.1.1 The West Midlands Local Transport Plan, WMLTP3

LTPs normally cover a period of 5 years and are public documents that set out the highway authority's policies, strategies, objectives and targets for improving transport in their communities.

The Council provided specific air quality input into the development of the document and supported the commitment to deliver a number of key projects across the West Midlands which will have major impacts on reducing congestion, mitigating climate change, improving air quality and delivering associated health benefits. These include:

- Delivery of the smarter choices package and associated infrastructure to provide alternatives to the car
- Improving the quality of public transport
- Improving connectivity between the four Black Country strategic centres
- Developing the West Midlands Long Term Rail and Rapid Transit network and local bus networks
- Improving cycling facilities and networks
- Making local improvements to walking routes
- Providing safer road environments to encourage walking and cycling
- Further development of regional freight strategy and rail freight facilities
- Continued roll out of urban traffic control management
- Reducing carbon emissions via the promotion and uptake of low emission technologies

WMLTP3 includes two air quality policies and identifies appropriate partnerships who will work together in their implementation, i.e. District Councils, Primary Care Trusts and successor bodies and other interest groups. The policies include:

- Policy GT7 – to reduce air pollution emissions from transport
- Policy GT8- To improve local air quality in pursuit of UK standards and European Directive limits

7.2 Dudley Transport Strategy

The Dudley Transport Strategy is the outcome of a detailed appraisal of national, regional and local transport policy including the WM Area Multi-Modal Study (WMAMMS), West Midlands Local Transport Plan and the Black Country Study; it was formerly adopted by DMBC in February 2008. The strategy examines existing and future network performance and transport demands and sets out a number of specific challenges that need to be addressed:

- Congestion within the borough and on the motorway network
- Unreliable, expensive and often overcrowded public transport
- Lack of a high standard urban public transport system
- Lack of good public transport travel information
- Severe congestion on the motorway system
- Future congestion and safety problems arising from car dependency
- Inefficient use of existing road space
- High costs of freight transport due to road congestion
- Inadequate facilities for cycling and walking
- Poor transport network in the west of the conurbation
- Pressure on resources to maintain and renew transport services and infrastructure
- Inadequate capital resources to deliver and sustain a modern transport system for Dudley as proposed in the Black Country Study

The Transport Strategy focuses delivery on the four themes of the Transport Shared Priority by managing demand for travel effectively, maximising use of existing transport infrastructure, supporting economic development and regeneration by

improving access to the strategic centre of Brierley Hill and other key employment areas and connectivity to regional and international gateways.

A number of specific objectives have been identified to help tackle these issues:

- Reducing traffic growth, and ultimately achieve an absolute reduction in traffic
- Increasing the number of trips in the area carried out by public transport, cycling and walking
- Reducing future levels of traffic congestion on the Principal Road Network and other key routes
- Raising awareness of the impacts of travel choices and opportunities for sustainable travel choices
- Increasing the speed and reliability of public transport on key routes
- Improving the quality, extent and security of public transport networks serving key destinations
- Increasing accessibility to jobs, main centres and hospitals
- Improving connectivity between key employment areas and the national motorway network;
- Reducing the contribution that transport makes to the region's climate change emissions and poor air quality
- Reducing the noise and visual intrusion emanating from the transport system and impacting on sensitive areas
- Continuation of safety improvements to the transport networks in the borough
- Improving the quality and security of pedestrian and cycling routes and public car parks
- Maintaining transport assets under the Council's control to a standard comparable to high performing authorities
- Reducing vehicular trips arising from new development through application of robust travel plans
- To ensure that new development contributes to mitigating the adverse impact that it may have on the transport system and supports this strategy
- Adoption of best practice in the provision of transport services and delivery of the transport strategy, including on-going communication with partners and stakeholders, and appropriate monitoring and review processes.

From a consideration of transport challenges facing the Borough, the national and regional policy steer and the future availability of resources for transport in Dudley, an integrated package of measures have been identified, many of which will have beneficial impacts on air quality. The policies and implementation measures identified within the Dudley Transport Strategy are set out in Table 14.

Table 14 Dudley Transport Strategy Policies and Objectives

Key Objectives	
Policy	**Description**
DTS 1	To support regeneration by maximising network capacity and the efficient use of existing infrastructure by developing and implementing improvements including: A Targeted physical improvements at congestion hotspots B Priority Investment Corridors with improved parking control and enforcement C Quick wins directed at providing rapid, mainly small scale and cost effective highway initiatives to increase network capacity at congestion hotspots across the borough
DTS 2	To continue to improve safety of the borough's transport networks by: A Continuing to investigate and analyse the causes of road traffic collisions B Continuing to implement programmes of Local Safety Schemes C Continuing to implement programmes of Safer Routes to School (SRS) initiatives D Education, training and road safety awareness programmes E Working with the West Midlands Road Safety Partnership to introduce traffic enforcement and WM wide education, training and publicity
DTS 3	To increase the emphasis on promoting sustainable transport by: A Investing more heavily in developing Smarter Choices Initiatives B Accessibility Planning activities C Continuing to implement improvements to walking and cycling networks, routes and facilities
DTS 4	To continue to work closely with West Midland partners, particularly Centro and Westfield, to promote and deliver Metro between Wednesbury and Brierley Hill, or the implementation of improvements to public transport of equal quality and attractiveness to the proposed Metro extension
DTS 5	To work more closely with Centro (and bus/train operators) on developing and delivering bus and rail infrastructure and service enhancements, including: A Bus Showcase improvements, both route based and targeted investment B Development of Punctuality Improvement Partnerships. C Improved public transport interchange facilities
DTS 6	To maximise opportunities to bring in new sources of funding for transport including planning obligations, working in partnership with major developers in the area, and continuing to engage with the evolving WM Initiatives
DTS 7	To improve the transport evidence base and improve the assessment of transport investment choices through a programme of corridor transport studies/area studies focusing on the Brierley Hill Strategic Centre and key Priority Investment Corridors
DTS 8	To undertake an initial scoping study to investigate the feasibility and mechanism for bringing forward the improvements proposed in the Black Country Study and in accordance with the RSS and RTS
DTS 9	To work with WM partners to develop improved monitoring systems of key transport indicators to enable achievement of the Dudley Transport Strategy to be measured over time
DTS 10	To ensure that stakeholders are consulted and engaged in bringing forward transport strategies, policies and measures and the delivery of transport services in Dudley
DTS 11	To work with WM partners and across the Council to maximise opportunities offered by new technology in managing the highway network, delivering transport services and communicating with transport users

8 Implementation of Action Plans

Please see Dudley Air Quality Action Plan Progress Report 2013.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

New monitoring data has confirmed ongoing exceedences the annual mean NO_2 objective which all fall within the existing borough wide AQMA:

- Halesowen Road, Netherton
- Windmill Hill, Halesowen
- High Street, Pensnett
- Dudley Street, Sedgley
- High Street, Brierley Hill (but with no relevant exposure)
- High Street, Quarry Bank
- Hagley Road, Halesowen
- High Street, Wordsley
- Dudley Road, Lye
- New Street, Dudley
- Himley Road, Gornal Wood
- Stourbridge Road, Halesowen
- Birmingham Road, Burnt Tree
- Buffery Road

New monitoring data has also confirmed exceedences of the annual mean NO_2 objective during 2012 in the following locations which will need to be addressed during the next revision of the air quality action plan:

- Castle Hill, Dudley
- Hall Street, Dudley
- Burton Road/Eve Lane, Gornal

One area where problems were identified previously were demonstrated to comply with the annual mean NO_2 objective during 2012:

- High Street, Amblecote

Three year 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.

9.2 Conclusions relating to New Local Developments

No new local developments have been approved during 2012 that require further consideration as part of the next Updating and Screening Assessment.

9.3 Other Conclusions

Dudley MBC is actively involved in the delivery of the West Midlands LETC programme and envisages that a revision of the Action Plan will be required once the LETC Best Practice Planning Guidance document is formally adopted at the end of 2013. The revisions will address changes in local and national planning policy and new areas of exceedence identified in Hall Street and Castle Hill, Dudley and Eve Lane/Burton Road, Gornal.

9.4 Proposed Actions

Pollution monitoring undertaken during 2012 has not identified any specific requirements to undertake Detailed Assessment of any new pollutants or to modify DMBC's current AQMA order.

The Council's pollution monitoring programme has undergone some degree of rationalisation and contraction but continued monitoring of PM_{10} and NO_2 will be

undertaken during 2013/2014 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 a combined Progress Report/Action Plan Progress Report at the end of April 2014.

10 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 (2008) Progress Report

5. DMBC (2009) 2009 Air Quality Updating and Screening Assessment

6. DMBC (2011) Air Quality Action Plan

7. HSL/BV/NPL (on behalf of DEFRA and the devolved administrations) (2012) "Summary of Laboratory Performance in WASP NO_2 Proficiency Testing Scheme Rounds 111-118"

Appendices

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

Appendix NO_2 Diffusion Tube Data Set, 2012

Appendix A: QA: QC Data

Diffusion Tube Bias Adjustment Factors

The NO_2 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	0.97
Spreadsheet Version Number	03/13

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[6]**	**Bias Adjustment Factor (A) (Cm/Dm)**
Central Dudley	20% TEA in Water	UB	10	27	26	3.1%	G	**0.97**
Colley Gate	20% TEA in Water	R	11	43	42	2.0%	G	**0.98**
Burnt Tree	20% TEA in Water	R	11	39	33	16.0%	G	**0.86**
Wordsley	20% TEA in Water	R	9	55	60	-7.5%	G	**1.08**
							Mean	**0.96**
							National Factor	**0.97**

Box 1.2 DMBC Co-Location Data 2012

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 0.96 was slightly lower than the national bias adjustment factor of 0.97 calculated using spreadsheet version 03/13.

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 27 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.

- Use of the national adjustment factor is slightly more conservative on this occasion

PM Monitoring Adjustment

Prior to 2008, data obtained from the TEOMs was scaled a factor of 1.3 as recommended in the former technical guidance document LAQM.TG (03). Data from 01/01/2008 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 16 April 2013 and the portal may include some un-ratified FDMS data and/or distant temperature & pressure sites.

Results prior to 2012 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

Data with <75% data capture rate were adjusted in accordance with Box 3.2 of LAQM.TG (09) using data from sites in Central Dudley and Burnt Tree (both with >95% data capture). The following calculations were employed:

Sites 62e, 31bx, 31g, 31m, 14b

Months monitored: Jan, Feb, Mar, Apr, May, Jun (Total: 6)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	28.4	0.9
62	R	32.5	36.4	0.9
			Average (Ra)	**0.9**

Box 1.3 Data adjustment for Sites 62e, 31bx, 31g, 31m, 14b

Site 62e period mean = 0.97 x 40.5 x 0.9 = 35.9 µg/m³

Site 31bx period mean = 0.97 x 24.4 x 0.9 = 21.6 µg/m³

Site 31g period mean = 0.97 x 30.1 x 0.9 = 26.7 µg/m³

Site 31m period mean = 0.97 x 39.3 x 0.9 = 34.8 µg/m³

Site 14b period mean = 0.97 x 45.3 x 0.9 = 40.1 µg/m³

Sites 34d, 21d, 21e, 21f, 57, 57b, 3d, 3g, 15b, 24, 24a, 11, 4, 2, 36, 27b, 27k

Months monitored: Jan, Feb, Mar, Apr, (Total: 4)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	32.3	0.8
62	R	32.5	40.4	0.8
			Average (Ra)	**0.8**

Box 1.4 Data adjustment for Sites 34d, 21d, 21e, 21f, 57, 57b, 3d, 3g, 15b, 24, 24a, 11, 4, 2, 36, 27b, 27k

Site 34d period mean = 0.97 x 48.5 x 0.8 = 38.2 µg/m³

Site 21d period mean = 0.97 x 43.6 x 0.8 = 34.3 µg/m³

Site 21e period mean = 0.97 x 38.8 x 0.8 = 30.6 µg/m³

Site 21f period mean = 0.97 x 41.6 x 0.8 = 32.8 µg/m³

Site 57 period mean = 0.97 x 40.4 x 0.8 = 31.8 µg/m³

Site 57b period mean = 0.97 x 36.5 x 0.8 = 28.7 µg/m³

Site 3d period mean = 0.97 x 44.6 x 0.8 = 35.1 µg/m³

Site 3g period mean = 0.97 x 61.8 x 0.8 = 48.7 µg/m³

Site 15b period mean = 0.97 x 52.3 x 0.8 = 41.2 µg/m³

Site 24 period mean = 0.97 x 23.7 x 0.8 = 18.7 µg/m³

Site 24a period mean = 0.97 x 41.2 x 0.8 = 32.5 µg/m³

Site 11 period mean = 0.97 x 44.3 x 0.8 = 34.9 µg/m³

Site 4 period mean = 0.97 x 22.7 x 0.8 = 17.9 µg/m³

Site 2 period mean = 0.97 x 21.5 x 0.8 = 16.9 µg/m³

Site 36 period mean = 0.97 x 28.9 x 0.8 = 22.8 µg/m³

Site 27b period mean = 0.97 x 42.9 x 0.8 = 33.8 µg/m³

Site 27k period mean = 0.97 x 51.2 x 0.8 = 40.3 µg/m³

Site 16j

Months monitored: May, Jun, Aug, Sep, Oct, Nov, Dec (Total: 7)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	24.5	1.1
62	R	32.5	29.1	1.1
			Average (Ra)	**1.1**

Box 1.5 Data adjustment for site 16j

Site 16j period mean = 0.97 x 28.9 x 1.1 = 30.7 µg/m³

Sites 54, 35b, 19e

Months monitored: Aug, Sep, Oct, Nov, Dec (Total: 5)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	26.1	1.0
62	R	32.5	29.5	1.1
			Average (Ra)	**1.1**

Box 1.6 Data adjustment for sites 54,35b, 19e

Site 54 period mean = 0.97 x 41.5 x 1.1 = 42.6 µg/m³

Site 35b period mean = 0.97 x 49.7 x 1.1 = 50.9 µg/m³

Site 19e period mean = 0.97 x 41.8 x 1.1 = 42.8 µg/m³

Site 63b

Months monitored: Feb, Mar, Apr (Total: 3)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	26.1	1.0
62	R	32.5	29.5	1.1
			Average (Ra)	**1.1**

Box 1.7 Data adjustment for site 63b

Site 63b period mean = 0.97 x 45.3 x 0.8 = 46.4 µg/m³

Site 5s

Months monitored: Jan, Mar, Apr (Total: 3)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	30.9	0.9
62	R	32.5	40.2	0.8
			Average(Ra)	**0.8**

Box 1.8 Data adjustment for site 5s

Site 5s period mean = 0.97 x 45.3 x 0.8 = 36.6 µg/m³

Site 27q

Months monitored: Jan, Feb, Mar, Apr, May (Total: 5)

Site	Site Type	Annual Mean 2012 (Am)	Period Mean 2012 (Pm)	Ratio (Am/PM)
10	UB	26.5	30.5	0.9
62	R	32.5	39.1	0.8
			Average(Ra)	**0.8**

Box 1.9 Data adjustment for site 27q

Site 27q period mean = 0.97 x 32.2 x 0.8 = 26.6 µg/m³

QA/QC of Automatic Monitoring

The chemiluminescent NO_2 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 Air Liquide. 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:

- The Workplace Analysis for Proficiency (WASP) scheme managed by the Health & Safety Laboratory (HSL)

- A monthly field intercomparsion exercise

The laboratory demonstrated varying levels of performance with regard to WASP performance criteria over the period January 2012 to September 2012 [7], see Box 1.10:

Summary of Gradko Diffusion Tube Performance During 2012				
WASP Round	**WASP 116**	**WASP 117**	**WASP 118**	
Evaluation Period	Jan-March 2012	April-June 2012	July-Sept 2012	
% of results submitted which were deemed to be satisfactory based upon a z-score of ± 2	100%	100%	100%	

Box 1.10 Gradko Summary Performance For WASP NO_2 PT Rounds 116-118

Appendix B: NO_2 Diffusion Tube Data Set, 2012

DMBC NO_2 Diffusion Tube Data Set, 2012												
Site id	2012 Bias Adjusted NO_2 Concentrations (µg/m^3)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
20	38.1	38.7	36.5	19.0	19.3	20.1		23.5	26.8	37.0	35.8	
17b	30.1	30.0	28.0	20.9	17.5	13.6		15.3	10.9	27.1	26.5	26.4
13b	23.6	23.7	25.3	14.0	10.9	9.5		10.1	10.0	20.8	20.6	23.1
32	50.0	50.4	46.3	41.5	34.9	39.7		38.6	46.4	50.3	45.7	44.8
32b	53.3	48.8	53.2	45.9	51.5	37.3		34.9	38.0	57.2	46.7	41.9
32e	44.5	44.8	50.7	40.7	46.4	39.7		37.9	35.1	55.7	37.2	37.9
32f	41.8	45.5	54.1	35.1	40.8	41.1		43.1	41.2	55.1	53.5	
32r	46.1	49.4	42.5	43.0	30.1	29.9		33.0	40.4	48.1	44.8	40.6
62a	42.7	41.4	43.2	38.4	26.9	26.0		30.0	32.0	39.9	35.0	32.5
62b	53.1	51.7	49.5	48.7	38.1	41.3		41.7	42.6	55.0	49.2	53.9
62c	43.9	44.6	42.3	34.3	31.0	31.8		32.3	34.7	37.0	38.9	36.2
62d	42.0	45.6	48.1	36.3	34.4	28.3		26.2	34.5	41.7	31.6	36.9
62e	46.6	50.7	43.2	31.0	33.3	30.7						
62fx	58.2	60.1	64.8	39.2	28.5	44.2		42.3	51.7	63.2	54.2	55.3
62g	54.8	47.7	50.1	37.9	22.8	31.9		30.4	41.7	47.8	46.1	44.6
62r-t	43.9	48.4	45.8	38.4	32.7	28.1		25.8	34.0	40.7	34.3	39.5
52	42.4	43.8	42.8	40.6	30.1	28.7		30.8	27.6	48.2	39.8	41.7
53	42.3	47.6	39.8	33.9	24.8	31.2		35.6	34.6	41.6	40.3	39.8
16j					17.4	23.3		21.8	25.5	35.5	33.5	39.3
16b	48.3	44.3	46.3	39.9	24.1	29.4		29.7	34.8	41.6	35.1	38.5
34a-	58.8	58.8	55.2	52.3	40.0	39.3		44.1	48.8	62.3	55.6	61.3
34ay	66.4	78.4	69.9		45.5	48.6		55.3	50.9	80.1	67.9	76.0
34d	53.7	48.0	44.8	41.8								
31bx	33.3	31.1	31.9	17.0	14.3	14.3						
31g	33.0	35.0	34.9	27.1	21.0	24.4						
31m	42.4	44.3	35.4	41.2	34.5	30.9						
21c	17.8	23.6	17.7	13.3	9.4	8.4		9.2	8.3	18.0	15.9	18.1
21d	46.6	32.4	56.4	33.8								
21e	40.2	43.5	40.0	27.0								
21f	41.9	42.2	40.5	36.7								
54								32.8	35.6	42.7	46.0	44.3
57	38.1	44.1	42.5	32.0								
57a	48.5	52.7	48.1	44.9				38.1	38.0	53.1	36.5	45.9
57b	41.7	37.4	36.6	25.9								
10-	33.4	35.6	33.9	24.2	17.9	19.2		18.9	20.2	29.9	28.9	30.0
63	50.8	58.7	56.5	45.3	40.7	38.6		40.7	47.2	63.2	54.3	45.5
63a	51.8	50.1	42.8	38.3	37.3	37.8		40.2	37.9	51.0	51.5	40.9
63b		48.2	41.7	42.0								
63d	40.2	53.8	47.1	40.3	40.6	35.9		31.3	33.6	44.6	39.6	41.2
5s	50.8		50.2	35.3								
5mx	39.5	40.8	40.3	33.5	23.9	24.1		25.4	26.1	40.8	31.8	37.2
5w	57.0	48.7	52.3	39.6				38.3	52.9	57.6	49.8	46.8

DMBC NO_2 Diffusion Tube Data Set, 2012												
Site id	2012 Bias Adjusted NO_2 Concentrations (µg/m^3)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
35a								**43.1**	**44.1**	**55.1**	**50.1**	**48.4**
19e								35.1	35.5	**48.3**	**43.6**	**40.2**
19x	28.4	32.8	**40.7**	23.1	17.9			26.0	24.1	30.2	23.8	30.2
19t	32.1	38.1	27.0	24.3	21.9	23.9		15.2	14.3	32.6	30.9	30.4
3k	26.7	30.2	24.7	22.9	15.5	14.0		13.2	14.3	23.9	22.2	23.1
3a	**55.0**	**64.0**	**56.1**	**49.2**	**44.6**	**43.1**		37.5	**52.7**	**56.3**	**60.5**	**55.9**
3bx	**54.4**	**56.8**	**54.5**	**49.0**	35.1	36.6		39.3	48.2	**54.8**	**45.6**	**51.3**
3c	**50.5**	**51.9**	**55.1**	38.3	34.7	34.0		35.1	34.0	**48.5**	**40.0**	38.1
3d	**42.8**	**42.4**	**47.8**	39.8								
3e	**47.6**	**51.0**	**46.2**	**49.6**	37.1	37.1		**41.4**	38.2	**53.0**	**44.9**	37.2
3g	**65.9**	**62.0**	**61.0**	**50.8**								
3gx	**59.5**	**51.8**	**56.2**	**41.3**	31.6	37.9		**43.5**	**42.1**	**53.1**	**49.3**	**47.6**
3r-t	**46.6**	**51.1**	**43.2**	39.6	30.3	34.8		34.6	**40.9**	**49.1**	**42.0**	**47.8**
15	**45.2**	**46.3**	**48.5**	**40.6**	25.5	32.6		32.5	**40.9**	**49.2**	36.8	**42.2**
15a	**48.4**	**59.2**	**48.0**	**41.2**	**45.4**			32.8	38.2	**51.6**	**46.8**	**44.1**
15b	**51.4**	**51.9**	**47.9**	**51.7**								
24	24.8	27.3	22.9	17.0								
24a	**41.9**	**43.6**	38.2	36.1								
18	18.9	25.2	22.1	16.3	12.3	10.3		10.9	11.4	17.4	17.8	21.6
11	**45.8**	**51.0**	37.0	38.2								
11b	**45.3**	**46.8**	**44.7**	**40.4**	33.2	25.7		32.7	33.7	**44.8**	38.2	**40.0**
50d	**40.7**	**44.5**	37.3	39.8	33.1	31.6		31.3	32.6	**45.8**	**40.2**	32.7
50x	**50.3**	**49.1**	23.2	44.7	37.3	32.1		35.5	35.1	**50.4**	39.6	**49.4**
50e	**43.4**	**41.3**	**45.8**	31.7	25.8	23.8		22.2	26.0	35.4	26.0	37.2
51	27.3	30.6	27.8	18.5	11.5	13.5		11.9	14.2	21.6	17.0	26.5
4	24.2	26.7	22.3	14.7								
33	**40.9**	**43.2**	**41.5**	**43.5**	33.1	32.3		32.1	29.2	**45.2**	39.7	39.0
33k	**43.4**	**48.8**	**42.4**	**40.9**	**43.6**	35.8		30.1	30.2	**46.8**	32.5	**44.8**
33p	**60.0**	**68.3**	**57.4**	**42.2**	**46.7**	**47.1**		**54.8**	**57.2**	**60.5**	**49.0**	**64.7**
33ex	31.2	32.2	33.9	16.8	12.8	15.0		16.7	16.9	28.0	28.9	30.6
2	21.7	23.5	21.7	16.3								
30	**70.6**	**60.2**	**58.3**	**52.0**	**45.5**	**50.8**		**56.8**	**55.6**	**64.7**	**54.1**	**64.5**
30dx	**43.1**	**48.5**	28.9	38.5	21.8	30.1		28.1	31.7	**42.2**	37.0	38.3
30eX	**55.2**	**59.9**	**54.9**			**41.4**		**50.2**	**55.3**	**61.7**	**59.4**	**57.9**
30g	**48.9**	**52.4**	**44.6**	**43.6**	35.0	29.9		33.4	**41.1**	**47.5**	**44.8**	**43.7**
30m	**54.9**	**54.3**	**55.6**	**44.1**	26.6	**40.7**		**44.5**	**50.9**	**53.0**	**46.2**	**51.1**
30t	28.4	37.8	28.2	25.0	15.3	16.2		15.3	13.3	27.9	30.3	32.0
36	31.2	31.6	28.9	20.5								
60	34.2	36.9	34.3	23.0	15.6	16.1		15.9	18.9	28.8	27.9	31.6
64	35.5	37.7	39.4	33.3	26.5	26.7		28.3	27.3	39.3	34.9	41.0
27f	**48.0**	**48.0**	38.5	36.3	26.9	30.3		33.0	34.1	**47.3**	**44.6**	**43.3**
27b	**42.9**	**43.8**	**43.6**	36.1								
27c	**40.6**	**43.1**	**46.4**	37.8	39.4	39.3		33.8	32.3	**44.2**	**40.7**	**46.8**
27g	**85.7**	**80.3**	**71.6**	**56.0**	**42.7**	**53.9**		**68.2**	**73.7**	**83.7**	**73.7**	**81.8**
27gX	**76.0**	**72.2**	**65.5**	**53.9**	37.9	**57.6**		**72.3**	**67.4**	**82.1**	**77.3**	**74.0**

DMBC NO_2 Diffusion Tube Data Set, 2012												
Site id	2012 Bias Adjusted NO_2 Concentrations (µg/m^3)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27j	**65.1**	**66.6**	**54.6**	**50.9**	**50.8**	**40.7**		**56.7**	**65.6**	**68.5**	**66.1**	**68.5**
27k	**58.7**	**55.0**	**46.6**	38.3								
27n	**40.4**	**40.1**	38.0	33.2	27.6	22.4		27.9	32.0	**40.3**	33.6	36.4
27p	**52.2**	**50.6**	**45.9**	**55.3**	**40.3**	30.5		**41.2**	39.6	**55.9**	**48.8**	**46.4**
27q	37.7	36.4	35.0	25.4	21.8							
27t	**46.9**	**53.4**	**41.8**	**43.5**	37.7	35.6		36.5	34.4	**55.0**	**40.9**	**45.2**
14	**43.4**	**47.2**	35.6	38.8	24.8	32.8		34.8	36.9	45.0	36.0	**44.3**
14a	37.0	**48.7**	**46.0**	**41.2**	28.6	28.2		35.6	37.3	**42.0**	39.9	**41.9**
14b	**46.2**	**47.2**	**45.5**	**47.2**	36.5	**40.9**						
14d	37.1	37.4	33.2	33.0	27.3	29.2		29.9	25.7	38.4	31.9	36.9
47	36.2	34.9	31.4	28.3	24.1	25.4		26.1	21.8	36.6	31.2	33.7
45c	36.3	**46.9**	**42.4**	37.3	35.4	36.8		34.5	33.7	**49.3**	38.6	**42.5**
49	29.1	30.7	27.6	22.6	13.5			14.1	14.8	25.5	25.7	29.2

Notes

Survey not in progress

Laboratory QA issues

Missing

Data rejected

Scaffolding over

Red; new sites