Walsall Council

2016 Air Quality Annual Status Report (ASR)

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

Issued January 2017

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Report Reference number	ASR 2016
Date	January 2017

Overview: Air Quality in Our Area

Air Quality in Walsall Metropolitan Borough

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in our society: children and older people, and the infirm, notably those with heart and lung conditions. There is also often a strong correlation with equalities issues, principally as areas suffering poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

Within Walsall exceedances of the national air quality objective for nitrogen dioxide continue to occur, notably in the vicinity of the M6 Motorway at Junctions 9 and 10 (Bescot and Bentley), Bloxwich Lane and Wolverhampton Road. Modelled exceedances have also been identified likely along certain main arterial roads (the 'classified road network' which incorporates the West Midlands Key Road Network).

No air quality exceedances have been determined in respect of Particulate Matter (as PM_{10}).

Details of Walsall's current Air Quality Management Areas can be found at:

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=293

Key Actions to Improve Air Quality

A number of major projects and schemes have been undertaken to supplement and inform the work of Walsall's air quality action planning prior to its forthcoming revision, which are designed and promoted to improve the air quality across the borough which are outlined as follows.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

West Midlands Low Emissions Towns & Cities Programme (LETCP)

Participation in the Defra (grant) funded West Midlands LETCP from 2011 onwards has led to Good Practice Guidance being published together with technical studies concerning air quality interventions and actions and a Proposed Low Emissions Vehicle Strategy.

The LETCP comprises a partnership between the seven West Midlands Local Authorities, (Birmingham City Council, Coventry City Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council, Walsall Metropolitan Borough Council and Wolverhampton City Council) working together to reduce vehicle emissions through the acceleration of the uptake of cleaner vehicle fuels and technologies. The LETCP work programme has to date delivered six work streams:

- *Good Practice Air Quality Planning Guidance* – a model approach to integrate air quality considerations into land use planning.
- *Good Practice Procurement Guidance* – how public sector procurement can influence vehicle emissions.
- (Proposed) *West Midlands Low Emissions Vehicle Strategy* (LEVS) [which is anticipated will form a theme to be promoted as part of the West Midlands Strategic Transport Plan "*Movement for Growth*", and to be implemented by the West Midlands Combined Authority (WMCA)]
- West Midlands Low Emission Zones Technical Feasibility Study WP1: *Scenario modelling base case*.
- West Midlands Low Emission Zones Technical Feasibility Study WP1a: *Scenario modelling*.
- West Midlands Low Emission Zones Technical Feasibility Study WP2: *Economic and health impacts of air pollution reductions*.

Grant funding for the LETCP was provided by Defra in three consecutive years from 2011 onwards to broadly achieve:

a) Phase 1 - development of a Low Emissions Strategy and Best Practice Air Quality Guidance on Public Sector Procurement and Planning.

b) Phase 2 - a Low Emissions Zone (LEZs) Technical Feasibility Study examining various scenarios to develop a transferable "toolkit" for local authorities looking to designate LEZs, based on a series of study zones:

I. Birmingham city centre within the inner and outer ring roads

II. The M6 corridor between junctions for the M6 Toll road

III. A454 Wolverhampton Road /Black Country Route/Willenhall Road, Walsall to Wolverhampton

IV. A457 Sedgley Road/A459 Wolverhampton Road - Birmingham city centre to Wolverhampton

V. A4030 Bearwood Road

VI. A456 Hagley Road/A458 Halesowen Road - Dudley to Birmingham

VII. A459 Cinder Bank/Halesowen Road, Netherton

VIII. 4M bus route between Walsall and Brierley Hill

IX. A4600 Walsgrave Road, Coventry

c) Phase 3 - provision of further data concerning the West Midlands vehicle emission profile, traffic flows and forecasts, to be used as inputs to the LEZ Feasibility Study (with particular focus on data analysis with respect to the M6 and M6 Toll Road scenarios) and to:

I. Development of a Low Emission Vehicle and Infrastructure Plan building on CENTRO'S Local Transport Plan 3 and findings of the LEZ Feasibility Study, to develop a bus emission strategy; an emission agreement as part of the West Midlands Freight Strategy; an initiative aimed at improving taxi emissions as part of licensing review; and an Infrastructure Plan to facilitate uptake of low emission vehicles both in public and private sector.

II. Working with Public Health Authorities, Health Protection Agencies, schools and the NHS, develop an awareness campaign regarding the impacts of air pollution building on findings of the LEZ Study Health Impact Assessment.

All reports and information produced on behalf of the LETCP are available at:

http://cms.walsall.gov.uk/low_emissions_towns_and_cities_programme

Improvements have been made/completed over 2016 to highways and to urban traffic control systems in respect of the following:

Darlaston Strategic Development Area

Improvements in respect of road alignments and road junctions were designed *inter alia* to facilitate better access and egress in respect of the Darlaston Local Enterprise Zone, and ease traffic congestion and queuing traffic at strategic locations, namely:

- Old Pleck Road A4148 / Bescot Road A4148 / Darlaston Road A4038 / Wednesbury Road, Walsall; Bentley Mill Way / Cemetery Road / Darlaston Road.
- Bescot Road A4148 / Bescot Road A461 /Wallows Lane A4148 / Darlaston Road A4038 / Montfort Road, Walsall; and
- The Green / Heath Road / Richards Street / Bentley Road South, Darlaston, Walsall.

Black Country Air Quality Supplementary Document (SPD)

The SPD has been prepared to rationalise existing approaches to planning and air quality, reflecting the LETCP Good Practice Guidance whist applying the Black Country Core Strategy policy on air quality. The SPD explains how legal and policy requirements might be met to provide a basis for the application of a range of mitigation measures that should be as consistent, robust and effective as possible. The document is aimed at all those involved in the submission and determination of planning applications where relevant air quality issues arise across Walsall, Wolverhampton, Dudley and Sandwell metropolitan boroughs.

The SPD:

- explains why air quality is important in the Black Country and sets out the existing policy framework;
- presents the methodology for identifying development proposals where an air quality assessment will be required;
- identifies the types of development where appropriate air quality mitigation measures will be required to be incorporated, to offset the incremental growth in air quality problems;

- proposes various options for site specific mitigation to protect future occupiers from poor air and how such measures will be secured and delivered; and.
- sets out instances where on- site mitigation is not appropriate and monetary payments to the Local Authority would be required as part of damage costs.

In seeking to mitigate poor air quality, the SPD will directly support the Corporate Plan Priority towards "*Improving health and well-being ... and the protection of vulnerable people*".

Walsall Red Route Network / Bus Lane Prioritisation

A traffic congestion-easing and alignment initiative designed also to improve road capacity.

Local Sustainable Transport Fund

Congestion easing measures (e.g. traffic signal upgrades).

West Midlands UTC Major Projects

Six Variable Message Signs installed - A34 Birmingham Road; A34 Green Lane; A454 Wolverhampton Road; A461 Lichfield Road; A4038 Darlaston Road; A461 Bescot Road.

Walsall Council participates in development of Urban Traffic Control arrangements for Walsall and the West Midlands. This serves to identify the best enhancement linkages between the existing centres and between the urban systems and Highways England systems.

Automatic Number Plate Recognition cameras and Journey Time Monitoring Systems are used on borough-wide strategic routes.

Walsall Town Centre Area Action Plan and Site Allocation Document

The premise is to facilitate long-term allocation of development sites within and beyond the town centre, setting the planning framework for the town centre and other locations and the basis on which planning decisions are made within the borough.

Air quality considerations influence the allocation of land and land uses in context of the extant Air Quality Management Area.

Additional details of measures as previously submitted to Defra having impacts on air quality are set out in Table 2.2.

Local Priorities and Challenges

The main concerns in respect of poor air quality centre on the major road networks, which includes the Key Road Network as identified by te West Midlands Combined Authority, Highways England trunk roads and the M6 motorway.

Over several years Walsall Council has developed and maintained a borough-wide detailed air quality model in respect of nitrogen dioxide arising from road traffic, verified against continuous monitoring data which has subsequently been extended to incorporate all of the Black Country authorities to examine areas where the national air quality objective / EU Air Quality Limit Value (annual mean concentrations) are exceeded. This serves to form judgements on the exposure of relevant receptors experiencing poor air quality in all four Black Country boroughs for 2015 and has been utilised to inform a number of initiatives, including the recently completed Black Country Air Quality Supplementary Planning Guidance and the need for air quality monitoring programmes. This work is available at:

http://cms.walsall.gov.uk/walsall_borough_nitrogen_dioxide__roads__concentrations_2015.pdf

http://cms.walsall.gov.uk/air_quality_-_black_country_nitrogen_dioxide_areas_of_exceedance_2015.pdf

The model outputs to date are shown below, an updates for 2016 will be released in due course.

Figure 1 Walsall NO_2 Concentrations (Roads) 2015

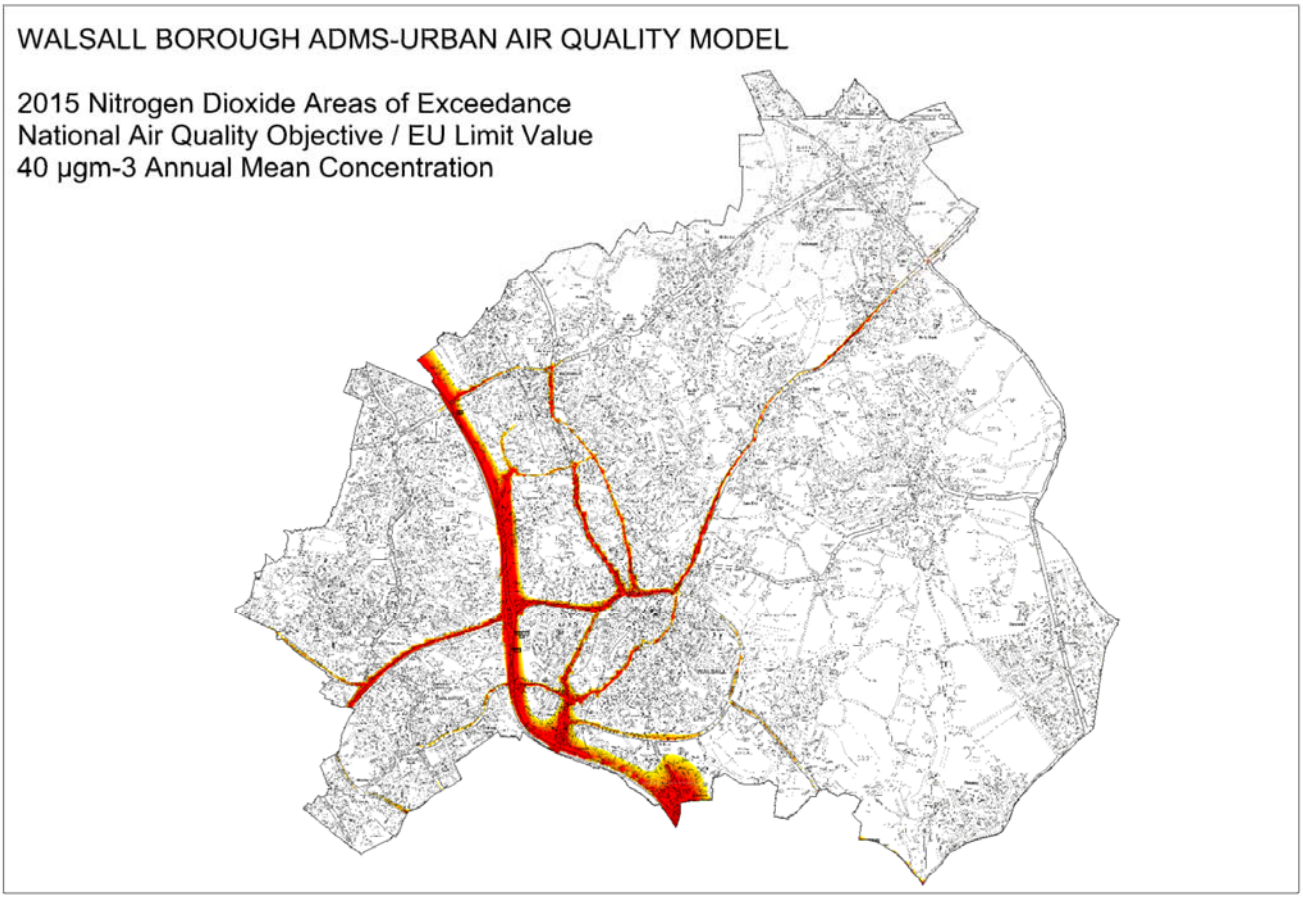
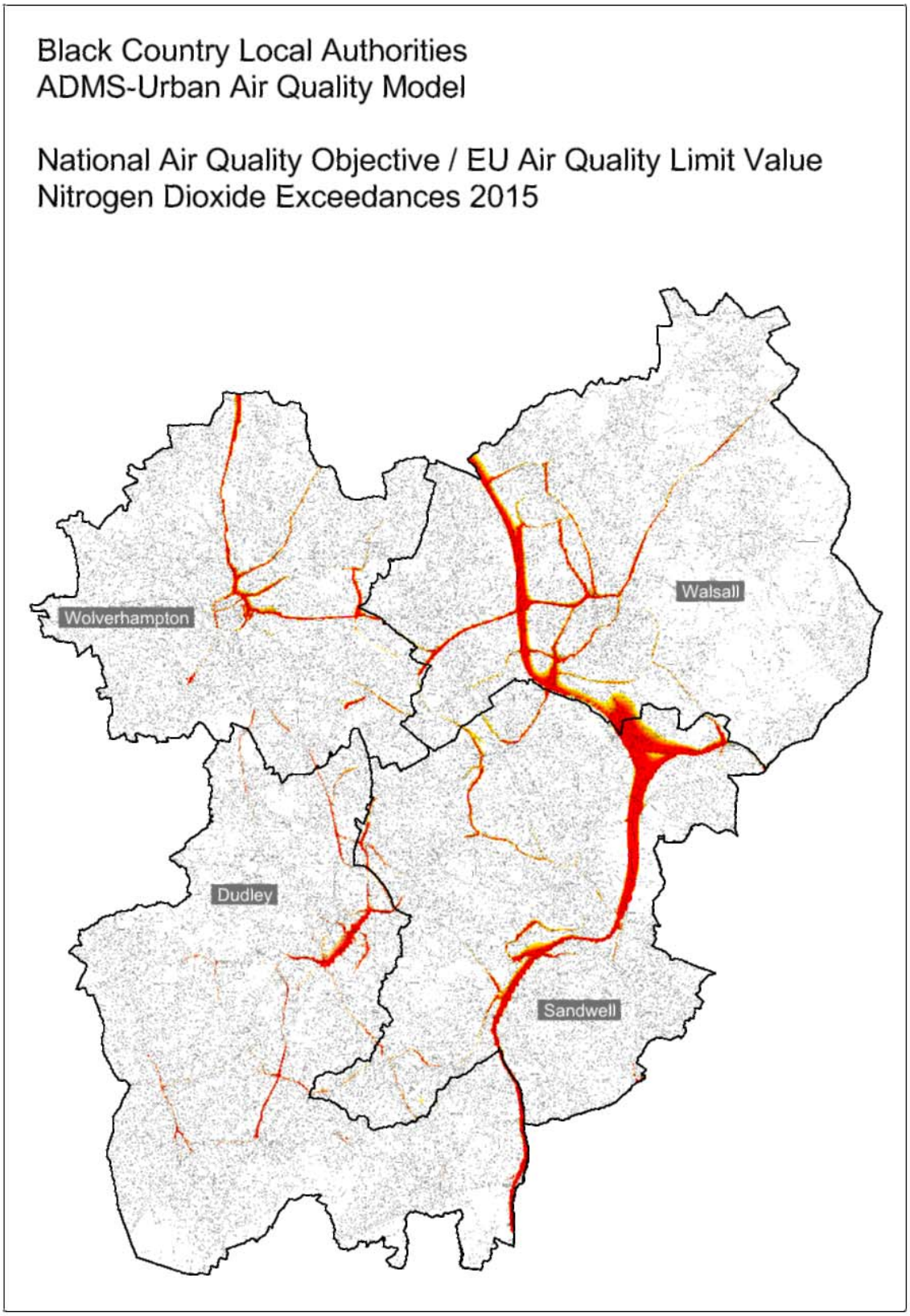


Figure 2 Black Country NO_2 Concentrations (Roads) 2015



Priorities for Walsall:

- To improve air quality to achieve the national air quality NO_2 annual mean objective across the Borough in areas where poor air quality has been identified and to reduce, where possible, concentrations of PM_{10} and $PM_{2.5}$.

- To maintain or improve existing levels of NO_2 where they meet annual mean objectives.

- To fully participate in the initiatives of the West Midlands Combined Authority to achieve air quality improvements across the region. (The West Midlands Combined Authority (WMCA) replaced the Integrated Transport Authority (ITA) and Centro/Passenger Transport Executive (PTE) from 1st June 2016).

- A new joint (Public Health funded) project concerning assessment of $PM_{2.5}$ concentrations and associated health impacts to inform the need for interventions and Public health actions (to run for a defined project/funding lifespan).

- Introduction of road traffic schemes and measures to ease congestion and aid traffic flows, reduce delays and assist in reducing pollutant concentrations.

- Continued monitoring of specified air pollutants to assess compliance with national objectives, European air quality limits values and air quality target values so far as available resources permits. (This will inform the need for prioritisation of resources and assist in identifying most relevant locations that demand air quality improvements.)

- Encouraging the use of public transport, walking, cycling and the uptake of cleaner vehicles, focussing on areas where there are exceedances of the national air quality NO_2 annual mean objective.

- Updating of the borough-wide (and Black Country) nitrogen dioxide air quality traffic emissions model for 2016 incorporating continuous monitoring data verification.

- Further development and refinement of the Walsall borough-wide $PM_{2.5}$ (base) air quality model based on road traffic emissions for use in the joint $PM_{2.5}$ Public Health project.

- Working with the West Midlands Combined Authority (WMCA) and the Black Country Director of Transport to bring forward highway schemes and interventions to improve air quality in respect of the Key Road Network, and generally improve bus fleet emissions in areas that exceed the national air quality NO_2 annual mean objective.

Challenges for Walsall:

- Developing collaborative working arrangements across the Black Country and West Midlands.

- Safeguarding staff resources and financial commitments to undertake air quality monitoring and air quality review and assessment work.
- Delivery of West Midlands LETCP initiatives.
- Revisions of the Walsall Air Quality Action Plan following adoption of the Black Country Air Quality Supplementary Planning Document.
- Progressing the draft Black Country Ultra-Low Emissions Vehicle Strategy.

How to Get Involved

Details concerning air quality in Walsall and the West Midlands LETCP are available at:

http://cms.walsall.gov.uk/index/environment/pollution/air_quality.htm

The council's Pollution Control service can be contacted by email via pollutioncontrol@walsall.gov.uk or by telephone 01922 658040 and by correspondence at the address provided at the beginning of this report.

Residents and businesses of Walsall, together with those visiting and using the borough, can all help to improve air quality and so bring about health benefits. By reducing dependence on private road transport there will inherently be less vehicle pollution, less noise and less congestion.

Walsall Council is committed to striking the right balance of providing for economic and social needs whilst reducing the need for private travel and protecting the environment. This can only be achieved by working in partnership with the Combined Authority to bring forward a sustainable transport plan that takes into account regional land use planning.

The council's cycling strategy is to encourage more cycling by providing high quality facilities for both new and experienced cyclists. By developing safer cycle links between the borough's main town and district centres. These routes form some of the borough's main destinations for trips as they include schools, employment areas, public transport interchanges and leisure facilities and the council encourages people to pursue cycling as a means of transport.

In order to maximise the benefits for cyclists, the Walsall network will aim to connect to networks being developed in adjacent areas such as Wolverhampton, Sandwell, South Staffordshire and Birmingham, as well as to the wider National Cycle Network. The network will be based on a combination of existing roads and the greenway network such as the canal towpath network. This will achieve a balance between off road and on road routes offering the public the best opportunities for cycling in Walsall.

Existing routes, cycle parking, groups and useful information on cycling and the council's

Walking and Mobility Strategy can be seen on the Walsall Active Travel Map at:

http://cms.walsall.gov.uk/walsall_active_travel_map.pdf

http://cms.walsall.gov.uk/walking_and_mobility_strategy__final_version-2.pdf

Rising levels of car use produce a range of associated problems such as accidents, air pollution, community severance and social exclusion for people who have no access to cars. The problem is not unique to Walsall; under-investment in transport is a national problem, but it has a unique impact on Walsall on account of our location at the centre of the transport network.

Infrastructure will not solve the problem alone, as a change in travel habits is required. The solution is a change in planning policy based on an integrated transport network and investment in transport. A new approach to network management across the West Midlands will benefit all forms of transport including cars, buses, freight, walking and bicycles.

There has been investment in new infrastructure such as Walsall's Bus Showcase Routes, and the proposed Town Centre Transport Package (TCTP), Red Routes and Darlaston Strategic Development Area (SDA) Access Project.

Details of Travelwise initiatives can be found at:

http://cms.walsall.gov.uk/travelwise.htm

West Midlands Combined Authority (WMCA) has been granted a sustainable transport fund called ‘Smart Network, Smart Choices’ to increase walking, cycling and public transport within the West Midlands. Further information can be found at:

http://centro.org.uk/sustainability/sustainable-travel/

http://centro.org.uk/transport/cycling-and-walking/

The above measures will help to reduce congestion on the roads, consequently reduce the amount of pollution emitted and therefore improve air quality. It will also improve fitness if walking or cycling is chosen.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Walsall up to the close of 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 air quality objectives are likely to be achieved. Where an exceedance is considered likely, the local authority must 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.

This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Walsall Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by Walsall Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at http://cms.walsall.gov.uk/aqma_order_.pdf and http://cms.walsall.gov.uk/chuckery_chuckery_aqma_consultation_notice_and_draft_order.pdf – see full list at http://uk-air.defra.gov.uk/aqma/list .

In the fullness of time it is proposed to revoke Walsall AQMA 2008 relating to Particulate Matter PM_{10}.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Walsall AQMA 2006	• NO_2 annual mean • 1 hour mean	Walsall	Whole borough declaration	http://cms.walsall.gov.uk/air_quality_action_plan_2009.pdf
Walsall AQMA 2008	• PM_{10} 24 hour mean	Name	An area of Chuckery (Nutmeg Grove) comprising 12 domestic properties	N/A AQMA redundant

2.2 Progress and Impact of Measures to address Air Quality in Walsall

Walsall Council along with other West Midlands Councils and partner organisations has taken forward a number of measures leading up to and including reporting year of 2016 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Key completed measures are:

- Work phases 1 and 2 of the LETCP by the seven West Midlands local authorities, incorporating Good Practice Guidance (procurement and planning), Technical Feasibility Studies on Low Emissions Zones and Economic/Health Impact Studies
- Black Country Air Quality Supplementary Planning Document
- Darlaston Strategic Development Area major highways scheme on behalf of Walsall Council to provide congestion easing and improved access to the Local Enterprise Zone
- West Midlands Strategic Transport Plan: Movement for Growth delivered by the Transport for West Midlands (now subsumed by the West Midlands Combined Authority)

Key measures in progress are:

- Black Country Ultra Low Emission Vehicle Strategy - development being carried out among Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Walsall Metropolitan Borough Council and Wolverhampton City Council and to supplement LETCP work.
- Requirement to fit electric vehicle charging points in respect of new planning developments – applied to new schemes where in scope.

Priorities and Key measures to be completed in the next 12 to 24 months or more:

- Review and update of the Walsall Air Quality Action Plan – work to now commence in lieu of adoption of the Black Country Air Quality SPD.
- M6 Motorway Junction 10 Walsall Council / Highways England Improvement Scheme involving reconstruction, provision of additional lane capacity on the gyratory and associated highway improvement.
- Network Rail Chase Line Walsall – Rugeley railway line electrification to provide additional services and capacity together with associated highway infrastructure changes.
- Re-modelling of Walsall borough (and the Black County) to determine areas of exceedance / likely exceedance in regard to nitrogen dioxide associated with

road traffic and the national air quality objective / EU Air Quality Limit Value to inform the need for interventions.

- Completion of a refined Walsall borough $PM_{2.5}$ air quality model and commencement of health impact studies in conjunction with Public Health Walsall.

Table 2.2 – Progress on Measures to Improve Air Quality

No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Darlaston Strategic Development Area	Traffic Management	Stregic Highway Improvements	Walsall Metropolitan Borough Council	2008 onwards	2014	None set	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Site works commenced at: i) Old Pleck Road A4148 / Bescot Road A4148 / Darlaston Road A4038 / Wednesbury Road, Walsall, ii) Bentley Mill Way / Cemetery Road / Darlaston Road. iii) Bescot Road A4148 / Bescot Road A461 /Wallows Lane A4148 / Darlaston Road A4038 / Montfort Road, Walsall, and iv) The Green / Heath Road / Richards Street / Bentley Road South, Darlaston, Walsall.	November 2016	Improvement in respect of road alignments and road junctions are designed *inter alia* to ease traffic congestion/queuing traffic at strategic locations.
2	West Midlands Low Emissions Towns & Cities Program (LETCP)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	LETCP Board, comprising Walsall MBC (Chair), Birmingham, Coventry, Dudley, Sandwell, Solihull, Wolverhampton.	2010	On going	Delivery of work streams	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	The LETCP has developed a delivery programme for the policies and measures, including setting targets and criteria for evaluating their effectiveness. The following work streams are currently being undertaken: Development of a Low Emission Strategy, Good Practice Guidance documents for Planning and Procurement; Low Emission Zone feasibility study.	2017/18	The LETCP programme comprises a range of measures to reduce emissions from road traffic across the West Midlands
3	Low Emission Strategy	Policy Guidance and Development	Low Emissions Strategy	Low Emission Towns and Cities Board - Representatives from 7 Local Authorities. Lead Authority for document is Walsall MBC	Completed	The development of the final document is ongoing, with a view to implementation following publication and adoption at Local Authority level.	Adoption of the Low Emission Strategy within each Local Authority area, subject to cabinet approvals.	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Draft Low Emission Strategy developed and initial consultation feedback was positive. Revised draft has been produced.	2015	As per West Midlands Low Emissions Towns and Cities Programme
4	Planning Guidance	Policy Guidance and Development	Air Quality Planning and Policy Guidance	Low Emission Towns and Cities Board - Representatives from 7 Local Authorities. Lead Authority for document is Dudley MBC	Completed	Completed	Publication of Guidance and implementation across the West Midlands	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Completed.	2014	As per West Midlands Low Emissions Towns and Cities Programme
5	Procurement Guidance	Policy Guidance and Development	Sustainable Procurement Guidance	Low Emission Towns and Cities Board - Representatives from 7 Local Authorities. Lead Authority for document is Coventry CC.	Completed	Completed	Publication of Guidance and implementation across the West Midlands	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Completed.	2014	As per West Midlands Low Emissions Towns and Cities Programme

No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	Procurement Guidance	Policy Guidance and Development	Sustainable Procurement Guidance	Low Emission Towns and Cities Board - Representatives from 7 Local Authorities. Lead Authority for document is Coventry CC.	Completed	Completed	Publication of Guidance and implementation across the West Midlands	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Completed.	2014	As per West Midlands Low Emissions Towns and Cities Programme
6	Low Emission Zone Feasibility	Policy Guidance and Development	Low Emissions Strategy	Low Emission Towns and Cities Board - Representatives from 7 Local Authorities. Lead Authority for document is Birmingham CC	Completed	On going	Publication of feasibility study and adoption of measures capable of improving emissions /pollutant concentrations.	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.	Completed.	2015	As per West Midlands Low Emissions Towns and Cities Programme
8	OLEV Go Ultra Low City Status Scheme	Policy Guidance and Development	Low Emissions Strategy	West Midlands authorities and Warwickshire in conjuction with the West Midlands Intergrated Transport Authority (ITA).	2014/15	To be confirmed.	Success of the bid	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.		2015	Part of a range of initiatives aimed at improving fleet emissions by encouraging uptake of low emission vehicles, driver training and vehicle management.
9	Local sustainable transport initiatives	Promoting Low Emission Transport	Compnay Vehicle Procurement / Public Vehicle Procurement / Other	Walsall MBC in conjuction with West Midlands ITA, CENTRO and the Black Country LEP.	20014/2015.	To be confirmed.	Non set.	West Midlands Local Transport Plan 3 performance aim: " A net reduction of Nitrogen Dioxide (NO_2) in those areas, as confirmed by each local authority within the West Midlands, where the annual average NO2 values are predicted to exceed 40µg/m^3 between 2008 (baseline) and 2015" and compliance with relevant air quality objective.		2020	Part of a range of initiatives aimed at improving fleet emissions by encouraging the uptake of low emission vehicles, driver training and vehicle management
10	M6 Active Traffic Management - Birmingham Box	Traffic Management	Congestion Management	Highways Authority / Highways England	Phases 2a & 2b 2008/9 Phase 3 2011.	Phases 2a & 2B 2009 onwards Phase 3 2012 onwards.	Air Quality Objectives/exceedances.	National air quality objective compliance.	Completed.	N/A	Reductions in nitrogen dioxide levels observed at automatic monitoring stations adjacent to M6 over the period 2011 to 2014
11	Black Country Supplementary Planning Document for Air Quality.	Policy Guidance and Development	Air Quality Planning and Policy Guidance	Joint initiative between Dudley MBC, Sandwell MBC, Walsall MBC and Wolverhampton CC; Dudley MBC providing a planning lead	2014	2015 (expected).	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded.	3rd Draft SPD completed 2015.	2015	Planning to reduce exposure to poor air quality at relevant receptors
12	Junction 10 M6 Improvement.	Transport Planning and Infrastructure	Other	Highways England / Walsall MBC	2012-2018	2018-2019	Air Quality Objectives/exceedances. Significance of impacts.	Relevant exposure to air quality where national objectives are exceeded.	Design and EIS Scoping.	2019	Emission impacts to be forecast - under consieration for EIA
13	Chase Line Walsall - Rugeley rail electrification.	Transport Planning and Infrastructure	Other	Network Rail.	2012	2013 onwards	Air Quality Objectives/exceedances. Significance of impacts.	Relevant exposure to air quality where national objectives are exceeded.	Part complete.	2017	Anticipated reduced road freight and improved commuter linkages - promotion of reduced car usage
14	Walsall Red Route Network / Bus Lane Prioritisation.	Transport Planning and Infrastructure	Public Transport Improvments	Walsall MBC	2006 - 2010	2010-2011	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Completed.	2011	Reduction in nitrogen dioxide emissions targetted

No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
15	Local Sustainable Transport Fund.	Promoting Travel Alternatives	Other	Walsall MBC	2012-2013	2013-2015	Air Quality Objectives/exceedances; Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Completed.	2014	Reduction in nitrogen dioxide emissions targetted
16	Managing Shorter Trips Fund	Promoting Travel Alternatives	Other	Black Country LEP	2014-2015	2015-2017	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Planning Phase.	2017	Designed to reduce private car usage#
17	A' Stars Schools Programme	Promoting Travel Alternatives	School Travel Plans	Walsall MBC	2009	2010 onwards	Cycling/Walking Levels. Health - Child Obesity	Relevant exposure to air quality where national objectives are exceeded	On-going (long term).	On-going	Designed in part to reduce vehicle emissions by uptake of alternative transport mode
18	Cycle Network	Promoting Travel Alternatives	Promotion of cycling	Walsall MBC	2003	2003 onwards.	Levels of cycling.		On-going (long term).	On-going	Designed in part to reduce vehicle emissions by uptake of alternative transport mode
19	20 mph Zones	Traffic Management	Reduction of speed limits	Walsall MBC	2012	2013 onwards	Speed enforcement / accidents rates		On-going	On-going	Related effects on vehicle emissions and driver behaviour
20	Cycle to Work Scheme.	Promoting Travel Alternatives	Promotion of cycling	Walsall MBC	2009	2010	Numbers of employees cycling to work / associated health benefits		On-going	On-going	Designed in part to reduce vehicle emissions by uptake of alternative transport mode
21	Walsall Town Centre Transport Package	Transport Planning and Infrastructure	Other	Walsall MBC	2006-2008	2009	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Completed.	2009	Nitrogen Dioxide annual mean air quality objective is exceeded. Forecast complaince is 2021
22	Bus Lane, Pedestrian Crossings and School Clearways Vehicle Enforcement	Traffic Management	Other	Walsall MBC	2011-2012		Number of infringements	Relevant exposure to air quality where national objectives are exceeded	On-going (long term)	On-going	Potential for less congestion and in turn lower vehicle emissions
23	Workplace Travel Plans.	Promoting Travel Alternatives	Workplace Travel Planning	Walsall MBC	2013	2014	LSTF Walsall Travel Plans		10 local businesses engaged	2016	Potential for alternative transport modes / less car usage /reduced vehicle emissions
24	Emergency Service Local Media and Bus Operator advanced notification of highway disruption	Public Information	Via other mechanisms	Walsall MBC	N/A	Historical/on-going.	N/A		Reactive and Planned to needs	On-going	Context related to key arterial roads and areas of nitrogen dioxide exceedances to inform air qulaity monitoring and reporting
25	Public Health Notifications	Public Information	Via other mechanisms	Walsall MBC - Public Health	2013	2013		Relevant exposure to air quality where national objectives are exceeded	On-going (long term)	On-going	N/A
26	Driver CPC training	Vehicle Fleet Efficiency	Driver training and ECO driving aids	Walsall MBC - Public Health	2010	2011	5 days training per 5 years per driver		Proficient Driver and Safe and Efficient Driver Modules set-up	5 modules done	Aids better driving habits
27	Take Responsibility campaign	Vehicle Fleet Efficiency	Driver training and ECO driving aids	Walsall MBC	2014	2014	Adverse comments / complaint numbers		Reduced adverse incidents	On-going	Aids better driving habits
28	Voluntary Speed Limiters	Vehicle Fleet Efficiency	Other	Walsall MBC	2013	2013	Vehicle Tracking		Under review	On-going	Design in part aids reduction of exceesive vehicle emissions
29	Greener Fleet Review	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	Walsall MBC	2015	Awaiting	Fuel usage per vehicle / type of vehicle / whole life costings		Under review	N/A	Intened in part to examine benefits of cleaner vehicles
30	Vehicle Replacement	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	Walsall MBC	2013	2010 (unnofficial)	Cost efficiency / repair costs / emissions / service life /maintenance		Formally implemented	On-going	Selection include consideration of emissions
31	Walsall Town Centre Area Action Plan and Site Allocation Document	Policy Guidance and Development Control	Air quality planning	Walsall MBC	2010	2016	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Consultation on issues and options completed	On-going	Air quality considerations regarding allocation of land/land uses and extant AQMA

No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
32	West Midlands UTC Major Projects - 6 Variable Message Signs installed - A34 Birmingham Road; A34 Green Lane; A454 Wolverhampton Road, A461 Lichfield Road; A4038 Darlaston Road, A461 Bescot Road	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2005 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Installed - operational	2015	Information for road users to notify of congestion, highway closures, re-routing, road conditions etc.
33	West Midlands UTC Major Projects - ANPR Journey Time Monitoring System - c. 22 ANPR cameras (borough-wide strategic routes)	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2009 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Installed - to be commissioned	2015	Foward UTC planning to aid management of traffic congestion
34	West Midlands UTC Major Projects - c. 24 Road Traffic Cameras on strategic roads (road occupancy - congestion/vehicle counting/vehicle classification)	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2009 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Installed - to be commissioned	2015	Data collection to inform travel pain initiatives and road usage
35	West Midlands UTC Major Projects - Traffic signal communication infrastructure upgraded to internet protocol (wireless-digital system)	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2009 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Installed and operational	2015	Over-arching initiative to improve UTC
36	West Midlands UTC Major Projects - UTC Common data base	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2009 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Installed - to be fully commissioned	2015	Over-arching initiative to improve UTC
37	West Midlands UTC Major Projects - 6 traffic signal upgrades (Mova/Scoot)	Traffic Management	UTC	Walsall MBC - LTP3 commitment West Mids Police, Highway Agency, CENTRO.	2009 onwards	On-going	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	Completed.	2015	Improvements to aid control of road traffic signals
38	West Midlands UTC Major Projects - 'ASTRID'	Traffic Management	UTC	Walsall MBC	2006	N/A	Air Quality Objectives/exceedances. Significance of impacts	Relevant exposure to air quality where national objectives are exceeded	None	2020	Intended to manipulate urban traffic control signals to ease traffic congestion

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5 µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

During Autumn/Winter 2015, Walsall Council commenced a joint $PM_{2.5}$ project with Public Health Walsall using Public Health Transformation fund monies, and deployed four $PM_{2.5}$ monitors (Partisol 2025 gravimetric for EU reference method) at existing air quality monitoring stations (M6 Motorway Junction 9, Wolverhampton Road (A454), Bloxwich Lane, and Primley Avenue). A fifth urban background monitoring station has been deployed in January 2016 at Rough Hay Primary School, Rough Hay Road, Darlaston to provide $PM_{2.5}$ (and O_3 and NO_x) data.

The project is intended to provide actual real-world data, which will be used to verify and refine the council's ADMS (Urban) $PM_{2.5}$ base air quality model, and in-turn aid a health impact analysis that will likely include statistics related respiratory illness, hospital admissions, cardio-vascular disease/illness, prevalence of asthma etc., and provide a focus on needs for intervention. This will also serve to inform the $PM_{2.5}$ target in the Public Health Outcomes Framework.

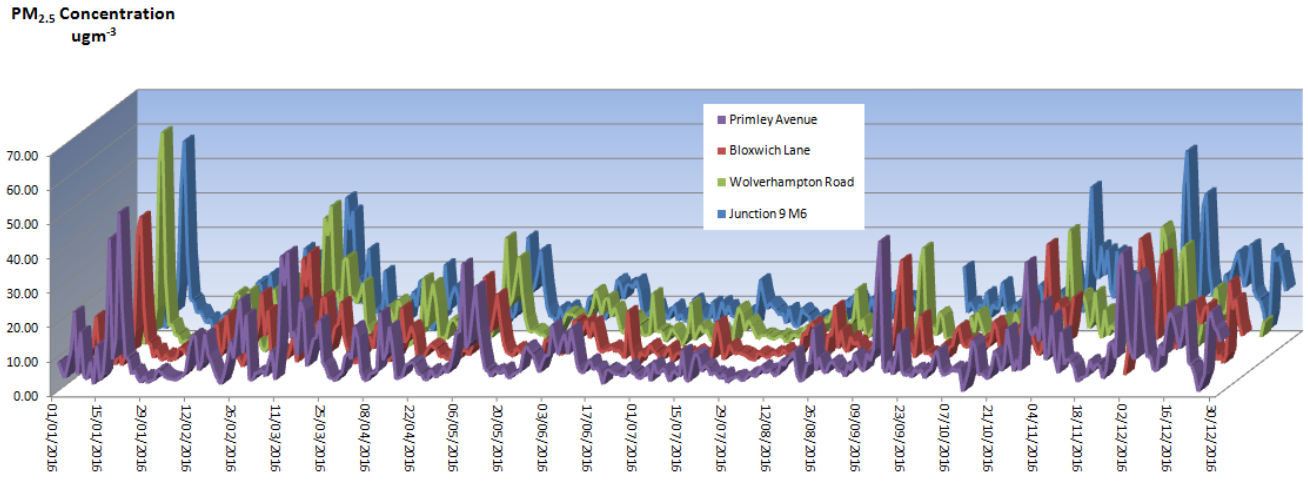
In summary the key outcomes set out for this initiative are therefore:

- Commissioning of a new urban background air quality monitoring station
- Acquisition of additional $PM_{2.5}$ sampling equipment
- To inform a review and update of the council's Air Quality Action Plan Measures
- Assisting with air quality reporting to Defra
- Informing health impact studies, which may also form part of West Midlands-wide work on $PM_{2.5}$
- Provision of air quality data for correlation with Walsall Health statistics

- Informing the need for low emissions intervention both locally and over a broader catchment
- Extend in-house abilities and scope to robustly appraise local and strategic developments, including infrastructure schemes
- Future-proofing of air quality assessments for Walsall
- Aid provision of baseline positions and validation for strategic air quality modelling and health impact studies.

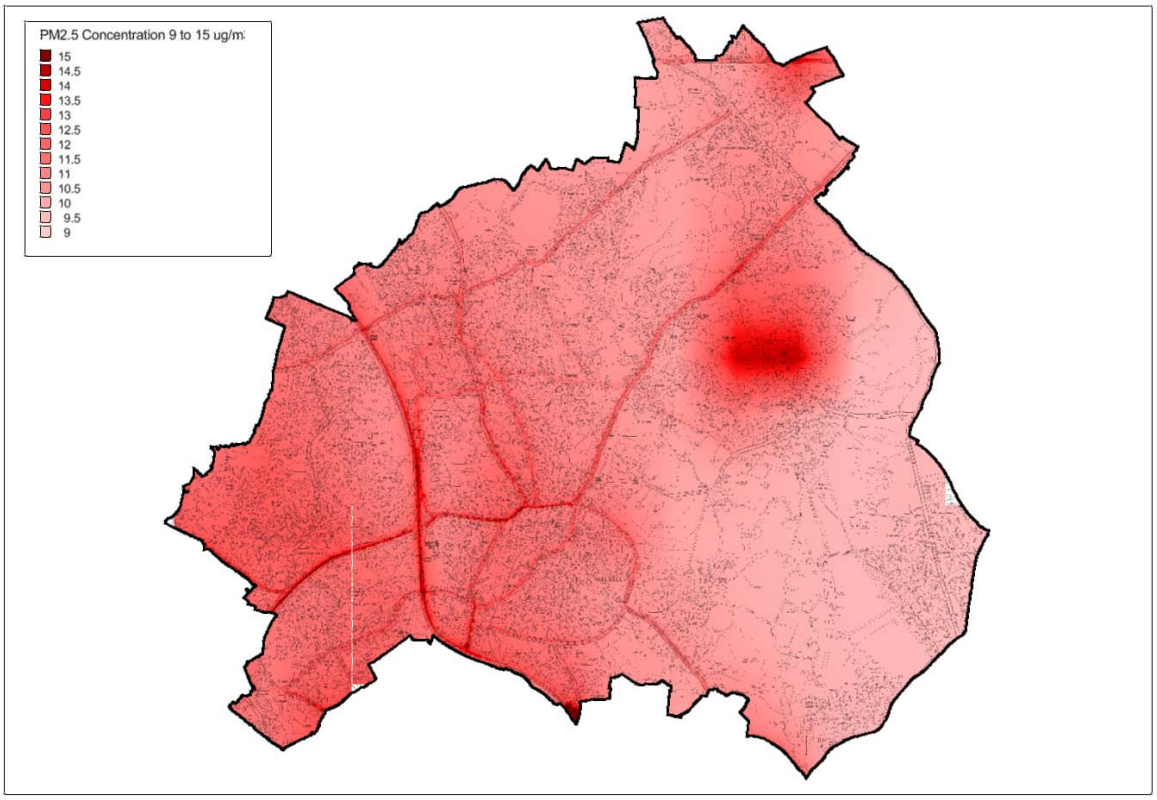
Monitoring data acquired thus far is presented below. A fuller commentary on this will be provided in the next Annual Status Report, though it is acknowledged efforts to reduce NO_x from road traffic will in any case have produce benefits in terms of $PM_{2.5}$ concentrations.

Figure 3 Walsall $PM_{2.5}$ Measured Concentrations 2016



Monitored concentrations have shown good correlation with $PM_{2.5}$ modelled values, with minimum predicted annual mean concentrations across the borough exceeding 9 μgm^{-3}.

Figure 4 Indicative $PM_{2.5}$ Concentrations 2015



3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Walsall Council undertook automatic (continuous) monitoring of nitrogen dioxide at six sites during 2015 and 2016. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at https://uk-air.defra.gov.uk/interactive-map

A map showing the location of the monitoring sites is provided in Appendix C. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix B.

3.1.2 Non-Automatic Monitoring Sites

Walsall Council undertook no non-automatic (passive) monitoring during 2015.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for “annualisation” and bias. Further details on adjustments are provided in Appendix B.

Appendix E provides historical trend data for the annual mean concentration of nitrogen dioxide at monitoring stations across the borough. Examining each station in-turn the following has been observed (note that the concentrations commented on are those measured at the point of monitoring and not distance corrected to the nearest receptor).

Walsall M6 Junction 9: Since monitoring commenced at this site in 2004, a continual increase in concentrations of nitrogen dioxide was seen until a peak in 2011. For the period 2011 to 2016, the annual mean concentration has fluctuated

between 47.5 μgm^{-3} and 65.4 μgm^{-3}, with no clear increasing or decreasing trend. Measurements made at this site have never recorded an annual mean below the required annual mean objective of 40 μg m^{-3}.

Walsall Alumwell: This former Automatic Urban and Rural Network (AURN) site was operated by Defra between 1987 and 2007. Walsall Council has continued to monitor at this location and has not recorded any exceedance of the annual mean objective for nitrogen dioxide since 2008.

Walsall Woodlands School: This affiliated urban background site was commissioned in 2012 to replace the former Johnson Road, Short Heath, monitoring station that was destroyed by fire. Measured annual mean concentrations of nitrogen dioxide have been below 25 μg m^{-3} during the four years since monitoring commenced.

Walsall Ring Road: Monitoring of nitrogen dioxide commenced in 2012 with an annual mean of 31.8 μgm^{-3}. Over the following two years however, measured annual mean concentrations were above the annual mean objective, being 47.2 μg m^{-3} in 2013, and 46.4 μgm^{-3} in 2014. The following year the annual mean decreased to below the objective level to 33.5 μgm^{-3} and for 2016 is reported as 30.8 μgm^{-3}.

Walsall Wolverhampton Road: Monitoring of nitrogen dioxide at this site re-commenced in 2012 with an annual mean of 44.6 μgm^{-3}. Over the following two years measured annual mean concentrations were marginally above the annual mean objective being 40.3 μgm^{-3} in 2013, and 40.2 μgm^{-3} in 2014. The following year the annual mean decreased to below the objective level to 38.7 μgm^{-3} and for 2016 is reported as 41.8 μgm^{-3}.

Walsall Bloxwich Lane: Monitoring at this site commenced in 2012 with an annual mean of 53 μgm^{-3}. Over the following two years measured annual mean

concentrations decreased significantly to 40.7 μgm^{-3} in 2014. The following year the annual mean increased to 44 μgm^{-3} and for 2016 is reported as 41.1 μgm^{-3}.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 6 years with the air quality objective of 40 μg/m^3.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 6 years with the air quality objective of 200 μgm^{-3}, not to be exceeded more than 18 times per year. Particulate Matter (PM_{10}).

Data capture < 90%. Data bracketed value represents the 90th percentile of the 24 hour mean value.

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the years 2014 and 2015 with the air quality objective of 40 μgm^{-3}.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the years 2014 and 2015 with the air quality objective of 50 μgm^{-3}, not to be exceeded more than 35 times per year.

Results show there have been no exceedances of either the annual or 24-hour air quality objectives for PM_{10} for 2015.

3.2.2 Particulate Matter ($PM_{2.5}$)

As described in Section 2.3 above(Local Authority Approach to Reducing Emissions and or Concentrations), monitoring of $PM_{2.5}$ commenced in Autumn/Winter 2015 and results are included in Table 8.7.

3.2.3 Sulphur Dioxide (SO_2)

Walsall Council undertook no monitoring of sulphur dioxide during 2015.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
M6 Motorway Junction 9	Roadside	399932	296644	NO_2	Y	Chemiluminescent	21	4	3
Walsall Alumwell	Urban Background	399386	298210	NO_2	Y	Chemiluminescent	0	n/a	20
Wolverhampton Road (A454)	Roadside	400429	298701	NO_2	Y	Chemiluminescent	40	5	3
Bloxwich Lane	Roadside	399183	298809	NO_2	Y	Chemiluminescent	10	21 metres 45 metres (M6)	3
Woodlands School	Urban Background	398036	300872	NO_2	Y	Chemiluminescent	25	5	2
Walsall Ring Road	Roadside	401590	299014	NO_2	Y	Differential Optical Absorption Spectroscopy	30	5	3
Primley Avenue	Urban Background	399530	297956	PM_{10}	N	Gravimetric	0	16	3

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

The council did not conduct any non-automatic air quality monitoring in 2015.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2015 (%)	NO_2 Annual Mean Concentration µgm^{-3}					
					2011	2012	2013	2014	2015	2016
M6 Motorway Junction 9	Roadside	Automatic	>95	>95	**65.4** **49.81**[1]	**52.0** **44.3**[1]	**47.7** **40.3**[1]	**52.8** **42.4**[1]	**49.2** **40.4**[1]	**47.5** 37.5[1]
Walsall Alumwell	Urban Background	Automatic	>95	>95	-	30.9	32.8		30.9	29.5
Wolverhampton Road (A454)	Roadside	Automatic	>95	>95	-	**44.6** **42.3**[1]	**40.3** 37.4[1]	**40.2** 37.0[1]	38.7 33.3[1]	**41.8** 36.2[1]
Bloxwich Lane	Roadside	Automatic	>95	>95	-	**53.3**	**43.6**	**40.7**	**44.1**	**41.1**
Woodlands School	Urban Background	Automatic	>95	>95	-	21.6	19.9	25.3	18.9	18.0
Walsall Ring Road	Roadside	Automatic				31.8	**47.2**	**46.4**	33.5	30.8

Notes: Exceedances of the NO_2 annual mean objective of 40 µgm^{-3} are shown in **bold**.

[1] **Distance Adjusted Concentration to nearest relevant receptor as per LAQM TG(09)/(16)**

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2015 (%)	NO_2 1-Hour Means > 200 μgm^{-3}					
					2011	2012	2013	2014	2015	2016
M6 Motorway Junction 9	Roadside	Automatic	>95	>95	9	3	4	1 (158.6) #	0	0
Walsall Alumwell	Urban Background	Automatic	>95	>95	-	0 (78.1)	0	-	0	0
Wolverhampton Road (A454)	Roadside	Automatic	>95	>95	-	15 (110)	0	1	0	0
Bloxwich Lane	Roadside	Automatic	>95	>95	-	0 (88.5)	1	0 (134.0) #	0	2
Woodlands School	Urban Background	Automatic	>95	>95	-	0 (78.1)	0	0	0	0
Walsall Ring Road	Roadside	Automatic			-	1 (94.5)	1	17	0	0

Data capture < 90%. Data bracketed value represents the 90th percentile of the 24 hour mean value.

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site Name	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2015 (%)	PM_{10} Annual Mean Concentration μgm^{-3}				
				2011	2012	2013	2014	2015
Primley Avenue	Urban Background	81	81	-	-	-	17.1	17.3

Notes: Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold.**

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site Name	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2015 (%)	PM_{10} 24-Hour Means > 50 μgm^{-3}				
				2011	2012	2013	2014	2015
Primley Avenue	Urban Background	81	81	-	-	-	8	4

Notes: Exceedances of the PM_{10} 24-hour mean objective (50 μgm^{-3} not to be exceeded more than 35 times/year) are shown in **bold.**

Table A.7 – Annual Mean $PM_{2.5}$ Monitoring Results

Site Name	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2016 (%)	$PM_{2.5}$ Annual Mean µgm^{-3}
				2016
Primley Avenue	Urban Background	100	99.7	9.9
M6 Motorway Junction 9	Roadside	98.4	94.8	11.9
Wolverhampton Road (A454)	Roadside	100	97.0	10.8
Bloxwich Lane	Roadside	100	95.6	10.2

Appendix B: Supporting Technical Information / Air Quality Monitoring Data QA/QC

QA/QC of automatic monitoring

A1. Introduction

A1.1 The purpose of quality assurance is to ensure that data obtained is representative of actual pollutant concentrations in the atmosphere. Data must be consistent over time and sufficiently accurate and precise to enable a comparison with air quality objectives.

A1.2 In some cases meaningful QA/QC is difficult, for example in the case of certain pollutants (e.g. sulphur dioxide, PM_{10}) and the council recognises that consistency can be compromised by enforced (albeit perhaps relatively minor) changes to monitoring station locations. Nonetheless, there exists a general aim in the council's monitoring work to achieve 90% data capture.

A1.3 The council accepts that a documented quality assurance and quality control programme should be followed in order that reliable and credible measurements are obtained. In summary the council has therefore adopted a rigorous QA/QC programme that includes an established schedule of regular site calibrations, validation of data, and documentation of all procedures.

A2. QA/QC of Automatic Data

A2.1 In order to minimise measurement uncertainty it is important to apply stringent QA/QC procedures to monitoring programmes, such as those laid down for the UK automatic monitoring networks.

A2.2 Chemiluminesence analysers are calibrated by council personnel on a monthly basis. This relies on using a single cylinder of nitrogen oxide (NO) containing a known concentration of NO that is transported around all sites, and a zero air purifier containing charcoal and Purafil to remove any trace of oxides of nitrogen from the sample stream i.e. zero air.

A2.3 All calibration gases and analytical techniques applied to monitoring methods are accredited to a recognised standard.

A2.4 All the sites are covered by a service contract provided by Matts Monitors Limited, Stroud, Gloucestershire. The sites are serviced every six months by a qualified service engineer in accordance with the manufacturer's instructions and warranty conditions. Matts Monitors Limited also provides a 48-hour call out response to cover breakdowns.

A3. QA/QC of Active Samplers

A3.1 For PM_{10} gravimetric samplers, all filters are properly conditioned and weighed in a controlled environment before and after exposure. Weighing is carried out using an accurate balance calibrated to national standards. Sample flow rates are checked to ensure that the sample volume is accurately determined.

A4. Data Management

A4.1 All of the data collected by the council's air quality monitoring network undergoes data processing, data validation and/or ratification. These methods of data management are outlined in more detail within the DEFRA publication Local Air Quality Management Technical Guidance LAQM.TG(09) as superseded by LAQM.TG (16).

A4.2 Raw data is collected remotely on a daily basis and is examined to screen out any spurious and/or unusual measurements having regard to the recommendations in Box A1.6 of LAQM.TG(09) as superseded by LAQM.TG(16).

A4.3 Data is then subject to a correction factor being applied to the relevant data set based on the results from each monthly calibration visit.

Appendix C: Map(s) of Monitoring Locations

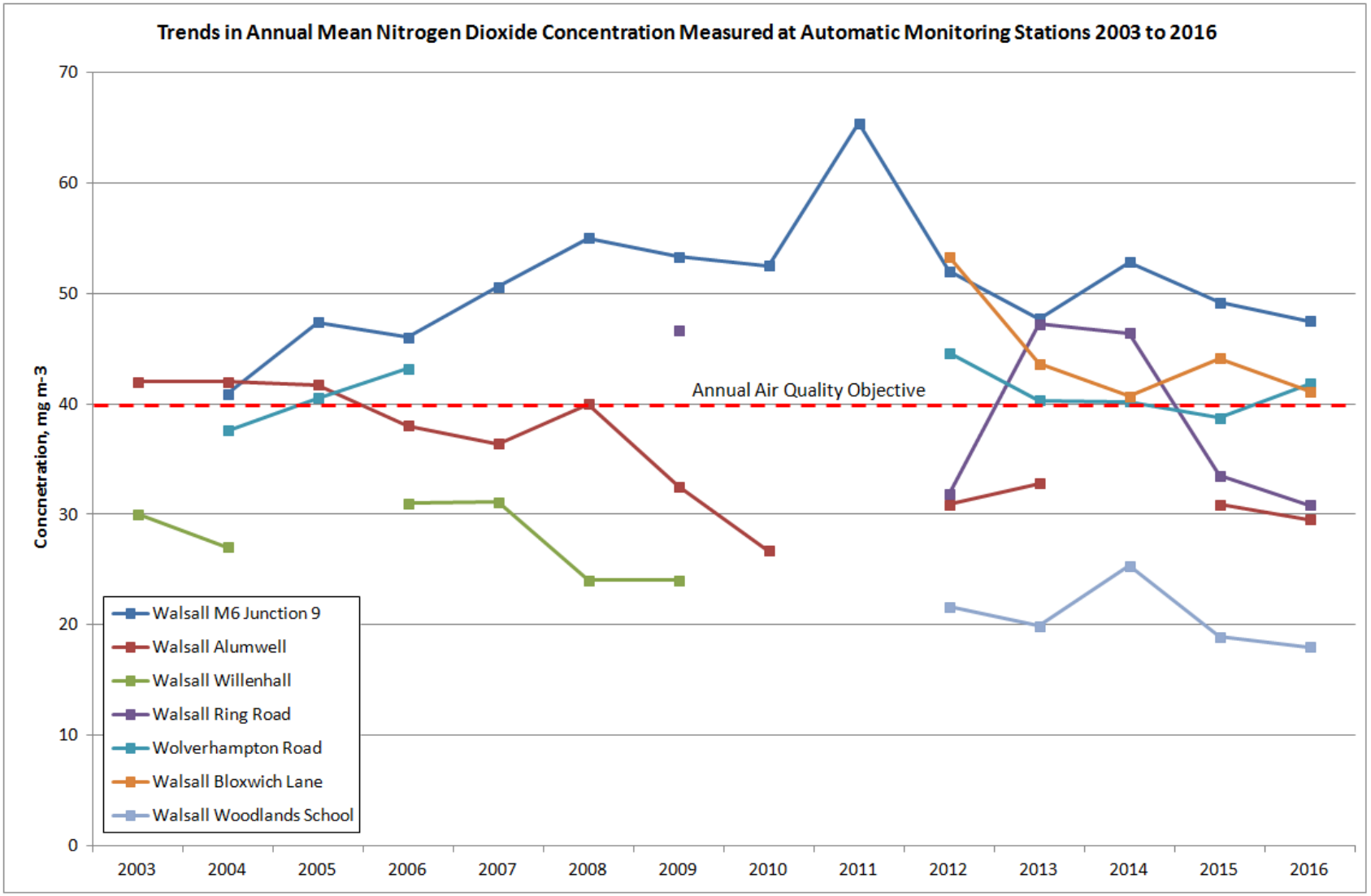
Appendix D: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 μgm^{-3} not to be exceeded more than 18 times a year	1-hour mean
	40 μgm^{-3}	Annual mean
Particulate Matter (PM_{10})	50 μgm^{-3}, not to be exceeded more than 35 times a year	24-hour mean
	40 μgm^{-3}	Annual mean
Sulphur Dioxide (SO_2)	350 μgm^{-3}not to be exceeded more than 24 times a year	1-hour mean
	125 μgm^{-3}, not to be exceeded more than 3 times a year	24-hour mean
	266 μgm^{-3}, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in microgrammes of pollutant per cubic metre of air ($\mu g/m^3$).

Appendix E: Historical Nitrogen Dioxide Monitoring Data



Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LETCP	Low Emissions Towns & Cities Programme (West Midlands)
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10 µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5 µm (micrometres or microns) or less
PG	Policy Guidance
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
TG	Technical Guidance

References

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