

Cabinet – 17 December 2008

Air Quality Action Plan Consultation

Portfolio:	Councillor Rachel Walker - Environment
Service:	Engineering & Transportation – Built Environment
Wards:	All
Key decision:	Yes
Forward plan:	Yes

1. Summary of report

- 1.1 Following the declaration of a borough-wide Air Quality Management Area (AQMA) in 2006, the Council has a statutory duty under the Environment Act 1995 (As Amended) to produce an Air Quality Action Plan (AQAP). The purpose of this AQAP is to demonstrate how the Council is working towards meeting air quality objective(s) set out in the Government's Air Quality Strategy for England, Scotland, Wales and Northern Ireland to which the AQMA relates.
- 1.2 There are formal requirements to carry out consultation in relation to certain aspects of the local air quality review and assessment regime administered under the 1995 Act, including AQAPs. This report consequently seeks cabinet approval for a draft Action Plan to be the subject of consultation, and thereafter its implementation once approval has been given on behalf of the Secretary of State.
- 1.3 A pre-consultation draft AQAP has already been the subject of targeted internal consultation, and preliminary comments from the Department for Environment, Food and Rural Affairs (DEFRA). DEFRA has provided an initial series of suggestions for completion of the Action Plan, reporting that overall the (pre-consultation) draft plan is a good start, and that the Council should be commended for committing to a quantitative and systematic approach to the problem. Furthermore, DEFRA remarked that the plan was concise, coherent and readable. There are however, elements of the pre-draft plan that required more supporting evidence that have now been considered.

2. Recommendations

- 2.1 That Cabinet approves the Draft Air Quality Action Plan set out in **Appendix A** for formal consultation purposes.
- 2.2 That following consultation, and subject to there being no substantive adverse comments, the Draft Action Plan is finalised, submitted to the Secretary of State and implemented.
- 2.3 That a further report be submitted to Cabinet if there are substantive comments arising from the consultation process.

3. Background information

- 3.1 The purpose of local air quality review and assessment is to examine the impact on health of seven air pollutants as set out in The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007 (AQS). This Strategy has been produced by Government as a requirement under the Environment Act 1995 (As Amended).
- 3.2 For each pollutant in the AQS, Air Quality Objectives (AQOs) are set which are in turn the subject of several EC Directives specifying targets to be achieved by member states.
- 3.3 As part of on-going work on air quality, it was established in 2005 that the Council's original five AQMAs (declared in 2002) did not sufficiently reflect all locations where AQOs are, or are likely to be, exceeded. DEFRA accepted the Council's findings that on account of this there was a need to amend the AQMAs.
- 3.4 The basis for the Council's original AQMA declarations was due to predicted exceedances of the annual mean nitrogen dioxide air quality objective, which is set at a concentration of 40 mgm^{-3} (a millionth of a gram in weight for a volume of air that is 1 cubic metre). The cause of this is road traffic pollution, primarily using the M6 motorway corridor and major arterial roads within the borough.
- 3.5 Following the 2002 AQMA declarations, the Council was tasked with examining each AQMA in more detail to accurately determine the extent of nitrogen dioxide exceedances. This culminated in an air quality report being submitted to DEFRA in May 2005 (referred to as the 'Stage 4 Report') which not only confirmed the need for the AQMAs but also demonstrated that the extent of impact was actually wider than had originally been modelled. Notably, there were predicted exceedances along the length of the M6 corridor at distances of up to 250 metres either side of the carriageway, near to the town centre, and along large stretches of Lichfield Street and Lichfield Road, Bloxwich Road and Green Lane, Walsall.

- 3.6 Government guidance states that it is entirely a matter for the local authority to determine the extent of any AQMA. Accordingly, a number of local authorities have declared very defined AQMAs, for example where the source of pollution is possibly static or else very well determined and limited in extent, whereas others have declared the whole of their borough due to either the number of individual AQMAs that would otherwise be needed, the nature of the pollution source (for instance road traffic), ease of administration, and the avoidance of blight.
- 3.7 Walsall declared a whole borough AQMA in 2006, and within the West Midlands the Councils of Birmingham, Dudley, Sandwell and Wolverhampton all have whole-borough AQMAs designed to deal with problems associated with road traffic. This provides a basis for addressing traffic pollution in an integrated fashion, not only within the given boroughs, but also across a wider geographical area within the West Midlands which is important for strategic transport planning and the Local Transport Plan.
- 3.8 Following declaration of an AQMA, it is a statutory duty that an AQAP is produced, although under the Environment Act 1995 (As amended) there is no prescribed timescale for preparing this. Fundamentally this must set out what measures a Council intends to introduce in pursuit of the AQOs and whilst local authorities are not obliged themselves to meet the objectives, they must show that they are working towards them. This forms part of requirement to submit yearly Progress Reports to DEFRA in relation to Air Quality Action Plans.
- 3.9 Action planning is the most important and significant aspect of the local air quality management (LAQM) process, providing the practical opportunity for improving local air quality where it has been shown that national measures will be insufficient to meet relevant AQOs. Action planning at the local level can often be the most cost-effective way of tackling localised air quality problems.
- 3.10 Tackling this in a larger geographical sense however can have an added benefit in that action plans to redress poor air quality can consider broader implications, and on balance can be the preferred option. Borders with neighbouring authorities may be jointly targeted in terms of intersecting or boundary roads, and there is an advantage of only having made one AQMA declaration as future changes brought about should air pollution increase are inherently catered for.
- 3.11 An AQAP should basically incorporate:
- Quantification of the source contributions to exceedances of AQOs – this allows the AQAP to be effectively targeted.
 - Evidence that all available options have been considered on the grounds of cost effectiveness and feasibility.
 - How the Council will use its powers and also work in conjunction with other organisations in pursuit of AQOs.

- Clear timescales in which the Council and other organisations/agencies propose to implement the measures within its Plan.
- How the Council intends to monitor and evaluate the effectiveness of the plan.

3.12 The national policy framework has already led to significant improvements in local air quality policy with key transport initiatives, including:

- Regulatory measures and standards to reduce vehicle emissions – EURO vehicle and fuel standards, vehicle emission testing;
- Tax-based measures that encourage people to supply and use cleaner fuels and also encourage them to buy more environmentally friendly vehicles – graded Vehicle Excise Duty according carbon dioxide emissions, fuel duty differentials, company car taxation;
- The development of an integrated transport strategy that supports sustainable development – 10 year plan for transport.

3.13 Strategies for reducing emissions from road transport within AQAPs typically include ‘hard’ measures relating to transport infrastructure and ‘soft’ measures, particularly those aimed at changing how and when people travel. Examples include:

- Traffic Calming
- Traffic Management
- Reallocation of road space
- Vehicle restricted areas
- Congestion Charging
- Parking Controls
- Traffic Control systems
- Green Travel Plans
- Land use planning - Development Control constraints
- Low Emission Zones
- Roadside vehicle testing
- Speed restrictions
- Public transport initiatives

- Park and ride schemes
- Promotion of alternative means of travel – walking and cycling initiatives
- Travel awareness campaigns

3.14 A number of projects are currently being developed with the intention of reducing traffic congestion and to improve access to public transport, both of which support action to reduce air pollution. These can be included in an AQAP as complementary themes.

4. Resource considerations

4.1 **Financial:** LAQM is administered from the annual Pollution Control budget in respect of professional and technical work undertaken by officers, and continued operation and maintenance of the air quality monitoring network throughout the borough, which involves the Pollution Control Laboratory.

Any expenditure designed to mitigate air pollution and/or achieve compliance with AQOs largely fall under the responsibility of Engineering & Transportation and Regeneration. Costing of measures to be introduced is most likely to form an element of the final AQAP, which will be kept under review and explored with relevant services.

4.2 **Legal:** The Council has a duty under section 84(2) of the Environment Act 1995 (As Amended) to produce an AQAP where it has designated an AQMA pursuant to 83(1) of the Act.

The Secretary of State has reserve powers under the section 85 of the 1995 Act for the purpose of conducting, or requiring to be conducted, reviews and assessment of air quality, and to make directions to local authorities to take steps as may be specified for the purpose of implementing air quality reviews, assessments, AQMAs, and AQAPs.

4.3 **Staffing:** Air Quality Review and Assessment for the purpose of the Government's Air Quality Strategy is carried out by officers of Pollution Control's Scientific Team, which is part of Engineering and Transportation Services, Built Environment.

The implementation of an Air Quality Action Plan may have implications for other service areas, notably Transportation, Highways, Strategy, Regeneration and Strategic Planning, where required actions need a resource element. These will be explored in full at the appropriate time.

5. Citizen impact

- 5.1 Air quality has a direct influence on the health of the general public, as well as the environment.
- 5.2 The statutory Air Quality Review and Assessment regime set out in the Environment Act 1995 (As Amended) is designed to improve and safeguard the health of citizens. By declaration of AQMAs, improvements must be made in areas of relatively poor air quality by the subsequent implementation of local AQAPs. Such plans are highly dependant on the source of pollution and the mechanisms needed to ensure appropriate controls.

6. Community safety

- 6.1 The progression of local air quality action planning is in part intended to bring together Council services in addressing air quality in conjunction with broader issues, which may include transport initiatives and local planning processes.
- 6.2 These initiatives can impact on other areas of corporate priorities in terms of improving health due to cleaner air, as well as promoting a safer Walsall.

7. Environmental impact

- 7.1 Implementation of an AQAP will have a positive long term environmental impact by working towards meeting AQOs which are designed to safeguard health.
- 7.2 Key locations of poor air quality due to road traffic will be targeted, and air quality throughout the borough will continue to be tracked using the Council's existing air quality monitoring network.

8. Performance and risk management issues

- 8.1 **Risk:** Following submission to the Council's May 2005 Stage 4 Review and Assessment of Air Quality report, DEFRA duly confirmed that on the basis of the evidence provided, the conclusions reached by the Council were accepted. In summary, this confirmed that predicted areas of exceedance with respect to the annual average AQO for nitrogen dioxide extended beyond the boundaries of five AQMAs declared in 2002. This was duly rectified by declaration of a whole borough AQMA in 2006.

It is required that all local authorities shall demonstrate that they have discharged their duties under Part 4 of the Environment Act 1995 (As Amended), and to do so they will have conducted a review and assessment of air quality having regard to published procedures and formal guidance. If necessary they must also have designated AQMAs and drawn up related action plans.

Failure to address poor air quality ultimately renders the United Kingdom in breach of EC law, and the Council itself subject to central government sanction. Whilst there is no legal obligation on local authorities to achieve national AQOs (as many sources of emissions to air may well be outside of their control), they nonetheless have to show they are working towards compliance. This is clearly identified under section 84 of the Environment Act 1995 (As Amended).

If the Secretary of State is satisfied this has all been undertaken and AQOs are still not met, further action may have to be taken at a national level possibly with the involvement of other agencies.

Should the Secretary of State deem that the Council has not satisfied these conditions, a direction can be issued forcing the Council to undertake given work or tasks. It is considered the proposed AQAP (**Appendix A**) is sufficient to demonstrate the Council is working to meet AQOs.

- 8.2 **Performance Management:** LAQM is a mandatory function local authorities are obliged to carry out, and form inherent elements within Service, Team and Individual Performance Management Plans.

At a national level, Policy Guidance issued by DEFRA states that “excellent” rated authorities are not required to produce an AQAP. This relates to an Order made under section 6 of the Local Government Act 2000, coming into effect on 1st February 2005, removing the duty for those local authorities rated as excellent to produce seven statutory plans.

The Secretary of State’s reserve powers under section 85 of the 1995 Act have been amended by the section 6 Order in that the Secretary of State may no longer direct an excellent authority to exercise its powers in pursuit of AQOs.

9. Equality implications

- 9.1 Development of an AQAP must be an inclusive process in dealing with air quality, not only for the purposes of achieving an objective, but also to link in with policies borough-wide which have a direct effect on sustaining safer, cleaner, and stronger communities and providing support for vulnerable sectors.

10. Consultation

- 10.1 In June 2008 a Pre-Draft Air Quality Action Plan was circulated among targeted consultees within the Council. The preliminary work on this had been undertaken by Faber Maunsell, consultants acting on behalf of the Council.
- 10.2 The preliminary work was forwarded to DEFRA to seek initial comments to steer development of the action. This was favourably received, and a number of matters and recommendations were raised for further refinement.

- 10.3 The Pre-Draft was circulated to key officers in Transportation, Highways, Strategic Planning, Regeneration and Development Control and based partly on comments received, a consultation Draft Air Quality Action Plan has been prepared for a wider audience.
- 10.4 The next phase of this process is to consult the following before finalising and implementing the Action Plan. The Environment Act 1995 provides the statutory basis for consultation and liaison in respect of air quality management. Schedule 11 of the Act requires the Council to consult:
- The Secretary of State
 - The Environment Agency
 - The Highways Authority
 - All neighbouring authorities
 - Highways Agency
 - Other public authorities as appropriate
- 10.5 The intention of the consultation is to provide comments for finalisation of the Action Plan, having regard to the fact that actions plans tend to operate over long timescales and in the first draft it may only be possible to specify broad proposals. It is therefore probable that as and when revisions and amendments to the Air Quality Action Plan are required, further consultation will take place.
- 10.6 An extended consultation will also take place within the Council, and whilst the public does not constitute a statutory consultee, a consultation document will be made available, notably via the Council's web site, to provide an opportunity for members of the public to offer their comments.
- 10.7 DEFRA acknowledges that effective consultation and interaction with the general public and local stakeholders is extremely important in preparing action plans, and their support is needed for Actions Plans to be effective. Guidance and advice has been prepared to assist in this process which will be taken into account as relevant during the consultation process.

Background papers

1. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. DEFRA July 2007
2. Part IV of the Environment Act 1995 (As Amended). Local Air Quality Management. Policy Guidance LAQM.PG(03). DEFRA 2003
3. Part IV of the Environment Act 1995. Local Air Quality Management. Policy Guidance LAQM.PGA(05). Addendum. DEFRA

4. Walsall MBC Stage 4 Review and Assessment of Air Quality (First Round).May 2005.
5. Walsall MBC Cabinet Report. Agenda Item 15 – Cabinet 30th November 2005. 'Re-designation of Air Quality Management Areas'.
6. Statutory Instrument SI 2007 No. 64 Environmental Protection. The Air Quality Standards Regulations 2007
7. The Walsall Air quality Management Area 2006. Order Designating an Air Quality Management Area.
8. Air Quality Management Areas: Turning Reviews Into Action. National Society for Clean Air.
9. Air Quality Management Areas: A review of Procedures & Practice For Local Authorities. National Society for Clean Air.

Author

John Grant
Scientific Manager

☎ 652277

✉ grantj@walsall.gov.uk



Jamie Morris
Executive Director
December 2008



Councillor Rachel Walker
Portfolio holder
December 2008



Air Quality Action Plan

Consultation Draft

Version 1.3

**Pollution Control
Engineering & Transportation Services
Walsall Metropolitan Borough Council
2nd Floor Civic Centre
Darwall Street
Walsall
WS1 1DG**

**Contact: John Grant Scientific Manager
Telephone: 01922 652277
Email: pollutioncontrol@walsall.gov.uk
Fax: 01922 623234**

December 2008

Executive Summary

E.1 As part of the Local Air Quality Management (LAQM) process, Walsall Metropolitan Borough Council have identified areas within Walsall that exceed, or are likely to exceed, the annual average and hourly national air quality objectives (AQOs) for nitrogen dioxide (NO₂).

E.2 Resulting from this, the Council declared the whole of its borough an air quality management area (AQMA) for the purpose of achieving NO₂ AQOs. Upon declaring an AQMA, the Council has a statutory duty to prepare an Air Quality Action Plan (AQAP) which sets out measures designed to improve air quality within the AQMA.

E.3 This report describes an AQAP that has been produced incorporating the measures that are intended to be implemented.

E.4 A source apportionment study has been carried out in order to aid the targeting of measures within this Action Plan, which suggests that the most significant source of NO₂ emissions are associated with Heavy Goods Vehicles (HGVs) due to a combination of fuel type, engine size, and to some extent use of particulate traps in exhaust systems.

E.5 A detailed assessment has yet to be made of the costs and likely air quality benefit of the measures proposed, which is a matter for consideration once the AQAP is confirmed .

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Air Quality Monitoring in Walsall

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1.0 Introduction

1.1.1 The Environment Act 1995 Part IV introduced a new regime in the United Kingdom requiring local authorities to review air quality in their areas on an annual basis as part of a three year cycle of reporting to central government. This is to ensure that objectives are met relating to seven (of eight in total) key air pollutants as set out in the UK Air Quality Strategy¹.

1.1.2 The objectives specified in the Strategy¹ are fundamentally designed to protect human health and are assessed in areas of relevant exposure, namely where people are regularly exposed to, and may be affected by, air pollution. The pollutants for which air quality objectives have been set and which local authorities are obliged to assess relate to:

- ▶ 1,3 – Butadiene
- ▶ Benzene
- ▶ Carbon Dioxide, CO
- ▶ Lead, Pb
- ▶ Nitrogen Dioxide, NO₂
- ▶ Particles (PM₁₀)
- ▶ Sulphur Dioxide, SO₂

1.1.3 A further objective relating to ozone is also included, although this is a long-range pollutant and is seen as a national, rather than a local problem that is to be dealt with by government.

1.1.4 As part of the three year cycle local authorities must produce an Updating and Screening Assessment (USA) for their areas. If the USA identifies places where air quality objectives are not likely to be met by a target date, it is then necessary for a Detailed Assessment to be undertaken for the given pollutant(s) and as required to declare an Air Quality Management Area (AQMA).

1.1.5 Thereafter, a Stage 4 Further Assessment within 12 months of an AQMA declaration is required, and an AQAP has to be produced setting out how the local authority will work towards meeting air quality objectives.

1.1.6 In addition to this, local authorities also have to produce air quality Progress Reports in years when either a USA or Detailed Assessments are not compiled.

1.2 Local Issues in Walsall

1.2.1 Walsall MBC is a relatively large urban local authority, with a population of c.253,000 spread over an area of approximately 10,250 hectares (equivalent to about 40 square miles). It has a relatively high population density of 24.4 persons per hectare, which is not evenly distributed, and consequently features high density populations in and around urban centres.

1.2.2 The borough town of Walsall is located centrally in the UK and is surrounded by six other local authorities, namely Lichfield District Council to the north; Birmingham City Council to the east and south east; Sandwell Metropolitan Borough Council to the south; Wolverhampton City Council to the west; and South Staffordshire Council and Cannock Chase District Council to the north west.

1.2.3 Walsall town centre is surrounded by a ring road incorporating five major radial roads. In addition, the heavily trafficked M6 motorway located to the west of the town centre runs north west to south east through the Borough.

1.2.4 Walsall MBC also has 22 significant industrial emissions sources, of which 13 are Part A1 installations regulated by the Environment Agency under Integrated Pollution Prevention and Control (IPPC) pursuant to the Environmental Permitting (England and Wales) Regulations 2007.

Figure 1 Regional Geography



1.3 Air Quality Review and Assessment in Walsall

1.3.1 In April 1999 Walsall Council published its First Stage review and assessment of air quality involving the identification of significant sources of air pollution within and surrounding the borough, reviewing the levels of air pollutants for which prescribed standards and objectives have been set, and estimating the likely future levels.

1.3.2 The First Stage confirmed that the air quality objectives for butadiene, benzene and carbon monoxide would be achieved by the required deadlines, and that a second and third stage review and assessment would be required in relation to lead, nitrogen dioxide, sulphur dioxide and PM₁₀ to identify any existing or likely exceedances of air quality objectives by deadlines specified in the Air Quality Strategy. This detailed investigation was intended to determine whether or not the Council would need to declare Air Quality Management Areas in accordance with the Environment Act 1995. The investigation utilised data obtained from computer modelling techniques, emission inventories, road traffic data and a results obtained from a network of air pollution monitoring stations located throughout Walsall and the West Midlands.

1.3.3 The combined Second and Third Stage Review & Assessment² required the council to provide further screening of pollutant concentrations with reference to AQOs and their associated compliance deadlines together with accurate detailed assessment of current and future air quality. The combined Assessment concluded that in Walsall the Government's air quality objectives would be met by the specified deadlines and that no air quality management areas would need to be declared. The report recognised however, that further work would be required before the next review and assessment was due in 2003 to overcome anomalies identified in relation to measured and modelled concentrations of certain pollutants (notably NO₂).

1.3.4 An addendum report³ was subsequently produced specifically in regard to NO₂ which led to the declaration of five AQMAs in 2002 :

Areas 1 North of Junction 10, East of M6 Motorway, Beechdale.

Areas 2 Wolverhampton Road A454.

Areas 3 M6 Motorway Junction 9 / Bescot Road.

Area 4 Rushall.

Area 5 Lichfield Road, Walsall.

1.3.5 As part of continuing work on air quality it had been established that the Council's original AQMAs did not sufficiently reflect all locations where air quality objectives are/were, or are likely to be exceeded, and it was therefore necessary, in accordance with the Environment Act 1995 (As Amended) and guidance published by the DEFRA, to re-define these.

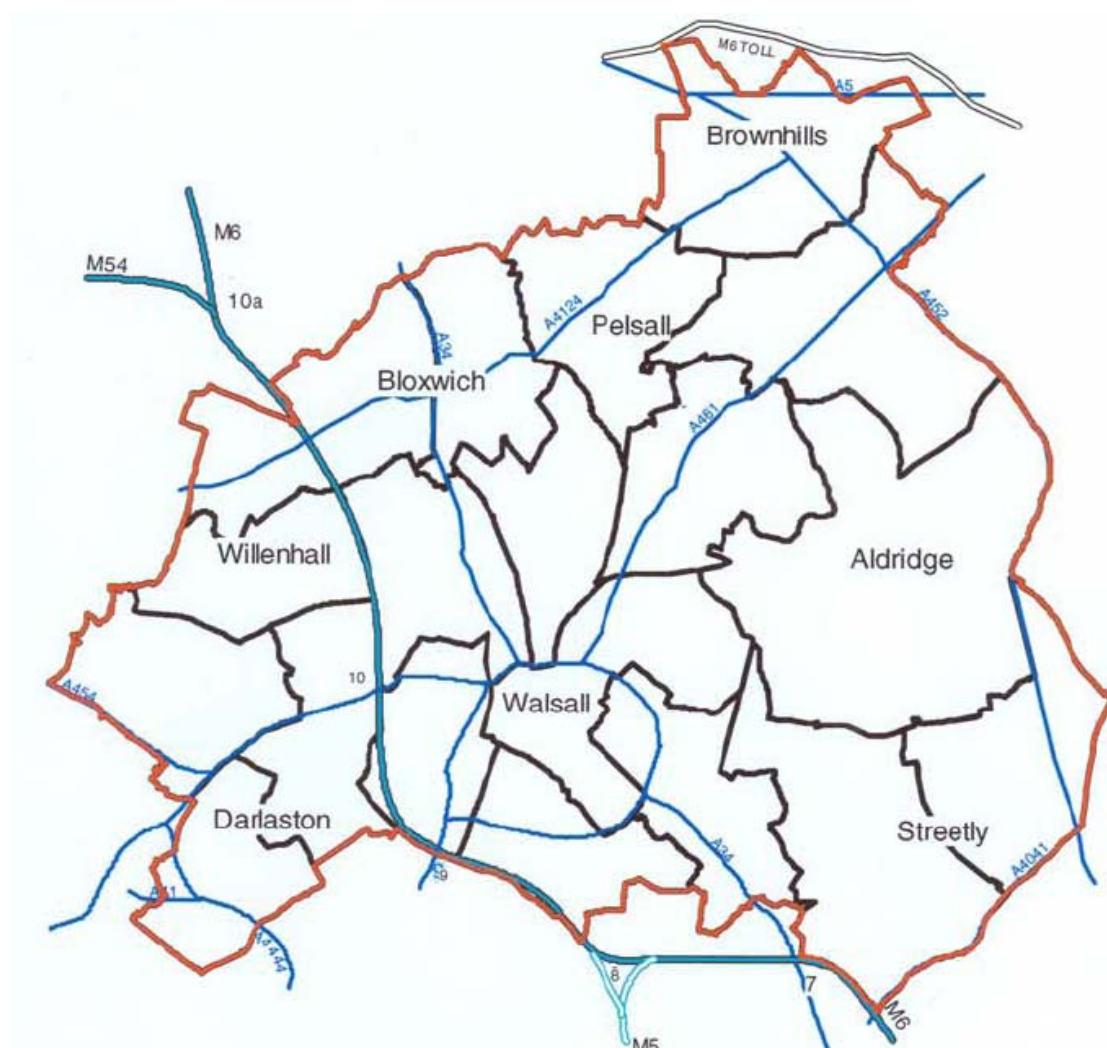
1.3.6 In August 2006 Walsall MBC revoked these AQMAs in order to consolidate the whole of its borough as an AQMA in relation to nitrogen

dioxide. The Walsall Air Quality Management Area 2006 was declared on 31st August 2006, the extent of which is shown as bounded red in Figure 2.

1.3.7 DEFRA confirmed by letter dated 2nd September 2005 that they accepted the Councils findings and that there was a need to amend the AQMAAs.

1.3.8 By declaring the whole borough an AQMA problems associated with road traffic and transportation can be dealt with in an integrated fashion across a broader geographical area which is important for strategic transport planning and the Local Transport Plan.

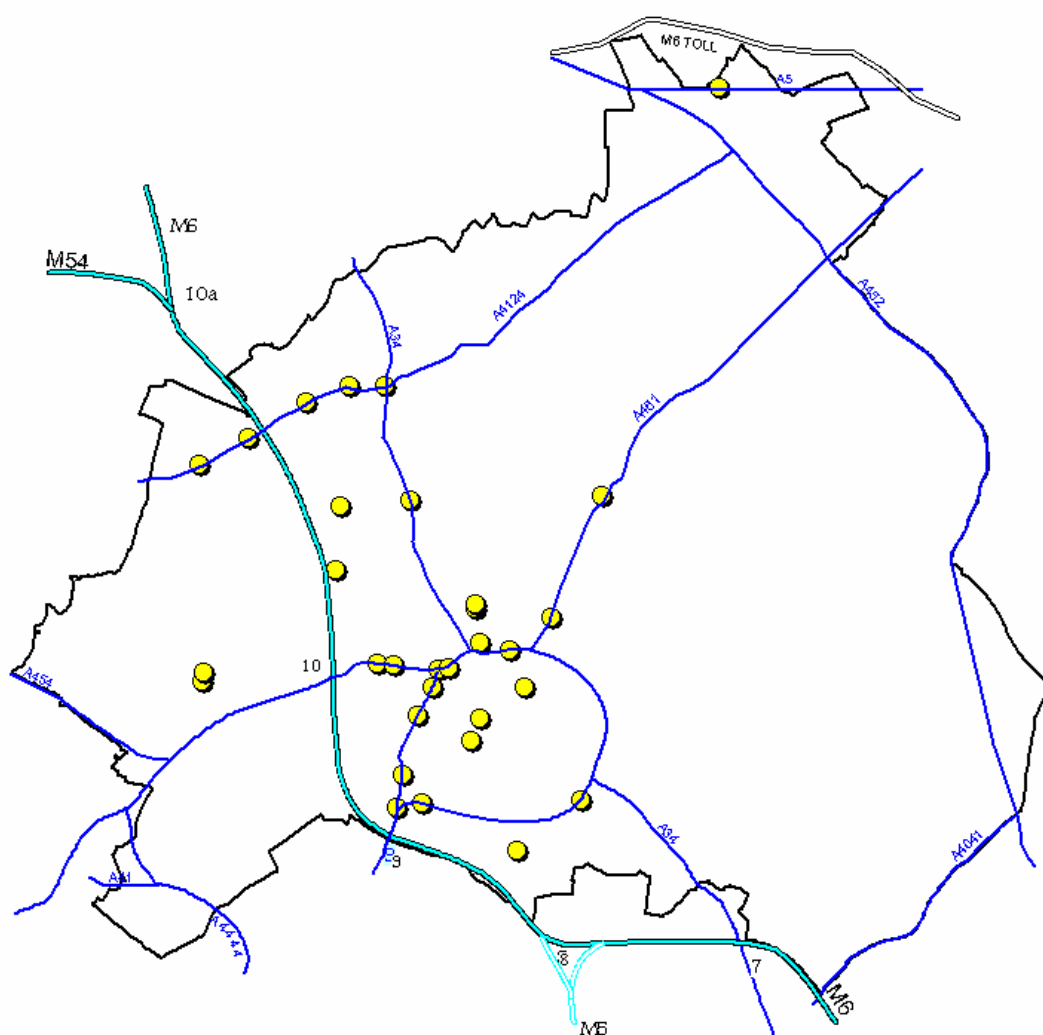
Figure 2 Walsall Air Quality Management Area 2006



1.4 Areas of Exceedance

1.4.1 An Updating & Screening Assessment undertaken by Walsall MBC in 2006⁴ identified 32 road junctions where annual mean concentrations of NO₂ were predicted to be above the 40 µg/m³ objective. The locations of these junctions are shown in yellow in Figure 3 below.

Figure 3 Road junctions where annual NO₂ objective is or has been predicted to be exceeded



1.4 West Midlands Local Transport Plan

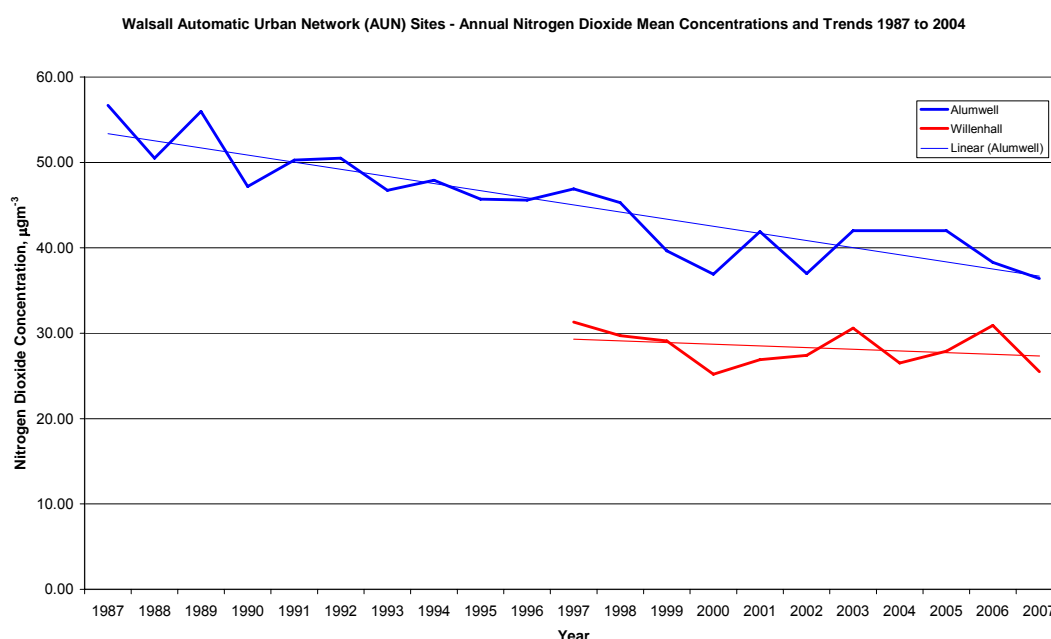
1.4.1 The West Midlands Local Transport Plan (WMLTP) includes an Air

Quality Strategy Statement which sets an air quality target related to a decrease in average NO₂ levels where NO₂ exceeds the national objective. Whilst the general trend in NO₂ levels for the past two decades has shown a decline in levels, in more recent years annual averages have also shown increases above the annual air quality objective.

1.4.2 As one of the four shared transport priority themes, it was a mandatory requirement for the 2005 LTP to contain a target on air quality. The target chosen for the West Midlands Metropolitan Area is “Reduce the average level of NO₂ by 1% between 2004/5 and 2010/11 in the areas where NO₂ exceeds the national objective”.

1.4.3 In terms of a justification for this target, levels of NO₂ had been seen to generally rise in established areas of exceedance (poor air quality) since the year 2000. This rise was especially dramatic in 2003 which resulted in many more areas of exceedance recorded throughout the UK. In the West Midlands most of the increases experienced in 2003 reduced during 2004 to levels similar to those recorded in 2002. Given the general rising trend, it was considered challenging to reduce levels of NO₂ by 2011.

Figure 4 Walsall Automatic Urban Network (AUN) Sites – Annual NO₂ Mean Concentrations and Trends 1987 to 2007



1.5 The Air Quality Action Planning Process in Walsall

1.6.1 Action planning is an essential part of the local air quality management process, providing a practical opportunity for improving air quality in areas where review and assessment has shown that national measures will be insufficient to meet one or more of the air quality objectives. An air quality action plan should include the following:

- ▶ Quantification of the source contributions to the predicted exceedances of the limit values. This allows the action plan measures to be effectively targeted;
- ▶ Evidence that all available options have been considered on the grounds of cost and feasibility;
- ▶ How the council will use its powers and also work together with others in pursuit of the relevant air quality objectives;
- ▶ Clear timescales within which the authority and other organisations propose to implement the measures contained in the plan;
- ▶ Quantification of the expected impacts of the proposed measures and, where possible, an indication as to whether these will be sufficient to meet the objectives; and
- ▶ How the local authority intends to monitor and evaluate the effectiveness of the plan.

1.6.2 These principles have been incorporated in development of the AQAP for Walsall. It is essential that the implementation of the AQAP is closely monitored, and that it is incorporated into other strategic and corporate functions to maximise improvements in air quality.

2. Source Apportionment

2.1.1 In order to effectively target the measures within any AQAP, relative contributions of different source types (typically traffic, industrial and background sources) need to be determined. The results from this can then be used to help assess the effectiveness of different control options and which of one or more source types need to be addressed.

2.1.2 Nitrogen dioxide can arise as a primary emission from road traffic and from the emission of nitric oxide (NO) reacting to produce NO₂; collectively, emission are referred to as total oxide of nitrogen, NO_x.

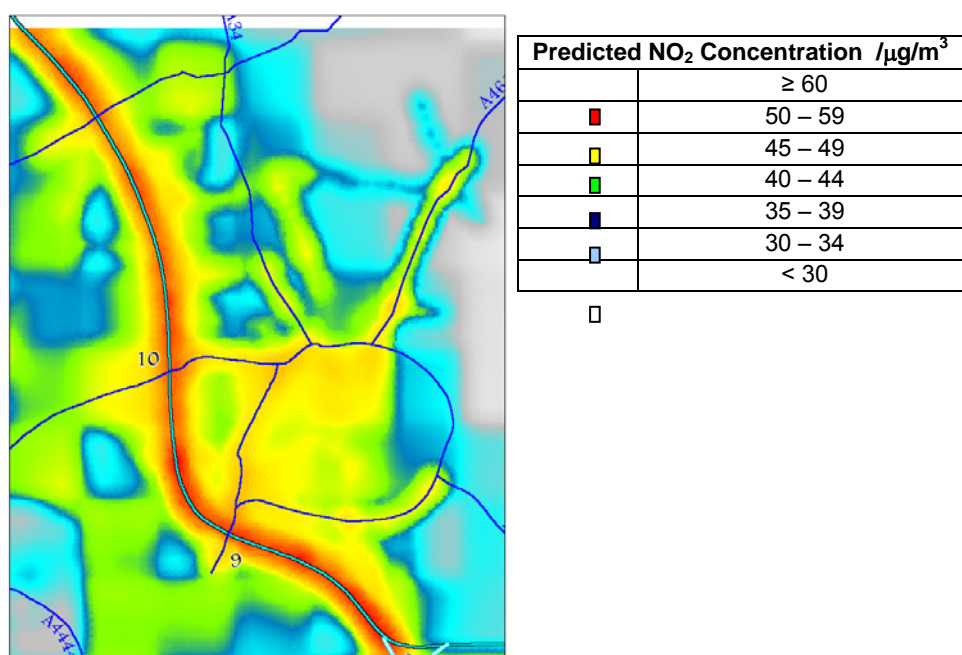
2.1.3 Motor vehicles emissions consist predominantly of NO which is converted to NO₂. The rate at which NO₂ is formed from NO is proportional to the ambient temperature and the availability of other reactants involved in the process, including ozone and hydrocarbons. Whenever high levels of total oxides are present, the conversion of NO to NO₂ is limited if other chemical species are not present. Consequently, during summer months chemical reactions are much faster so that at low pollutant concentrations more than 80% of the total NO_x might consist of NO₂. Conversely, in the winter chemical reactions are much slower so that at high pollutant concentrations in particular only 20% the total NO_x consist of NO₂. The overall effect of the atmospheric chemistry is to have a reserve of NO in the atmosphere and therefore a reduction in the levels of total NO_x does not produce a proportionate reduction in the levels of NO₂.

2.1.4 This effect is demonstrated by pollutant levels recorded over the past decade. In the early 1990s maximum hourly concentrations of NO_x of an order 1500 µg/m³ were associated with approximately 200 µg/m³ of NO₂. Recently, maximum levels of total NO_x have fallen to around 800 µg/m³, however these are still associated with maximum hourly levels of NO₂ about 150 µg/m³. The corresponding average levels of total NO_x in the 1990s of the order 180 µg/m³ were associate with 50 µg/m³ of NO₂, but although the average levels of total NO_x have fallen to around 130 µg/m³, these are still related to levels of NO₂ of

between 45 to 50 $\mu\text{g}/\text{m}^3$. Archive information indicates that the concentrations of total NO_x may have to be reduced to between 50 to 60 to achieve concentrations of NO_2 that are consistently below 40 $\mu\text{g}/\text{m}^3$, which is a major reduction compounded by the variable climatic conditions now encountered in the UK. Should the climate become warmer and more unsettled, rates of conversion of NO to NO_2 could increase, and in-turn levels of NO_2 near to busy roads may similarly increase even as total concentrations of NO_x continue to fall.

2.1.5 A source apportionment study has thus been undertaken in order to determine the relative contribution of different sources at receptors within each of the areas of exceedance identified in the council's USA⁴ and Stage 4 Assessment⁵ reports.. As the road transportation sector is the major contributor to the emissions of NO_2 these can be examined by using known and predicted traffic flows, together with vehicle fleet compositions to form the basis for modelling pollutant levels, targeting. Key areas of exceedance (or likely exceedance) of air quality objectives are illustrated in Figure 5.

Figure 5 Areas of NO_2 Exceedance – Walsall Road Network



2.2 Source Apportionment Methodology

2.2.1 The source apportionment study has been undertaken using the ADMS-Urban dispersion model following the modelling methodology described in the council's Stage 4 Assessment⁵.

2.2.2 Traffic data used in the model has been obtained from the Mott MacDonald Group Ltd. internet-based geographic information system called SPECTRUM. Traffic flows are in the form of automatic permanent counts, automatic programmed counts, or ad-hoc counts for which a grid reference is provided to enable locations to be readily identified. Traffic counts for the period 2003 to 2006 inclusive were retrieved from:

http://www.strat-e-gis.co.uk/SPECTRUM_interface.asp

2.2.3 This data has been used in preference to PRISM traffic data for the West Midlands Conurbation as Mott MacDonald confirmed that PRISM is a transport model utilised for forecasting data for the future. The development of PRISM is understood to have been based upon SPECTRUM data, and hence the two are complimentary. Therefore, when looking at traffic flows retrospectively it is appropriate that SPECTRUM is used, whereas for future years (e.g. 2011 and 2021) PRISM would be employed.

2.2.4 Furthermore, comparison of SPECTRUM and PRISM data sets identified a significant difference in the volume of traffic reported. The Council is of the opinion that SPECTRUM data, which is a database of observed vehicle movements, provides an inherently more accurate representation of both the vehicle numbers and split between vehicle classes.

2.2.5 The traffic counts contained in SPECTRUM do not have any associated speeds. Thus, in order to model traffic emissions within ADMS Urban, conservative estimates of road traffic speeds have been made based on officer judgement in conjunction with local knowledge and vehicle speed limits

2.2.6 An additional module will be added to SPECTRUM in February 2007 which will extend its functionality to deliver CJAMS (Congestion and Journey-time Acquisition and Monitoring System), which has been developed since 2002 and is now used across England by the Department of Transport as the primary source of data for the urban network. CJAMS is also used by the Highways Agency as a major source of data on the inter urban network, notably where other sources of data are either unavailable or unreliable.

2.2.7 Notwithstanding traffic is the main consideration, the relative contribution of the following sources have been considered:

- Background sources;
- Road transport sources;
- Industrial sources; and
- Commercial / domestic sources.

2.2.8 Annual average concentrations of NO_x attributable to each of the sources described above have been predicted at receptors where exceedences of the annual NO₂ objective were predicted within the council's USA⁴, as described below in Table 1.

Table 1 Source Apportionment Study Receptors

Ref.	Road Junction / Location	Receptor Co-ordinates		Modelled NO ₂ (µg/m ³)	Description
		X	Y		
A	Hollyhedge Lane Wolverhampton Road Pleck Road	400486	298735	52.2	Busy Road Junction
B	Bescot Road Wallows Lane	400001	296852	42.7	Busy Road Junction
C	Old Pleck Road Wednesbury Road Darlaston Road	400064	297328	45.9	Busy Road Junction
D	Wolverhampton Road Alumwell Road	399829	298790	47.2	Busy Road Junction

Ref.	Road Junction / Location	Receptor Co-ordinates		Modelled NO ₂ (µg/m ³)	Description
		X	Y		
E	Pleck Road Bridgeman Street Moat Road	400507	298504	44.8	Busy Road Junction
F	Pleck Road Rollingmill Street Ida Road	400256	298126	45.1	Busy Road Junction
G	Lower Rushall Street Ablewell Street Upper Rushall Street Bridge Street	401696	298472	47.8	Busy Road Junction
H	Bloxwich Lane Cavendish Road Bentley Lane	399148	300079	47.8	Busy Road Junction
I	Stafford Street Proffitt Street	401024	299527	41.0	Busy Road Junction
J	Stafford Street Day Street	401092	299090	49.8	Busy Road Junction
K	Lichfield Road Mellish Road Buchanan Avenue	401994	299397	52.0	Busy Road Junction
L	Broad Lane Bell Lane Sandbank Sneyd Lane	399339	302538	47.3	Busy Road Junction
M	Stafford Road Lichfield Road High Street Bell Lane	399829	302553	40.1	Busy Road Junction
N	Bloxwich Road Stafford Street Hospital Street	401024	299593	48.0	Busy Road Junction
O	Bradford Street Vicarage Place Wednesbury Road	401106	298066	51.3	Busy Road Junction
P	Cresswell Crescent Sneyd Lane	398779	302298	42.8	Busy Road Junction
Q	Lichfield Road Daw End Lane Station Road	402715	301066	41.5	Busy Road Junction
R	West Bromwich Street	401343	297540	36.5	Narrow Congested Street
S	Wednesbury Road	400353	297330	37.9	Narrow Congested Street
T	High Street, Bloxwich	399801	302128	43.3	Narrow Congested Street
U	Birmingham Road	402500	297350	30.6	Narrow Congested Street

2.3 Source Apportionment Results

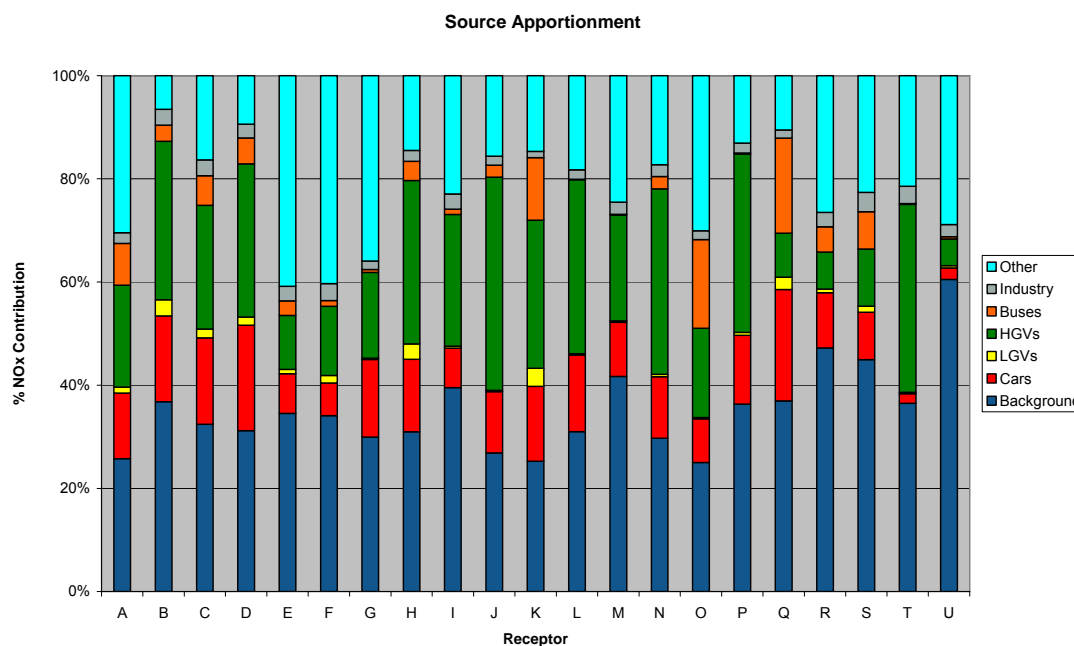
2.3.1 The results of the source apportionment study are shown in Table 2 and illustrated in Figure 6. Generic vehicle splits are approximate as :

	%
Pre Euro Diesel	0.9
Euro 1 Diesel	3.4
Euro 2/3 Diesel	18.1
Pre Euro Petrol	9.5
Euro 1 Petrol	10.3
Euro 2/3 Petrol	43.1
Light Goods Vehicles	10.3
Heavy Goods Vehicles	3.4
Buses	1.0

Table 2 Source Apportionment Study Results - NO_x

Ref	% Contribution to Annual Average NO _x Concentration			
	Background	Road Transport	Industry	Commercial & Domestic
A	26	42	2	30
B	37	54	3	7
C	32	48	3	16
D	31	57	3	9
E	35	22	3	41
F	34	22	3	40
G	30	32	2	36
H	31	52	2	14
I	40	35	3	23
J	27	56	2	16
K	25	59	1	15
L	31	49	2	18
M	42	31	2	25
N	30	51	2	17
O	25	43	2	30
P	36	49	2	13
Q	37	51	2	11
R	47	23	3	27
S	45	29	4	23
T	36	39	3	21
U	60	8	2	29

Figure 6 Source Apportionment Results – NO_x Contribution



2.3.2 The results indicate that NO₂ concentrations at locations predicted to exceed the annual NO₂ objective within Walsall are significantly affected by background, road transport and commercial & domestic sources, whereas industrial sources are not predicted to significantly contribute to NO_x concentrations within any of the areas of exceedance identified.

2.3.3 Background sources typically contribute approximately 30% of NO_x concentrations, road transport 50% and commercial and domestic sources 20%.

2.3.4 Emissions from road transport have been further disaggregated in order to determine the relevant contribution of different vehicle types as shown below in Table 3.

Table 3 Source Apportionment Study Results

Ref	% Contribution to Annual Average NO ₂ Concentration			
	Cars	LGVs	HGVs	Buses
A	13	1	20	8
B	17	3	31	3
C	17	2	24	6
D	20	2	30	5
E	8	1	10	3
F	6	1	13	1
G	15	< 1	17	1
H	14	3	32	4
I	8	< 1	26	1
J	12	< 1	41	2
K	15	4	29	12
L	15	< 1	34	< 1
M	10	< 1	21	< 1
N	12	< 1	36	2
O	8	< 1	17	17
P	13	1	35	< 1
Q	22	2	9	18
R	11	1	7	5
S	9	1	11	7
T	2	< 1	36	< 1
U	2	< 1	5	< 1

2.4 Conclusions

2.4.1 The results indicate that NO₂ concentrations within areas predicted to exceed the annual air quality objective are predominantly affected by emissions from road transport and to a lesser extent by emissions from commercial and domestic sources. It is therefore considered that any air quality action plan must obviously concentrate on reducing emissions from road transport sources.

2.4.2 Emissions of NO₂ from road transport are significantly affected by emissions from HGVs and to a lesser extent by cars. LGVs tend not to contribute extensively to NO_x emissions, whilst buses have a significant contribution at three locations. These two main sources which should be targeted in order to most effectively reduce NO_x concentrations.

2.4.3 The impact of St. Paul's bus station located in Walsall town centre has not been explicitly addressed in this context. This has previously been identified as problematic⁶ and will require specific consideration. It is therefore intended to include this within the AQAP framework as required following completion of an extended Stage 4 Assessment⁵.

3. Required Level of Reduction in Nitrogen Dioxide

3.1.1 Before identifying the options available to improve air quality it is important to determine the overall level of improvement required. This can be calculated in micrograms per cubic metre concentration ($\mu\text{g}/\text{m}^3$) as the difference between the total predicted concentration and the relevant AQO and expressed in terms of concentration units or as a percentage.

3.1.2 For the purposes of AQAP the level of reduction required has been established for each of the receptors considered within this assessment. The relevant reduction in annual average NO_x concentrations that is required to meet the annual NO_2 air quality objective has been determined, and expressed in terms of percentage, as shown in Table 4. This assessment has been based upon the assumption that a NO_x concentration of $80 \mu\text{g}/\text{m}^3$ equates to an NO_2 concentration of $40 \mu\text{g}/\text{m}^3$. The percentage reduction in NO_x emissions from just road transport that is required to meet the NO_2 objective has also been determined.

Table 4 Indicated Level of Reduction in NO_x Required

Ref	% Reduction in NO_x Emissions Required to meet Annual NO_2 Objective	
	Total NO_x Emissions	Road Transport NO_x Emissions
A	39	93
B	13	24
C	23	48
D	26	46
E	18	83
F	19	85
G	29	89
H	26	51
I	6	18
J	36	65
K	40	68
L	26	54
M	1	3
N	29	58
O	41	94
P	14	28
Q	12	24
R	< 1	< 1
S	< 1	< 1
T	13	35
U	< 1	< 1

3.1.3 It is seen that relatively large reductions in NO_x concentrations are required in order to meet the annual NO₂ objective at the receptors under consideration. It is considered that background concentrations, emissions from domestic and commercial sources and vehicle emissions of NO_x will inherently reduce in the future due to increased efficiency, improved technology and tighter pollution control. Nonetheless, it is considered that further measures to reduce NO_x concentrations will be required in order to meet the annual NO₂ objective.

3.1.4 To inform this process, and to further develop the AQAP, the West Midlands Emissions Data Base has been updated for 2007 which will be used by the council to carry out a repeat and extended Stage 4 Assessment. The results of this will be utilised to improve source apportionment and enable more closely focussed discrete actions to improve air quality.

4. Proposed Actions

4.1.1 The Council has no direct control over background concentrations of NO_x and relatively little control over domestic and commercial emissions. It is considered that the most effective measures in reducing NO_x emissions, and thereby annual average NO₂ concentrations, are likely to be those that concentrate in reducing emissions from road transport.

4.1.2 The following measures have been considered when specifying specific actions to be taken to reduce exposure of sensitive receptors to road transport emissions:

- ▶ Improving the road network to reduce congestion;
- ▶ Real-time traffic flow monitoring systems to assess / mitigate traffic congestion using the West Midlands Urban Traffic Control scheme;
- ▶ Assessment of short-term air quality via use of real-time urban traffic control software based on vehicle counts and vehicle types;
- ▶ Improving public transport to reduce traffic volumes;
- ▶ Reducing air pollution from industrial, commercial and residential areas;
- ▶ Changing levels of travel demand;
- ▶ Promotion of alternative methods of transport and transport initiatives; and
- ▶ Reduction of vehicle emissions at a national and inter-national level.
- ▶ Bus lane sharing for HGVs.
- ▶ Provision of information to road user via traffic/vehicle management systems.

Table 5: Proposed Actions

Action	Details	Timescale	Cost/benefit	Priority
Reducing Vehicle Emissions				
Conduct a feasibility study of roadside emissions testing	Assess the viability of testing vehicle emissions at the roadside and issuing fixed penalty notices if vehicles fail test.	2010	Med/Low	3
Improve Walsall MBC vehicle fleet	Gradually replace older vehicles with cleaner more efficient vehicles. Seek to develop pilot schemes using alternatively fuelled/low emission vehicles in its fleet.	Ongoing	Med/Low	2
Discourage drivers from allowing engines to idle unnecessarily when parked and encourage drivers to drive more efficiently.	Improve driver awareness, particularly buses at bus station. Carry out campaign, put up signs etc.	2009 onwards	Med/Low	3
Freight Partnerships	Investigate viability of schemes to reduce traffic and /or emissions through regional freight partnerships for delivering goods to town centre businesses.	Ongoing	Med/Low	1
Reduce bus emissions	Encourage improvements to bus fleet. Seek to develop pilot schemes using alternatively fuelled/low emission vehicles or low emission zones.	Ongoing	Med/Low	1
Improving Public Transport to reduce traffic volumes				
Enhanced bus routes Showcase	Implement a programme of enhanced bus routes including both more routes and buses.	Ongoing	High/Med	2
Bus priority routes and enforcement	Increase the number and length of bus lanes and the number of enforcement cameras.	Ongoing	High/Med	1
Improving passenger information and bus stops	Real-time travel information at bus stops, improved bus shelters and lighting etc.	2009 onwards	Med/Low	2
Light Rail				
Extension of Metro link to Walsall.	Continue to support and facilitate the expansion and development of strategic mass transit servicing for key centres and development	2009 onwards	High/High	3

Action	Details	Timescale	Cost/benefit	Priority
	corridors.			
Heavy Rail				
Increase in passenger capacity of rail network	Investigate and encourage improvements in capacity and performance of passenger rail network.	Ongoing	High/Med	3
Improve Rail freight capabilities	Actively support improvements to rail freight network.	Ongoing	High/Med	3
Road Network Improvements				
Introduction of 'Red Routes' to ease congestion	Implement red route strategies	Ongoing	Med/Low	1
Introduce Urban Traffic Control system	Participate in the development of an Urban Traffic Control system.	Ongoing	High/Med	1
Prioritisation of lane sharing	Bus lane HGV sharing trials to commence during 2009	2009 on	Low	2
Seek improvements to traffic flow on motorway network	This falls primarily under the remit of Highways Agency, and includes gated access control of vehicle flows in respect of primary routes onto and exiting the motorway system.	Ongoing	Med/Low	1
Seek improvements to traffic flow on primary network	Target key areas of traffic congestion hot-spots through junction improvements.	Ongoing	Med/Low	1
Measures to reduce traffic				
Manage number of spaces available in City Centre car parks	Seek to maintain the number of short stay car parking spaces in the Town Centre and promote sustainable parking facilities in conjunction with travel choice options.	Ongoing	Low/Low	1
Presumption in favour of mixed use development	Encourage mixed use developments that will assist in reducing the need to travel.	Ongoing	Low/Low	2
Consideration of air quality in respect of planning applications	When assessing planning applications the implications of the development on air quality will be taken into consideration.	Ongoing	Low/Low	1
Industry / Commerce				
Control of Industrial Emissions	Continue to regulate industrial processes.	Ongoing	Low/Low	3
Emissions from Chimneys	Continue to enforce provisions of Clean Air Act	Ongoing	Low/Low	3

Action	Details	Timescale	Cost/benefit	Priority
	with respect to emissions of smoke from Chimneys			
Boiler plant and chimney heights	Continue to enforce provisions of Clean Air Act with respect to chimney heights for new plant and smoke control.	Ongoing	Low/Low	3
Energy efficiency	Improve energy efficiency by encouraging energy efficiency schemes for domestic, commercial and council properties and activities, e.g. HEAT West Midlands.	Ongoing	Med/Low	2
Control of Bonfires	Enforce provisions of the Clean Air Act and Environmental Protection Act.	Ongoing	Low/Low	3
Promotion of Alternative Modes of transport				
Additional Park & Ride	Walsall MBC will investigate the development of bus based park and ride schemes where suitable opportunities exist.	Ongoing	Med/Low	1
Promotion of Walking	Walsall MBC has developed a Walking Strategy to encourage people to walk as apposed to using other forms of transport.	Ongoing	Med/Low	1
Promotion of cycling	Walsall MBC has developed a Cycling Strategy to encourage people to cycle as apposed to using other forms of transport.	Ongoing	Med/Low	1
Promotion of Green Travel Plans	Continue to encourage and promote green travel plans for existing and proposed businesses, schools and council facilities.	Ongoing	Low/Low	1
Use planning conditions to promote Travelwise	Walsall MBC will, where appropriate, attach planning conditions relating to Travelwise to planning consents.	Ongoing	Low/Med	1
Strategy for Sustainable Travel	Walsall MBC to develop a Strategy for Sustainable Travel pursuant to s.31 Local Government Act 2003.	2009 onwards	Low/Med	2
Improving access to information regarding transport options.	Walsall MBC will continue to support schemes such as Help2Travel.	Ongoing	Low/Low	1
Key: Priority 1 = High Priority 2 = Medium Priority 3 = Low Priority Cost Benefit: Low = £?k Med = £?k High = £?k				

4.1.3 A preliminary assessment has also been undertaken of likely improvements in air quality as a result of reduced congestion and reduced HGV emissions. The results of which are shown below in Table 6. As the degree by which congestion could be reduced as a result of the various schemes detailed above is difficult to predict, the effect of reducing emissions of queuing traffic by 50% has been assessed. Likewise the degree by which HGV movements could be reduced is similarly difficult to predicted, therefore emissions from HGVs have also been reduced by 50%. These reductions are considered likely to be extremely optimistic and have been assessed to show the scale of improvement which could be achieved, which can only be attained via implementation of combinations of specified measures herein.

Table 6: Predicted Change in NO₂ Concentration

Ref	Assuming 50% Reduction in Emissions from Queuing Traffic		Assuming 50% Reduction in Emissions from HGVs	
	Predicted NO ₂ Concentration (µg/m ³)	Reduction in NO ₂ Concentration (µg/m ³)	Predicted NO ₂ Concentration (µg/m ³)	Reduction in NO ₂ Concentration (µg/m ³)
A	51.7	-0.5	50.6	-1.6
B	42.6	-0.1	43.7	1.0
C	45.3	-0.6	44.0	-1.9
D	47.2	0.0	47.0	-0.2
E	44.9	0.1	44.6	-0.2
F	45.3	0.2	44.5	-0.6
G	46.5	-1.3	46.1	-1.7
H	47.8	0.0	44.8	-3.0
I	39.7	-1.3	38.8	-2.2
J	46.9	-2.9	45.3	-4.5
K	51.8	-0.2	48.9	-3.1
L	44.6	-2.7	43.8	-3.5
M	38.6	-1.5	38.2	-1.9
N	45.6	-2.4	43.9	-4.1
O	49.1	-2.2	49.4	-1.9
P	40.6	-2.2	40.5	-2.3
Q	40.7	-0.8	40.9	-0.6
R	36.6	0.1	36.4	-0.1
S	38.2	0.3	37.9	0.0
T	40.9	-2.4	39.2	-4.1
U	30.7	0.1	30.6	0.0

4.1.4 It can be seen that the reduction in NO₂ concentrations as a result of reducing emissions from HGVs is greater than that afforded by reducing emissions from queuing traffic. It should be noted however, that even with either of these improvements the annual NO₂ objective is still predicted to be exceeded at most receptors in 2006.

5. Action Plan Steering Group

5.1 An Action Plan Steering Group will be developed in order to further progress the measures detailed herein. A core Steering Group is to be established within the council that will engage in consultation with:

- Neighbourhood Services Traffic Management (Walsall MBC);
- Transportation Forward Planning (Walsall MBC);
- Planning and Building Control (Walsall MBC);
- Regeneration Services – Delivery and Development (Walsall MBC);
- Regeneration Services– Strategic Regeneration (Walsall MBC);
- Policy Services (Walsall MBC);
- Pollution Control (Walsall MBC);
- Neighbourhood Partnerships & Programmes (Walsall MBC);
- Walsall Town Centre Management;
- CENTRO;
- Department for Transport;
- The Environmental Agency;
- The Highways Agency;
- Walsall Teaching Primary Care Trust;
- Neighbouring local authorities;
- Regional Pollution Groupings.
- Education Services;

6. References

1. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. DEFRA July 2007
2. Air Quality in Walsall. Report of the Third Stage Review and Assessment of Air Quality, Walsall Metropolitan Borough Council, December 2000.
3. Air Quality in Walsall. Report of the Third Stage Review and Assessment of Air Quality in – Nitrogen Dioxide Addendum. April 2002.
4. Walsall Council Air Quality Review and Assessment. Updating & Screening Assessment 2006.
5. Walsall Metropolitan Borough Council. Stage 4 Review & Assessment of Air Quality (1st Round). May 2005.
6. Walsall Metropolitan Borough Council. Detailed Assessment of Air Quality. Nitrogen Dioxide – St. Paul's Bus Station. June 2006.

Further information concerning air quality in Walsall can be viewed at:

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

Appendix 1

Air Quality Monitoring in Walsall

Extracts from Updating and Screening Assessment 2006

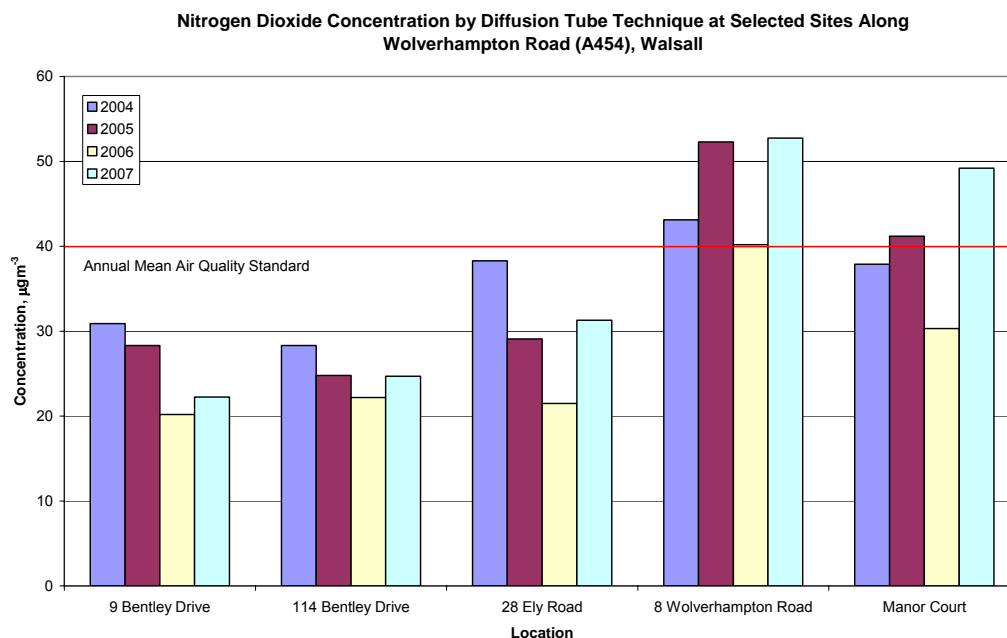
Concentrations of Nitrogen Dioxide from the Automatic Monitoring Stations in Walsall

Year	Site	Annual Mean ($\mu\text{gm-3}$)	No. of Hourly Exceedances	% Data Capture
2003	Walsall, Alumwell	42	0	>90
	Walsall, Willenhall	30	0	>90
2004	Walsall, Alumwell	42	1	>90
	Walsall, Willenhall	27	0	>90
	Wolverhampton Road	37.6	0	>90
	Bescot Road	40.9	0	>90
2005	Walsall, Alumwell	42	3	>90
	Walsall, Willenhall	n/a	0	<90
	Wolverhampton Road	40.5	0	>90
	Bescot Road	47.4	2	>90
2006	Walsall, Alumwell	36	0	>90
	Walsall, Willenhall	30	0	<90
	Wolverhampton Road	43.2	0	>90
	Bescot Road	47.9	0	>90
2007	Walsall, Alumwell	36.4	0	>90
	Walsall, Willenhall	31.08	0	>90
	Wolverhampton Road		Data currently unavailable [#]	
	Bescot Road	50.6	3	>90
	St. Paul's Bus Station	56.4	0	<80

Walsall NO2 Diffusion Tube Network - Wolverhampton Road (A454) Data

	2004 Concentration ($\mu\text{g m}^{-3}$)	2005 Concentration ($\mu\text{g m}^{-3}$)	2006 Concentration ($\mu\text{g m}^{-3}$)	2007 Concentration ($\mu\text{g m}^{-3}$)
9 Bentley Drive Grid Ref: 400002, 299146	30.9	24.8	20.2	22.2
114 Bentley Drive Grid Ref: 399882, 298870	28.3	29.1	22.2	24.7
28 Ely Road Grid Ref: 399616, 298181	38.3	52.3	21.5	31.3
8 Wolverhampton Road Grid Ref: 399919, 298795	43.1	41.2	40.2	52.7
Manor Court Grid Ref: 400220, 298731	37.9	41.2	30.3	49.2

Nitrogen Dioxide Concentrations Measured by Diffusion Tube Technique at Selected Sites Along Wolverhampton Road (A454), Walsall



Note:

Original site locations for Alumwell and Willenhall Automatic Monitoring Stations were determined on behalf of DEFRA as part the National Air Quality Monitoring Network, having regard to the M6 motorway corridor.

Locations for other Automatic Monitoring Stations were selected on the basis of the Stage 4 Review & Assessment of Air Quality (1st Round). May 2005 to reflect areas of consistently poor air quality.

NO₂ diffusion tube sites relate to the National NO₂ Diffusion Tube Survey operated by DEFRA. This formally ceased in 2005, though survey work continues to build on the existing database of information and since the A454 between J10 M6 motorway and Walsall Town Centre has historically experienced high levels of NO₂.

Additional air quality monitoring data can be found at

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