Air Quality Action Plan

September 2009

Sandwell
Metropolitan Borough Council

Executive Summary

Clean air is essential for improving quality of life and for improving people's health. The government have set objectives for limiting the concentrations of a range of pollutants, which can have an adverse impact upon health.

This document sets out the work carried out by Sandwell MBC in order to discharge its obligations under Part IV of the Environment Act 1995. This Act requires all local authorities to regularly review and assess air quality within their boundaries. Where pollutant concentrations exceed national objectives the local authority must declare an air quality management area (AQMA) and produce an action plan detailing how they intend to improve air quality within these areas.

This process has shown that Sandwell will comply with the objectives for the majority of pollutants for which objectives have been set in the governments Air Quality Strategy. There are however a number of areas in which pollutant concentrations have been found to exceed the annual mean nitrogen dioxide (NO_2) objective. Sandwell MBC has identified thirteen areas that exceed this objective and as a result declared the whole borough an AQMA. This Air Quality Action Plan sets out the work that is currently being undertaken and that is in progress to improve air quality within the areas of exceedance and the borough as a whole.

The principle source of NO_2 pollution has been found to be road transport. Though emission control technology is continually improving the emissions from vehicles, these technological advances can only partially mitigate the impact of increased road traffic.

This air quality action plan has been produced in co-ordination with the various key stakeholders both within the council and external bodies. Existing policies and strategies were reviewed and additional actions were identified. The air quality, economic and social impacts of each action were considered and a cost benefit analysis was carried out for each proposal.

As a result, 23 actions to reduce NO_2 levels within the specific areas of exceedance and 30 actions to improve NO_2 generally across the borough have been identified. Due to the transport related nature of the pollution, this action plan is closely linked with and contains many of the actions detailed in the Local Transport Plan (LTP2).

The complexity of atmospheric chemistry means that there is some uncertainty surrounding the level of reduction in oxides of nitrogen that would be required to achieve a given reduction in nitrogen dioxide in order to comply with the objective. It is also difficult to predict the exact air quality improvement that can be expected from many of the actions proposed. Therefore, it is not possible to predict with confidence whether these actions will achieve the objective, but the plan is considered to strike an appropriate balance between the direct and indirect costs of taking action and the benefit in terms of air quality.

During the implementation of the action plan any improvements in air quality will be closely monitored. The action plan will be regularly reviewed and any further opportunities to improve air quality will be considered.

Sandwell MBC's air quality action plan is constantly evolving any comments on the plan can be directed to:

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1. INTRODUCTION

1.1. Concern over the effects of air pollution, primarily from industrial and road transport sources has led to the UK government introducing a national framework for air quality management, which has been implemented under the requirements of Part IV of the Environment Act 1995. This Act led to the National Air Quality Strategies of 1997 and 2000 which set out the governments statutory objectives in relation to seven key pollutants:

- Nitrogen Dioxide
- Particulate Matter (PM_{10})
- Benzene
- 1,3 – Butadiene
- Lead
- Sulphur Dioxide
- Carbon Monoxide

1.2. For each pollutant an objective has been set with specified limit values and dates by which these values should be achieved. The National Air Quality Objectives are shown in Appendix 1.

1.3. The Act requires all local authorities to regularly review and assess air quality within their boundaries. If this process indicates that the national objectives will not be achieved within the statutory timeframe then the local authority is required to designate an Air Quality Management Area (AQMA). The local authority is then required to produce an Air Quality Action Plan to demonstrate how they intend to improve air quality in order to meet the objectives.

1.4. Air quality reviews and assessments in Sandwell have identified that the annual mean nitrogen dioxide objective is exceeded at a number of locations. As a result Sandwell MBC has declared the whole borough an AQMA.

1.5. The purpose of this report is to outline proposed actions at a local level that will play an important role in helping to meet National Air Quality Objectives across the borough. It contains an examination of the proposed actions and their potential impacts both direct and indirect. The cost effectiveness of each of the proposed actions is analysed and a timescale for the implementation of the proposed measures is presented.

2. AIR QUALITY REVIEW AND ASSESSMENT IN SANDWELL MBC

2.1. Sandwell MBC completed the first round of review and assessment in 2003. A combination of air quality monitoring and sophisticated modelling was used to predict whether the air quality objectives were likely to be achieved in the specified time.

This process demonstrated that the required standards for benzene, carbon monoxide, lead, sulphur dioxide, PM_{10}, and 1,3 butadiene are likely to be achieved by the required dates. However, it predicted that exceedances of the annual average nitrogen dioxide (NO_2) objectives were likely due to traffic emissions in six locations:

- The area in and around Birmingham Road Oldbury
- The area to the north of junction 8 on the M6 - Yew Tree
- The area to the north west of junction 7 M6 - Great Barr
- The area to the south of junction 8 M6 - Great Barr
- The area to the south east of junction 7 M6 - Great Barr
- The area to the south west of junction 7 M6 - Great Barr

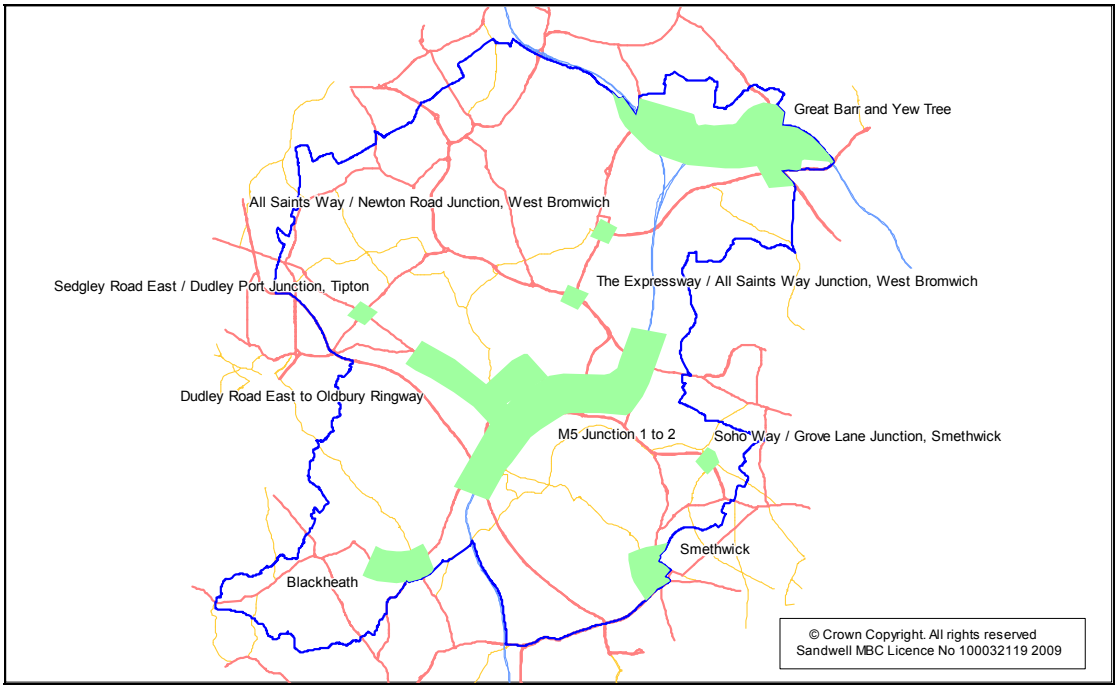
As a result Sandwell MBC declared each area as an AQMA.

2.2. Air quality review and assessment is a continuing process, in 2003 Sandwell MBC began the second round of review and assessment with the production of an Updating and Screening Assessment (USA). This concluded that there were a number of additional areas that had the potential to exceed the air quality objectives, mainly with respect to the annual mean nitrogen dioxide objective due to emissions from road traffic. Detailed assessments were completed for each of these areas.

2.3. These assessments concluded that there are thirteen areas that exceed the 2005 air quality objective for the annual mean NO_2. The areas are listed below; they are distributed across the borough as can be seen in Figure 2.1. The green shading represents areas where the annual mean NO_2 objective is exceeded.

1. Oldbury Ringway / Birmingham Road (A457), Oldbury
2. Dudley Road East / Roway Lane, Oldbury
3. Motorways - M6 J7-J8 / M5, Great Barr
4. - M5 J1-J2, Oldbury & West Bromwich
5. Newton Road / Birmingham Road (A34), Great Barr
6. Bearwood Road, Smethwick
7. Oldbury Road / Birmingham Road, Blackheath
8. High Street / Powke Lane, Blackheath
9. Bromford Road, West Bromwich
10. Trinity Way / Kenrick Way, West Bromwich
11. All Saints Way / Expressway, West Bromwich
12. All Saints Way / Newton Road, West Bromwich
13. Sedgley Road East / Dudley Port, Tipton

Figure 2.1 – Areas of Exceedance



2.4. The identification of the additional areas of exceedance resulted in the decision to make a borough wide declaration for the annual mean NO_2 objective. The existing six AQMA's were revoked and replaced with one AQMA covering the entire borough. Although the whole borough has been declared an AQMA the action plan will still have a focus upon the individual areas of exceedance that have been identified

2.5. The 2006 USA concluded that there are two additional areas, the first in West Bromwich and the second in Smethwick, which are exceeding the national objective for NO_2. These areas have been included in this action plan.

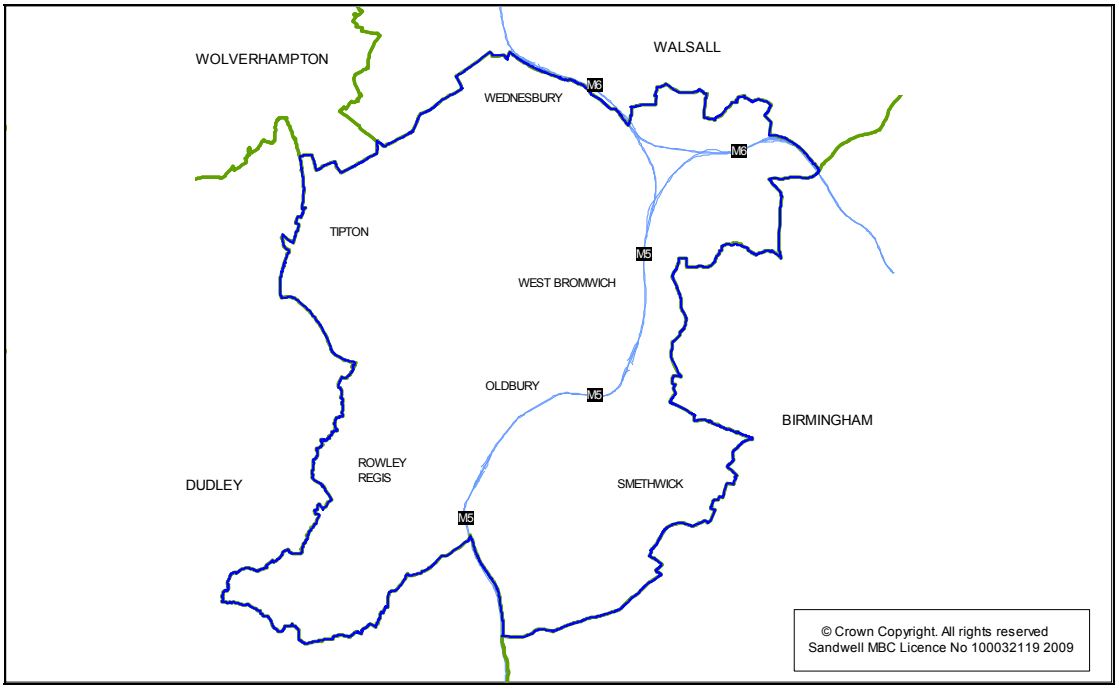
1. Bromford Lane / Kelvin Way / Brandon Way junction, West Bromwich
2. Soho Way / Grove Lane / Cranford Street junction, Smethwick

3. LOCAL ISSUES IN SANDWELL

3.1. Sandwell MBC is located in the heart of the West Midlands within the Black Country area, it is surrounded by four local authorities, Birmingham, Walsall, Wolverhampton and Dudley as illustrated in Figure 3.1.

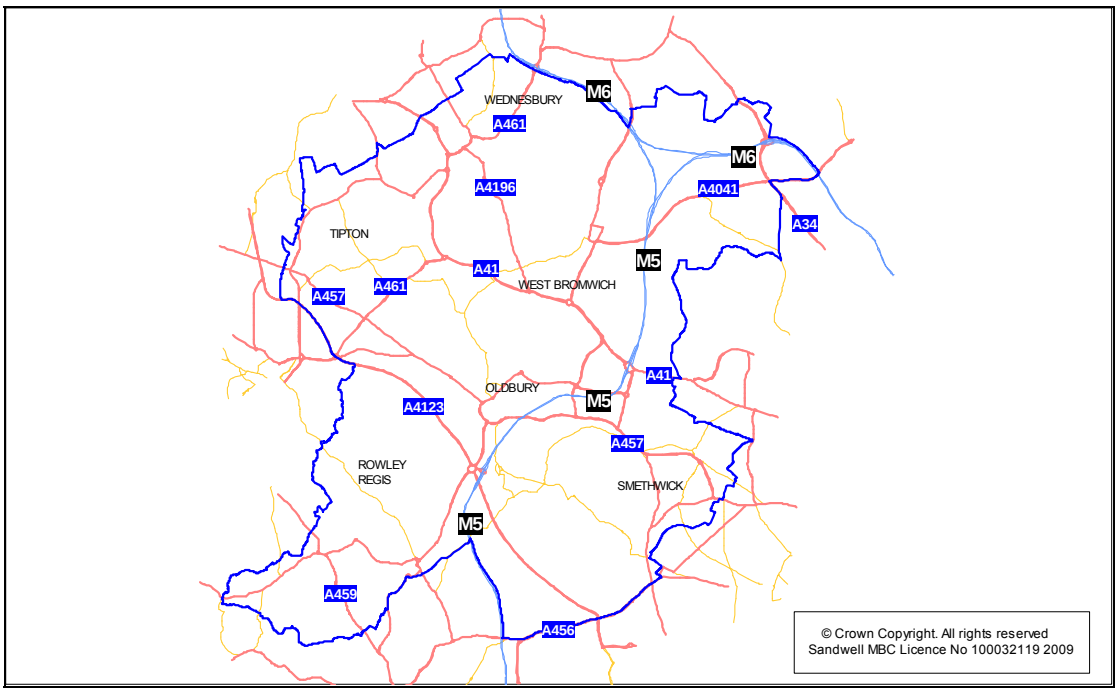
3.2. It has a population of approximately 280,000 spread over an area of approximately 8,600 hectares. There are six main towns that make up Sandwell: Oldbury, Rowley Regis, Smethwick, Tipton, Wednesbury and West Bromwich.

Figure 3.1 – Sandwell MBC and its Neighbouring Authorities



3.3. The borough has a complex road network with a number of major roads and two heavily trafficked motorways, the M5 and M6 traversing the borough. Large sections of these motorways are elevated. The road network is illustrated in Figure 3.2.

Figure 3.2 – Road network in Sandwell Borough



4. SOURCES OF AIR POLLUTION WITHIN SANDWELL

4.1. The pollutant of concern identified in each of the areas of exceedance was nitrogen dioxide. Nitrogen dioxide (NO_2) and nitric oxide (NO) are both oxides of nitrogen and are collectively known as nitrogen oxides (NO_x). All combustion processes produce NO_x emissions, largely in the form of NO, which is then converted to NO_2 mainly as a result of reaction with ozone in the atmosphere. Nationally the primary sources of oxides of nitrogen are the transport sector and combustion processes. It is NO_2 that is associated with adverse effects upon human health. In some individuals exposure to high concentrations of NO_2 can precipitate or exacerbate episodes of asthma. Childhood exposure to ambient NO_2 can increase the risk of respiratory infections and may lead to poorer lung function in later life.

4.2. The following health impact information was sourced by Sandwell's Primary Care Trust. It has been noted that day to day variations in exposure to poor air quality has effects on lung function in asthma and other chronic pulmonary diseases. Particulate matter in the air reduces the average European's life by one year and exposure to extremely high levels of pollution can be linked to morbidity and mortality.

Effects attributed to short-term exposure include increases in:

- Daily mortality
- Respiratory and cardiovascular hospital admissions
- Respiratory and cardiovascular emergency department visits
- Respiratory and cardiovascular primary care visits
- Use of respiratory and cardiovascular medications
- Days of restricted activity, work and school absenteeism
- Acute symptoms (wheezing, coughing, phlegm production, respiratory infections)
- Physiological changes (e.g. lung function)

Effects attributed to long-term exposure include increases in:

- Mortality due to cardiovascular and respiratory disease
- Chronic respiratory disease incidence and prevalence (asthma, chronic obstructive pulmonary disease (COPD), chronic pathological changes)
- Chronic changes in physiological functions
- Lung cancer
- Chronic cardiovascular disease
- Intrauterine growth restriction (low birth weight)

The health risks of particulate matter are highlighted in a recent World Health Organisation report, they include:

- Mortality and hospital admission in COPD patients
- Exacerbation of symptoms and increased use of therapy in asthma
- Mortality and hospital admission in cardiovascular disease patients
- Mortality and hospital admissions in diabetes mellitus
- Increased risk for myocardial infarction
- Lung inflammation
- Systemic inflammation
- Endothelial and vascular dysfunction
- Development of atherosclerosis
- Increased incidence of infection

The report also considers however the effect of ozone and nitrogen dioxide and highlights effect on all cause mortality reduced immune system function and respiratory airway function. The synergistic impact of an environment that contains all these pollutants must be considered.

4.3. The source apportionment work for Sandwell was carried out using the modelling software Airviro (version 3.1) and the current West Midlands emissions database. Mott MacDonald's Joint Data Team provided traffic data within this emissions database. The West Midlands emissions database is currently being updated; once this work is completed it will be possible to issue an update to the source apportionment work. As it has been identified that traffic is the main source of NO_x in Sandwell's exceedance areas, the source apportionment work has focused entirely on traffic sources. The contribution of industrial, commercial and domestic sources is minimal across the borough and will not be a focus for action planning. Further detail on the source apportionment methodology is given in Appendix 2.

4.4. With reference to the road traffic data, the 2005 vehicle splits that have been applied in the source apportionment work are as follows:

Pre Euro Diesel	0.9%
Euro 1 Diesel	3.4%
Euro 2/3 Diesel	18.1%
Pre Euro Petrol	9.5%
Euro1 Petrol	10.3%
Euro 2/3 Petrol	43.1%
Light Goods Vehicles (LGV)	10.3%
Heavy Goods Vehicles (HGV)	3.4%
Buses	1.0%

4.5. Fifteen areas of exceedance have been identified and are considered in this action plan (see section 2.3, 2.5 and figure 2.1). However, for the purposes of source apportionment some of the areas of exceedance have been grouped together and Sandwell borough as a whole has also been assessed. The areas considered for source apportionment are detailed below and are illustrated in Figure 4.1. A table detailing the origins of the eight source apportionment areas is given in Appendix 3.

1. Great Barr and Yew Tree
   - M6 J7-8
   - Newton Road / A34 junction

2. Oldbury
   - Oldbury Ringway / Birmingham Road (A457)
   - M5 J1 - 2
   - Dudley Road East / Roway Lane
   - Trinity Way / Kenrick Way
   - Bromford Road
   - Bromford Lane / Brandon Way junction (identified in the 2006 USA)

3. Blackheath
   - Oldbury Road / Birmingham Road
   - High Street / Powke Lane

4. Bearwood Road

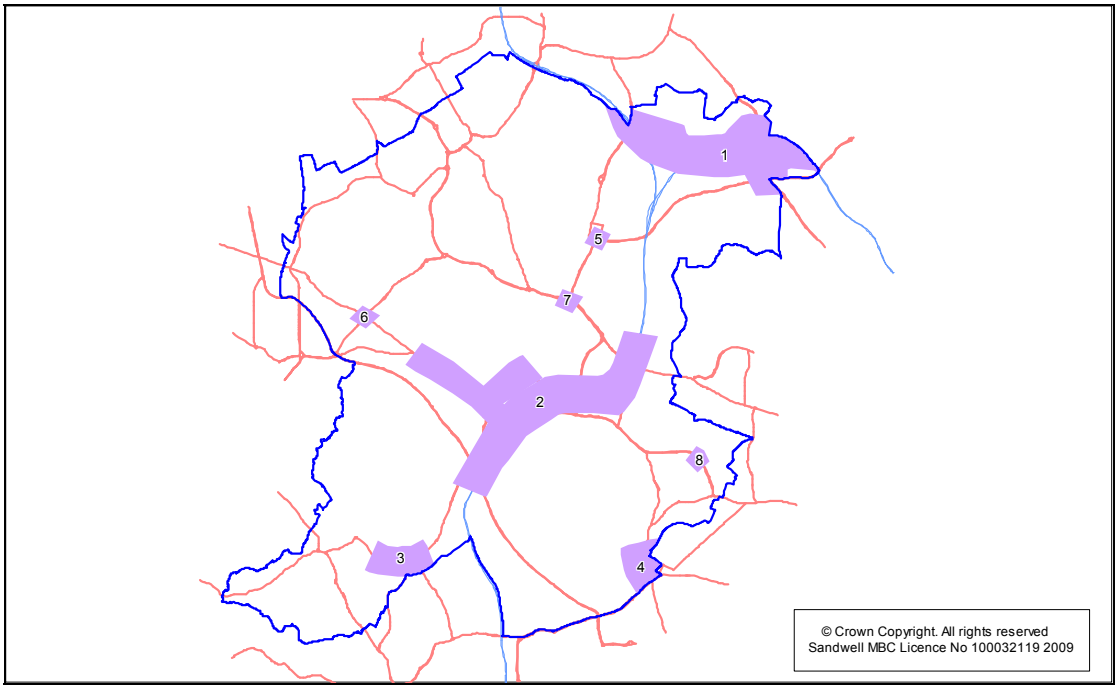
5. All Saints Way / Newton Road

6. Sedgley Road East / Dudley Port junction, Tipton

7. The Expressway / All Saints Way junction, West Bromwich

8. Soho Way / Grove Lane junction, Smethwick (identified in the 2006 USA)

Figure 4.1 - Source Apportionment Areas



4.6. The results of the source apportionment assessment are illustrated in the form of pie and bar charts. The source apportionment for the whole borough is illustrated in Figure 4.2. It shows that HGV's are by far the biggest source with 51% of NO_x generated by HGV's. Pre Euro petrol cars are also a significant source, contributing 19% of the NO_x.

Figure 4.2 – NO_x Source Apportionment for Sandwell Borough in 2005

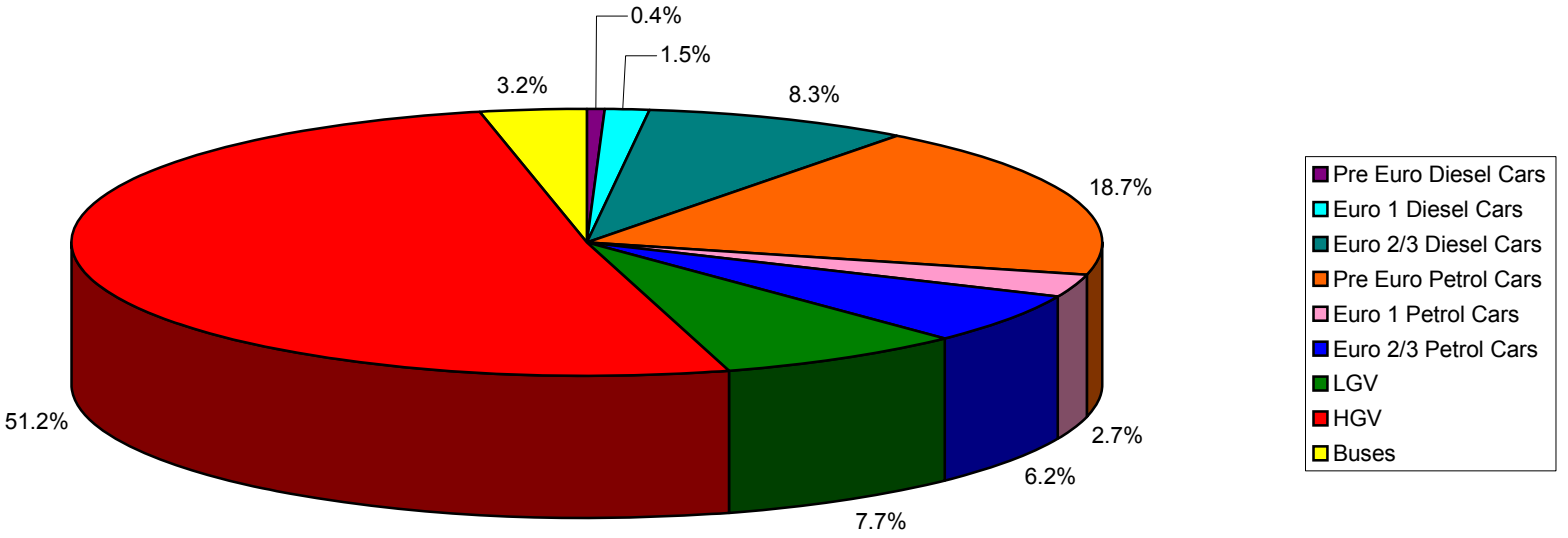
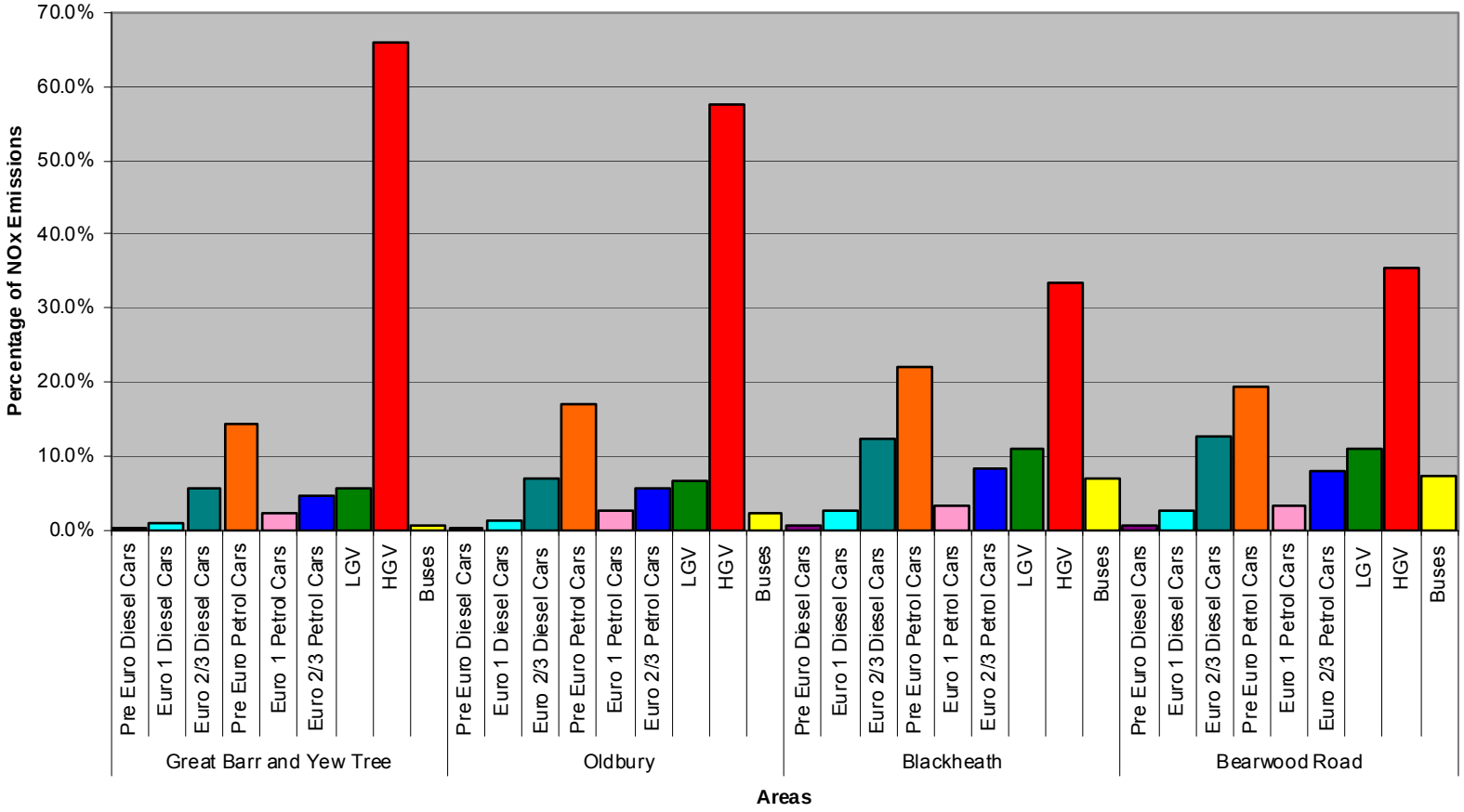


Figure 4.3 – NO_x Source Apportionment for Exceedance Areas in 2005



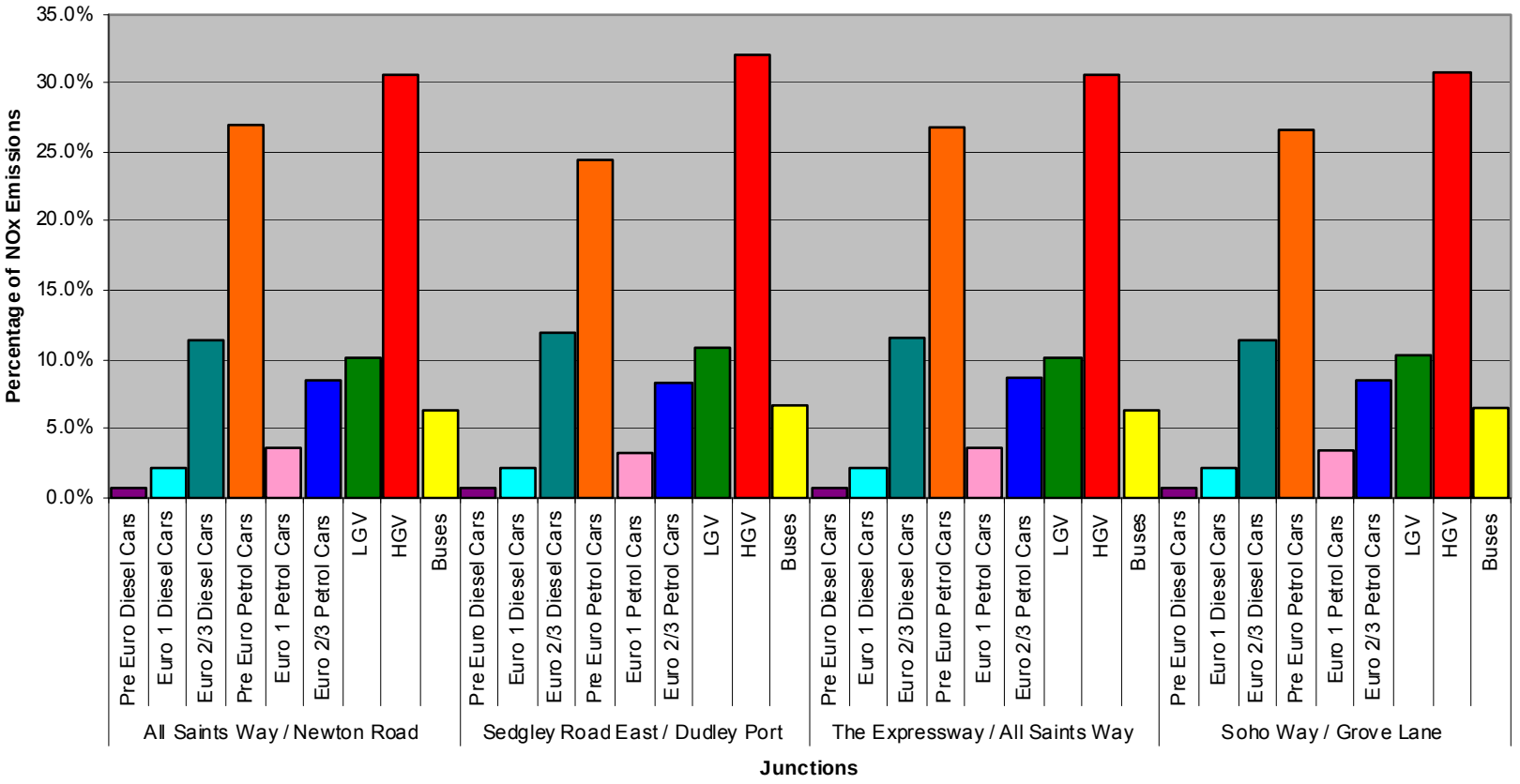
4.7. Figure 4.3 shows the source apportionment for Great Barr / Yew Tree, Oldbury, Blackheath and Bearwood Road. For all four of these areas the split between vehicles follows a similar pattern. HGV's are by far the largest source of NO_x emissions; pre Euro petrol cars are also a significant contributor in these areas. In both Great Barr / Yew Tree and Oldbury HGV's are the source of the vast majority of NO_x emissions and the contribution from buses is very low. This is due to the heavy influence of the motorway emissions in these areas.

4.8. In Oldbury source apportionment work predicts that 69% of NO_x emissions are generated by motorway traffic. Though it should be noted that the motorway is elevated along this section and many of the receptors in this area live alongside the A457 Birmingham Road.

4.9. In Great Barr and Yew Tree approximately 90% of NO_x emissions are generated by motorway traffic. Although it is clear that the motorway traffic in this area is the cause of much of this area of exceedance, it should also be noted that traffic going through the Newton Road and Birmingham Road junction is the cause of exceedances at receptors close to this junction.

4.10. For both Blackheath and Bearwood Road, the distribution of emissions sources is more even; this is likely to be due to the fact that the motorway does not influence these areas. However, HGV's and pre Euro petrol cars are still the dominant source of NO_x. Bus emissions are more significant in these smaller areas, particularly along Bearwood Road.

Figure 4.4 – NOx Source Apportionment at Exceeding Junctions in 2005



4.11. Figure 4.4 illustrates the results of the source apportionment work carried out for four of the junctions of concern. Once again in all four areas a similar vehicle split is illustrated. Overall the split at these four junctions is similar to that at the smallest areas of Blackheath and Bearwood Road. Again HGV's are the largest source of NO_x emissions followed by pre Euro petrol cars, however the difference between these categories and all other vehicle types is not as significant as it is in areas where there is a significant amount of motorway traffic. The proportion of bus emissions is significantly higher around all four junctions than in the larger motorway influenced areas.

Although HGV's and buses are a small part of the total traffic composition, they give rise to a large proportion of total NO_x emissions in the borough. Pre Euro petrol cars also make a significant contribution to NO_x emissions despite comprising a comparatively small fraction of the total traffic. Consideration should be given at the national level to developing policies to help accelerate the removal of pre Euro vehicles from the road. In addition effort should made to ensure emissions controls on HGV's and buses are made as stringent as possible and research to reduce the emissions associated with these larger vehicles should be supported. Table 4-1 contains a summary of the results of the source apportionment work.

Table 4-1 - Summary of Source Apportionment Results

Vehicle Type (approximate %age of this vehicle type making up total traffic across the borough in 2005)	Sandwell	Great Barr / Yew Tree	Oldbury	Blackheath	Bearwood Road	All Saints Way / Newton Road	Sedgley Road East / Dudley Port	Expressway / All Saints Way	Soho Way / Grove Lane
Pre Euro Diesel Cars (0.9%)	0.4%	0.3%	0.4%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
Euro 1 Diesel Cars (3.4%)	1.5%	1.0%	1.3%	2.5%	2.7%	2.1%	2.2%	2.1%	2.0%
Euro 2/3 Diesel Cars (18.1%)	8.3%	5.5%	7.0%	12.3%	12.6%	11.3%	11.8%	11.5%	11.4%
Pre Euro Petrol Cars (9.5%)	18.7%	14.4%	17.0%	22.1%	19.4%	27.0%	24.4%	26.7%	26.6%
Euro 1 Petrol Cars (10.3%)	2.7%	2.2%	2.5%	3.1%	3.1%	3.5%	3.1%	3.6%	3.4%
Euro 2/3 Petrol Cars (43.1%)	6.2%	4.5%	5.5%	8.3%	8.0%	8.5%	8.3%	8.6%	8.4%
LGV (10.3%)	7.7%	5.6%	6.6%	10.9%	10.9%	10.0%	10.7%	10.1%	10.3%
HGV (3.4%)	51.2%	65.9%	57.6%	33.3%	35.3%	30.6%	32.1%	30.5%	30.8%
Buses (1.0%)	3.3%	0.6%	2.1%	6.8%	7.3%	6.4%	6.8%	6.3%	6.5%

4.12. In conclusion the source apportionment work shows that particular vehicle types are contributing a majority of the NO_x. The main vehicles of concern are:

- HGV's in all areas of concern.
- Pre Euro Petrol Cars in all areas of concern.
- Buses along Bearwood Road.

4.13. This suggests that the action plan should target these particular types of vehicle. However, it may prove difficult to apply specific actions locally to target these vehicle types. For example, it would not be realistic to restrict HGV movements on the motorway network.

5. REDUCTION REQUIRED

5.1. Emissions of NO_x from motor vehicles consist mainly of NO, which is then converted to NO_2 in the atmosphere. The conversion of NO to NO_2 is rate limited if other chemicals are not present and also by the ambient temperature. Hence, in the summer the chemical reactions are faster so that more than 80% of the NO_x might consist of NO_2 whereas in winter the chemical reactions are slower so perhaps only 20% of NO_x might consist of NO_2. The overall effect of the atmospheric chemistry is to have a reserve of NO so that a reduction of NO_x levels does not produce a proportionate reduction in NO_2. This makes it difficult to predict what level of reduction is required to achieve the objective. The level of NO_2 reduction required in each of the areas of exceedance based on the maximum measured NO_2 level is shown in Table 5-1.

Table 5-1 – Maximum NO_2 reduction required

Location	Maximum measured NO_2 ($\mu g/m^3$) 2005[a]	% Reduction in NO_2 emissions required
Oldbury Ringway / Birmingham Road (A457), Oldbury	55.03 (BE)	38%
Dudley Road East / Roway Lane, Oldbury	55.28 (C7A)	38%
M6 J7-J8 / M5, Great Barr and Yew Tree	45.87 (WA)	15%
M5 J1- J2, Oldbury & West Bromwich	46.91 (RA)	17%
Newton Road / Birmingham Road (A34), Great Barr	50.01 (ZQ)	25%
Bearwood Road	59.81 (C10D)	50%
Oldbury Road / Birmingham Road, Blackheath	51.07 (C11A)	28%
High Street / Powke Lane, Blackheath	54.81 (C12A)	37%
Bromford Road, (including Kelvin Way/Brandon Way junction) West Bromwich	49.37 (C5A)	23%
Trinity Way / Kenrick Way, West Bromwich	57.85 (C4D)	45%
The Expressway / All Saints Way	55.30 (C1D)	38%
All Saints Way / Newton Rd	43.55 (C2A)	9%
Sedgley Road East / Dudley Port	54.58 (C13D)	36%
Soho Way / Grove Lane[b]	47.10 (N2A)	18%

[a] Maximum measured NO_2 located at a relevant receptor.
[b] No monitoring data was collected at this location in 2005 (the figure entered here is for guidance only as it is based upon six months of diffusion tube data that was collected in 2006).

5.2. Table 5-2 shows the approximate percentage reduction in NO_x required to achieve the 2005 annual mean NO_2 objective when considering the worst-case scenario (i.e. reduction from the maximum NO_2 concentrations recorded in each area in 2005). The annual mean roadside NO_x concentration has been calculated using the spreadsheet produced by Bureau Veritas and is available on the Air Quality Archive website at the following address http://www.airquality.co.uk/archive/laqm/tools/nox_from_no2_calculatorv2.xls.

Table 5-2 - NO_x Reduction Required

Location	1 Highest Annual Mean NO_2 ($\mu g/m^3$) 2005	2 Calculated Total Annual Mean NO_x ($\mu g/m^3$)	3 Calculated Road Increment Annual Mean NO_x ($\mu g/m^3$)	4 Background Annual Mean NO_x ($\mu g/m^3$)	5 Road Increment that would be required to achieve compliance ($\mu g/m^3$) (106[a] – column 4)	6 Roadside NO_x Reduction Required (column 3 – column 5)	7 % Reduction in NO_x emissions required from local roads (column 6/3)
Oldbury Ringway / Birmingham Road (A457), Oldbury	55.03 (BE)	175.8	100.9	74.8	31.2	69.7	69%
Dudley Road East / Roway Lane, Oldbury	55.28 (C7A)	181.2	111.2	70.0	36	75.2	68%
M6 J7-J8 / M5, Great Barr and Yew Tree	45.87 (WA)	143.6	91.4	52.2	53.8	37.6	41%
M5 J1- J2, Oldbury & West Bromwich	46.91 (RA)	138.3	74.1	64.1	41.9	32.2	43%
Newton Road/Birmingham Road (A34), Great Barr	50.01 (ZQ)	165	111	54	52	59	53%
Bearwood Road	59.81 (C10D)	225.2	178.4	46.8	59.2	119.2	67%
Oldbury Road / Birmingham Road, Blackheath	51.07 (C11A)	175.9	127.6	48.3	57.7	69.9	55%
High Street / Powke Lane, Blackheath	54.81 (C12A)	201.6	159.2	42.4	63.6	95.6	60%
Bromford Road, (including Kelvin Way / Brandon Way junction) West Bromwich	49.37 (C5A)	143.1	68.5	74.6	31.4	37.1	54%

Location	1 Highest Annual Mean NO_2 ($\mu g/m^3$) 2005	2 Calculated Total Annual Mean NO_x ($\mu g/m^3$)	3 Calculated Road Increment Annual Mean NO_x ($\mu g/m^3$)	4 Background Annual Mean NO_x ($\mu g/m^3$)	5 Road Increment that would be required to achieve compliance ($\mu g/m^3$) (106[a] – column 4)	6 Roadside NO_x Reduction Required (column 3 – column 5)	7 % Reduction in NO_x emissions required from local roads (column 6/3)
Trinity Way / Kenrick Way, West Bromwich	57.85 (C4D)	190.2	112.7	77.5	28.5	84.2	75%
The Expressway / All Saints Way	55.30 (C1D)	188.5	127.4	61.1	44.9	82.5	65%
All Saints Way / Newton Rd	43.55 (C2A)	132.2	81.6	50.6	55.4	26.2	32%
Sedgley Road East / Dudley Port	54.58 (C13D)	191.1	137.9	53.2	52.8	85.1	62%
Soho Way / Grove Lane[b]	47.10 (N2A)	148.3	93.8	54.5	51.5	42.3	45%

[a] This figure is the calculated NO_x concentration ($\mu g/m^3$) that corresponds to the annual mean NO_2 objective of 40$\mu g/m^3$.
[b] No monitoring data was collected at this location in 2005 (the figure entered here is for guidance only as it is based upon the five months diffusion tube data that were collected in 2006).

5.3. Although NO_2 levels need to be reduced by between 9% and 50%, the indications are that this would require NO_x emissions to be reduced by 32% to 75% across the borough. The greatest percentage reduction in roadside NO_x emissions is required at the Trinity Way / Kenrick Way junction in West Bromwich to comply with the objective. The smallest percentage reduction in roadside NO_x emissions is required at the All Saints Way / Newton Road junction in West Bromwich. It will be challenging to achieve the level of NO_x reduction required in order to achieve the NO_2 annual mean objective in a number of areas across the borough. However, the implementation of the actions outlined in this plan will contribute to achieving the required reduction and Sandwell MBC will continue to pursue reduction strategies.

6. DEVELOPMENT OF THE ACTION PLAN

6.1. To ensure that an action plan is effective, both air quality and non-air quality impacts need to be considered. For this reason representatives from the following key stakeholder organisations were consulted:

Table 6-1 – Key Consultees

Consultee	Name	Title
DEFRA	Tutu Aluko	Air and Environment Quality Division
Highways Agency	Naziya Sheikh	Assistant Route Performance Manager to West Midlands
Road Haulage Association	Mike Farmer	Midlands and Western Regional Director
National Express West Midlands (Travel West Midlands)	Lleon Jennings	Environment Manager UK Bus & Coach
CENTRO	Maria Machancoses	Head of Planning and Regeneration
Environment Agency	David Othen	Pollution Prevention and Control / Radioactive Substances Regulations Team Leader
Primary Care Trust	Dr John Middleton	Director of Public Health – Sandwell PCT
Chief Engineers and Planning Officers Group	Keith Rogers	Senior Strategy and Support Officer
Friends of the Earth	Chris Crean	West Midlands Campaign Co-ordinator
Black Country Study Group	Nicki Thomas	Principal Planning Officer – Dudley MBC
Oldbury Town Committee	Councillor Bridges	Chair of Town Committee

Consultee	Name	Title
Rowley Regis Town Committee	Councillor Mrs B Price	Chair of Town Committee
Smethwick Town Committee	Councillor M Rouf	Vice Chair of Town Committee
Tipton Town Committee	Councillor Mrs Khatun	Chair of Town Committee
Wednesbury Town Committee	Councillor Hackett	Vice Chair of Town Committee
West Bromwich Town Committee	Councillor Mrs Turton	Chair of Town Committee
Cycling in Sandwell Group	Roy McCauley	Sustainable Development Policy Officer
Sandwell MBC Transportation	John Hawkins Keith Sansom Andy Thorpe	Group Leader Traffic & Road Safety Manager Senior Transportation Planner
Sandwell MBC Strategic Planning	Tony Rice Phillipa Smith	Development Control Manager Principal Planner
Sandwell MBC Environmental Protection	Robert Lloyd	Deputy Manager Environmental Protection
Sandwell Agenda 21 Team	Terry Jones	Sustainable Development Manager
Neighbouring West Midlands Authorities (Birmingham, Coventry, Dudley, Solihull, Walsall and Wolverhampton)	Air Quality Teams	Environmental Protection Manager / Environmental Health Officer / Environmental Protection Officer / Technical Officer etc

6.2. Discussions were held with the key stakeholders to first identify actions proposed under existing policies that are likely to result in an improvement in air quality. It was then considered whether there are any additional actions that could further improve air quality. These discussions informed the development of the Draft Action Plan. The comments and issues drawn out from the consultation on the Draft Air Quality Action plan were also fed back to the relevant stakeholders for their comments to be included in this final document.

Focus was given to actions that would specifically reduce NO_2 levels within the areas of exceedance. It was clear however that these actions alone would be unlikely to achieve the air quality objectives in a number of areas; consequently consideration was also given to actions to improve air quality across the borough. In addition a cost benefit analysis was carried out for each of the actions identified to assess their feasibility and effectiveness.

6.3. The action plan has considered potential actions under a number of different headings. Although the whole borough has been declared an AQMA it was considered important to ensure focus was maintained on the specific areas of exceedance. Therefore the action plan first considers specific actions to improve air quality in each of the following areas of exceedance:

1. Oldbury Ringway / Birmingham Road (A457), Oldbury
2. Dudley Road East / Roway Lane, Oldbury
3. Motorways - M6 J7-J8 / M5, Great Barr
   - M5 J1-J2, Oldbury & West Bromwich
4. Newton Road / Birmingham Road (A34), Great Barr
5. Bearwood Road, Smethwick
6. Oldbury Road / Birmingham Road, Blackheath
7. High Street / Powke Lane, Blackheath
8. Bromford Road (including Bromford Lane / Kelvin Way / Brandon Way junction), West Bromwich
9. Trinity Way / Kenrick Way, West Bromwich
10. All Saints Way / Expressway, West Bromwich
11. All Saints Way / Newton Road, West Bromwich
12. Sedgley Road East / Dudley Port, Tipton
13. The Soho Way / Grove Lane / Cranford Street, Smethwick

6.4. It is clear that in the majority of areas of exceedance, the specific actions will not achieve sufficient reductions in NO_2 to meet the objective. Hence, the action plan also considers other actions to improve air quality generally across the borough. These actions have been divided into the following six key areas:

- Improving public transport to reduce traffic volumes
- Improving the road network to reduce congestion
- Using area planning methods for local air quality management
- Reducing vehicle emissions
- Reducing air pollution from industry, commerce and residential areas
- Changing levels of travel demand / promotion of alternative modes of transport

7. EXISTING PLANS AND POLICIES RELATED TO ACHIEVING AIR QUALITY OBJECTIVES

7.1. There are a number of existing plans and policies identified which could improve air quality. Where possible, air quality action plans should support existing and forthcoming plans and policies within the borough and West Midlands Region and vice versa.

The following documents contain plans and policies which would impact on air quality and hence have been considered in the action planning process:

- Local Transport Plan (LTP)
- West Midlands Transport Innovation Fund Reports
- West Midlands Area Multi Modal Study
- Unitary Development Plan
- Local Agenda 21 Strategy and Environmental Policy Statement and Actions
- Community Plan

Local Transport Plan

7.2. The current Local Transport Plan (LTP2) submitted in March 2006 covers all seven West Midland authorities: Birmingham City Council, Coventry City Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council, Walsall Metropolitan Borough Council, Wolverhampton City Council and Centro (West Midlands Passenger Transport Executive). LTP2 aims to reduce congestion, improve air quality, accessibility, and road safety and achieve regeneration across all seven districts. The latest plan provides the framework for the programme of initiatives that will be pursued between 2006 and 2011.

7.3. The air quality strategy contained in LTP2 involves:

- Working with the Highways Agency to deal with the substantial emissions from motorway traffic
- Detailed initiatives to tackle local hotspots through engineering and traffic management
- Broader policies to encourage forms of transport that have less impact on air quality, such as alternative fuel vehicles, cycling and walking

7.4. The LTP2 also contains a target to reduce the average NO_2 level by 1% between 2004/5 and 2010/11 in areas where NO_2 exceeds the national objective. This ambitious target is currently being met as are congestion targets, it is not possible to assess whether or not traffic growth targets are being met as the methodology for monitoring traffic growth has altered so there is currently no consistent trend evidence.

7.5. The latest plan includes actions to expand the Metro network, expand and improve Bus Showcase routes, deliver a comprehensive network of Red Routes, improve urban traffic control systems, provide a comprehensive cycle network and improve conditions to encourage walking. The LTP and Air Quality Action Plan are closely linked, with many of the LTP actions forming the basis of this action plan. The relevant actions are discussed in more detail in sections 8 and 9.

West Midlands Transport Innovation Fund Reports

7.6. In January 2006 the West Midlands Authorities commissioned a study to identify and predict future levels of traffic congestion within the conurbation and to examine a comprehensive range of solutions for tackling the problem, including consideration of some form of flexible zonal pricing mechanism. The first report released in September 2006 titled 'Gridlock or Growth – Choices and Challenges for the Future' looked at 3 scenarios for 2021:

- **Scenario A** – continuation of current policies (i.e. all proposals contained in LTP2)
- **Scenario B** - non-financial demand management package (i.e. all existing proposals as in scenario A and more concerted policies to encourage changes in travel behaviour)
- **Scenario C** – Major investment package supported by road user charging

7.7. The report concludes that Scenario C has the potential for most beneficial impact on congestion and related economic and environmental impacts. Subsequent reports were issued, 'Towards an Integrated Transport Strategy' was published in July 2007 and the final report 'Tackling Congestion, Delivering Growth' was published in March 2008. In these further reports it has been demonstrated that road user charging is not appropriate for the West Midlands at the present time.
The reasons for this decision are numerous and include:

- Concerns that in some parts of the city region competitiveness could be damaged.
- Road pricing would deliver mixed results in terms of reducing congestion across the region:
  - There would be either no, or negligible benefits in Coventry, Wolverhampton and the Black Country.
  - In Birmingham, although some benefits would be seen, congestion would be reduced only to 2001 levels.
- There would be only marginal gains for business as the costs for companies would almost equal the benefits.
- The most suitable pricing scheme for the area would be based on time, distance and place, but currently the technology is not available, and may not be until 2021.
- Both business and residents acknowledge that congestion must be tackled, but they express doubts that road pricing is the best solution.

Alternative approaches proposed to reduce congestion, include "Quick Wins" (relatively minor junction capacity improvements) and "Smarter Choices" (enhanced TravelWise activity), these are now being pursued.

West Midlands Area Multi Modal Study (WMAMMS)

7.8. This study, completed in October 2001, looked at the total demand for travel and establishes a thirty-year framework to provide for an integrated transport system covering all modes, including the more sustainable means of travel such as walking and cycling. The study developed and appraised a large number of options in order to determine their effectiveness. The study informed many of the proposals in the LTP.

7.9. The study resulted in a plan detailing a package of recommended measures including:

- Major investment in behavioural change and walking & cycling facilities
- Red routes to improve journey time reliability of all traffic, especially buses
- A network of Metro lines
- Major heavy rail investment
- Bypasses of Stourbridge and Wolverhampton with new links and improved roads within the Black Country
- Road user charging

A number of these recommended measures have been found to be prohibitively expensive however; therefore many have been scaled down. To date the only work that has been commenced in Sandwell is on Red Routes.

7.10. Red Route treatments may include side road entry treatments, new or revised traffic signals and new or revised stopping, loading and parking restrictions. Red Route measures help to reduce congestion thereby improving traffic flow and consequently improving air quality. Red Route enforcement is carried out by the Council's Civil Enforcement Officers (formally known as parking attendants). Civil Enforcement Officers operate throughout the borough. A maximum of 20 officers are deployed during core hours of 8am to 6pm, Monday to Saturday spread over three overlapping shifts. Priorities for enforcement are in the areas where most contraventions occur, which are principally the main centres such as West Bromwich. In areas where red routes are in operation they are covered by mobile patrols with occasional visits being made to any given location. It has been found to date that the number of contraventions on Sandwell's existing Red Routes is low.
Wherever Red Route treatments are proposed all objectives of the route are considered, pedestrian access and safety are key priorities consequently no Red Route should have any negative implications for pedestrian safety. Many Red Routes also have lowered speed limits associated with them further helping to increase pedestrian safety.

Unitary Development Plan

7.11. The Unitary Development Plan sets out planning policies for the borough and allocates land for various land uses. The new plan covering the period up to 2011 was approved in 2004. This plan includes policies to ensure that air quality is taken into consideration when assessing planning applications and policies to improve public transport and reduce congestion on roads throughout the borough. The phased introduction of the Local Development Framework (LDF) will commence in 2009 and be completed by 2012. Work is currently being undertaken to ensure air quality considerations are taken into account within the Core Strategy.

Local Agenda 21 Strategy 2000-2005

7.12. This strategy considers the way in which the council is integrating sustainable development principles into policy formulation and delivery of council services. The Strategy took a step further forward in 2006 with the adoption of the council's Environmental Policy Statement and Actions.

7.13. Some of the key aims relating to air quality contained in the strategy are:

- Reducing greenhouse gas emissions created by activity within Sandwell. This was originally carried out through the development of an Energy Strategy. Though since the council's declaration on Climate Change in 2007, a slightly different approach will be taken, target emission reductions will be set and a Climate Change Action Plan will be agreed and implemented,
- Increasing the use of environmentally friendly forms of transport. This will include implementing the Cycling in Sandwell Strategy (approved in 1999), working with businesses on TravelWise and green transport plans plus working with schools on a programme of "Safer Routes to School",
- Improving sustainable business practices. Helping businesses reduce their harmful emissions and adopt environmental management systems through Sandwell's Business Environment Charter,
- Providing an energy efficiency and renewable energy advice service for all households in the borough,
- Using council procurement to reduce harmful emissions.

Whilst all of the above points relate primarily to CO_2 emissions many sources of CO_2 are also sources of NO_x emissions. For further information please refer to the Air Quality Expert Group Report: Air Quality and Climate Change: A UK Perspective. A summary of the full report is available at http://www.defra.gov.uk/environment/airquality/publications/airqual-climatechange/pdf/summary.pdf.

The following list summarises some of the win-win climate change measures identified in the report that will also have an air quality benefit:

- Switching from coal to natural gas for power generation
- Use of new technologies in road transport, for example:

    (i) hybrid vehicles
    (ii) hydrogen from natural gas or from renewables
    (iii) lean burn petrol vehicles fitted with nitrogen oxide traps

- Efficiency improvements in domestic appliances and industrial processes, e.g. through technical developments
- Energy conservation, e.g. through improved insulation of houses
- Demand management/behavioural change: improved public transport coupled with disincentives for private car usage.

Community Plan

7.14. Local Authorities have a duty to prepare community strategies for promoting or improving the economic, social and environmental well being of their areas and contributing to sustainable development in the UK. The current Sandwell Plan was published in 2008, within this plan road traffic pollution is identified as a significant issue in Sandwell. Sandwell's commitment to improving public transport is noted in the plan.

8. ACTIONS TO IMPROVE AIR QUALITY WITHIN THE AREAS OF EXCEEDANCE

8.1. This section of the action plan considers specific actions to improve air quality within each of the following areas of exceedance:

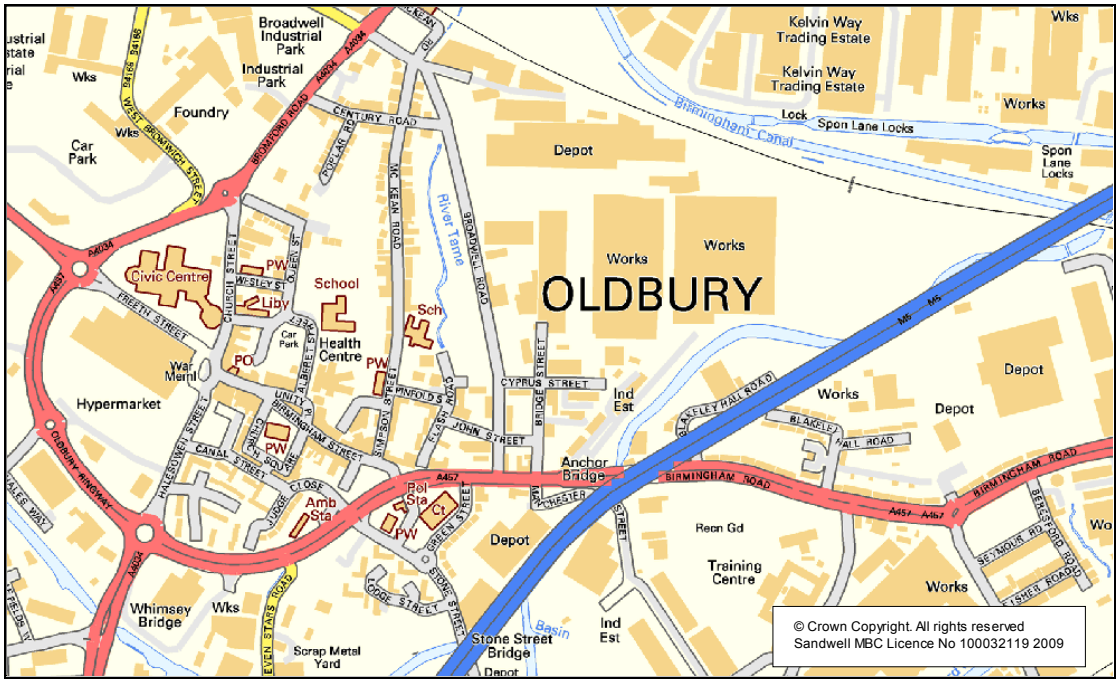
1. Oldbury Ringway / Birmingham Road (A457), Oldbury
2. Dudley Road East / Roway Lane, Oldbury
3. Motorways - M6 J7 - J8 / M5, Great Barr
   - M5 J1 - J2, Oldbury & West Bromwich
4. Newton Road / Birmingham Road (A34), Great Barr
5. Bearwood Road, Smethwick
6. Oldbury Road / Birmingham Road, Blackheath
7. High Street / Powke Lane, Blackheath
8. Bromford Road (including Kelvin Way / Brandon Way junction), West Bromwich
9. Trinity Way / Kenrick Way, West Bromwich
10. All Saints Way / Expressway, West Bromwich
11. All Saints Way / Newton Road, West Bromwich
12. Sedgley Road East / Dudley Port, Tipton
13. The Soho Way / Grove Lane / Cranford Street junction, Smethwick

Actions considered for each of these areas have been discussed below and the specific actions are listed in Table 10-5.

Oldbury Ringway / Birmingham Road (A457), Oldbury

8.2. The A457 is a busy dual carriageway leading into the centre of Oldbury. There are residential properties on one side of the carriageway and commercial industrial uses on the other.
A 38% reduction in NO_2 levels is required to meet the objective in this area, to achieve this a 46% reduction in NO_x generated from traffic is likely to be required.

Figure 8.1 – Oldbury Ringway / Birmingham Road (A457)



8.3. Red route treatment is proposed for this stretch of road, construction works are anticipated to start between June 2009 and June 2010. The works are anticipated to improve general traffic travel times by at least 10% and reliability by 20%. The general objective of smoothing the flow of traffic and reducing queues of stationary traffic should provide a reduction in air pollution. Initial appraisal of the route has identified the following improvements:

- Reduced footway and realigned centre-line to provide dedicated parking bays
- Limiting parking along the road
- Pelican crossing upgraded to Puffin crossing (on a Puffin crossing the red/green man indicator is on the nearside of the road above the push button and there are detectors which can extend the time available for the pedestrian to cross the road and a further set of detectors to cancel the signal if the pedestrian moves away from the crossing area)

- Bus stop facilities upgraded to showcase* standard (Route 87)
- Churchbridge roundabout operation is to be reviewed and options to reduce congestion are to be considered

* Bus showcase can include measures such as modern easy access buses, new enclosed glass shelters with Kassel kerbs for ease of boarding, real time electronic information displays and highway priority measures such as dedicated bus lanes and junction improvements.

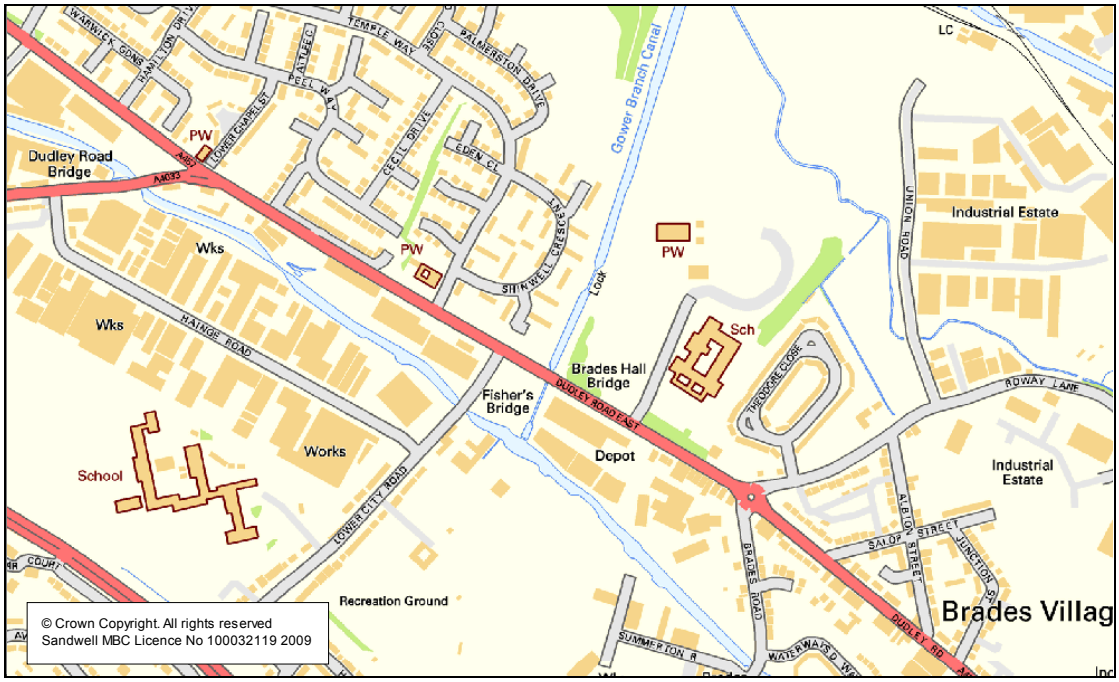
8.4. The area of exceedance along Birmingham Road near the M5 crossing contains a relatively small number of residential properties within an industrial/commercial area. The residential properties in this area fall within an area designated as a Business Zone in the Unitary Development Plan (UDP). Business Zones are areas safeguarded predominantly for industrial use. The UDP states that the Council will not seek to remove non-industrial uses unless there is overriding environmental or economic need. The council may give consideration to the future of these properties in addition to the actions referred to in section 8.3 as these properties are within the Housing Market Renewal Area (HMRA).

8.5. This option would not provide any improvement to air quality but would reduce the number of people exposed to high pollution levels at their dwellings. It would have a fairly high cost, but it would be a one off cost. This option has been discussed with the Strategic Planning and Housing departments and may be considered when developing the new Local Development Framework.

Dudley Road East and Junction with Roway Lane, Oldbury

8.6. Dudley Road East is a busy single carriageway road that becomes congested during rush hour and has houses located close to the road in a number of locations. A 38% reduction in NO_2 levels is required to meet the objective in this area, to achieve this a 46% reduction in NO_x generated from traffic is likely to be required.

Figure 8.2 – Dudley Road East and its junction with Roway Lane



8.7. This section of road has been identified for red route improvements. Construction is anticipated to take place between June 2009 and June 2010. Initial appraisal of the route identified the following improvements:

- Pelican crossings to be upgraded to Puffin crossings,
- Parking bay provision is to be considered,
- Bus Stop facilities upgraded to showcase standard (Route 87)
- New signalised crossroads to replace roundabout at Roway Lane (subject to budgetary constraints). Potentially jointly funded by Red Routes and Bus Showcase. This would improve capacity by approximately 20%.

8.8. Dudley Road West / Tipton Road signals have been upgraded, however as part of the joint red route / bus showcase initiative, a further review of these signals is anticipated.

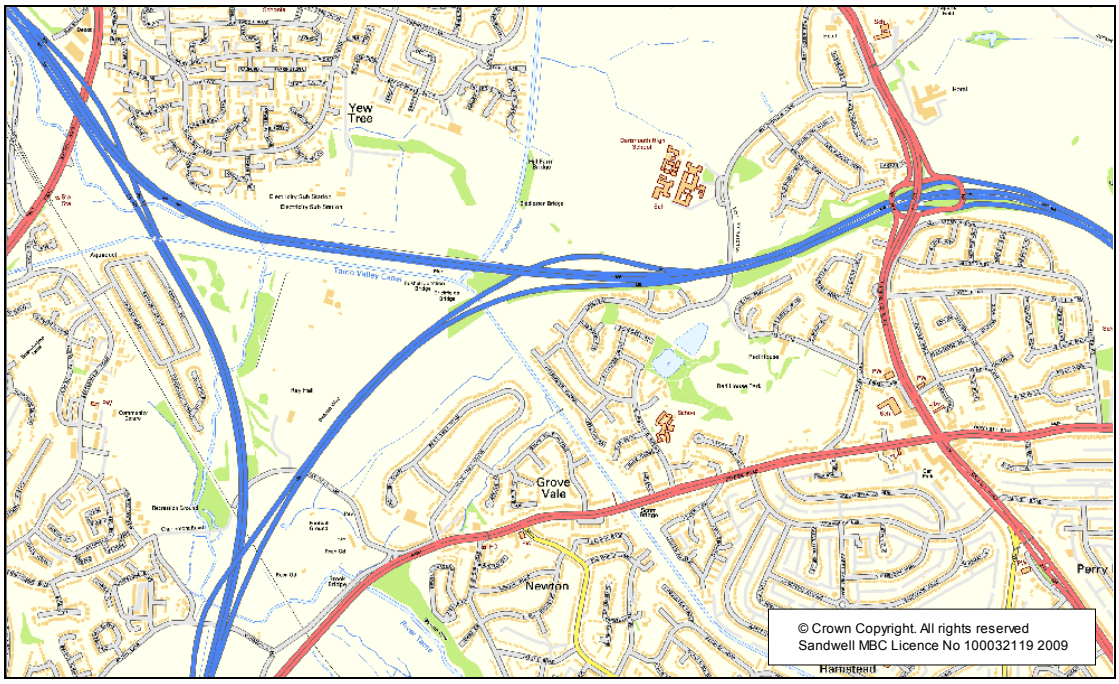
8.9. The council previously looked at the possibility of widening the road to dual carriageway but it was considered not viable. Highway Improvement Lines were imposed on 11/2/1993 to reserve the land but revoked on 21/3/1996. A bid for funding was last made in the 1991 Transport Policies and Programme document but high cost (£30m minimum at today's prices) meant funding was not attained. It affected around 30 residential properties and other land. It is highly unlikely that this project will be resurrected in the future.

Motorways - M6 J7 - J8 / M5, Great Barr and Yew Tree & M5 J1 - J2 Oldbury and West Bromwich

8.10. The M6 is the main source of nitrogen dioxide in Yew Tree and is also a significant source in Great Barr. The Highways Agency will have responsibility for options specific to the motorways hence their views have been sought in the action planning process. A 15% reduction in NO_2 levels is required to meet the objective in this area, to achieve this a 24% reduction in NO_x generated from traffic is likely to be required. A link road is planned between the M54 and the M6 (programmed for 2012). The opening of the M6 Toll in 2004 has contributed to NO_x reductions in this area, it has reduced average weekday traffic on the M6 between junctions 9 and 10 by around 7% and this initial reduction has been largely maintained.

8.11. During the action plans consultation phase the limited uptake of the M6 Toll by freight services was highlighted. Consultation with the road haulage association has revealed that it is simply not economically viable for hauliers to use the M6 Toll, the current cost of using the Toll does not equate with the savings associated with the approximate 17 minute saving made on their journey. Consequently there is currently little scope for an increase in the use of the M6 Toll use by freight services; the cost of the Toll would need to come down significantly before this would happen. Unfortunately the Toll increased by 40p on weekdays for HGV's and 20p on weekdays for cars from 1st January 2009 and there are no current plans to reduce this.

Figure 8.3 – M6 J7 - J8 / M5 Great Barr and Yew Tree



8.12. The M5 / M6 corridor will retain a role as the north-south strategic route for long distance through traffic in the UK. A number of measures that will impact upon the M6 corridor have been / are to be implemented by the Highways Agency, these include:

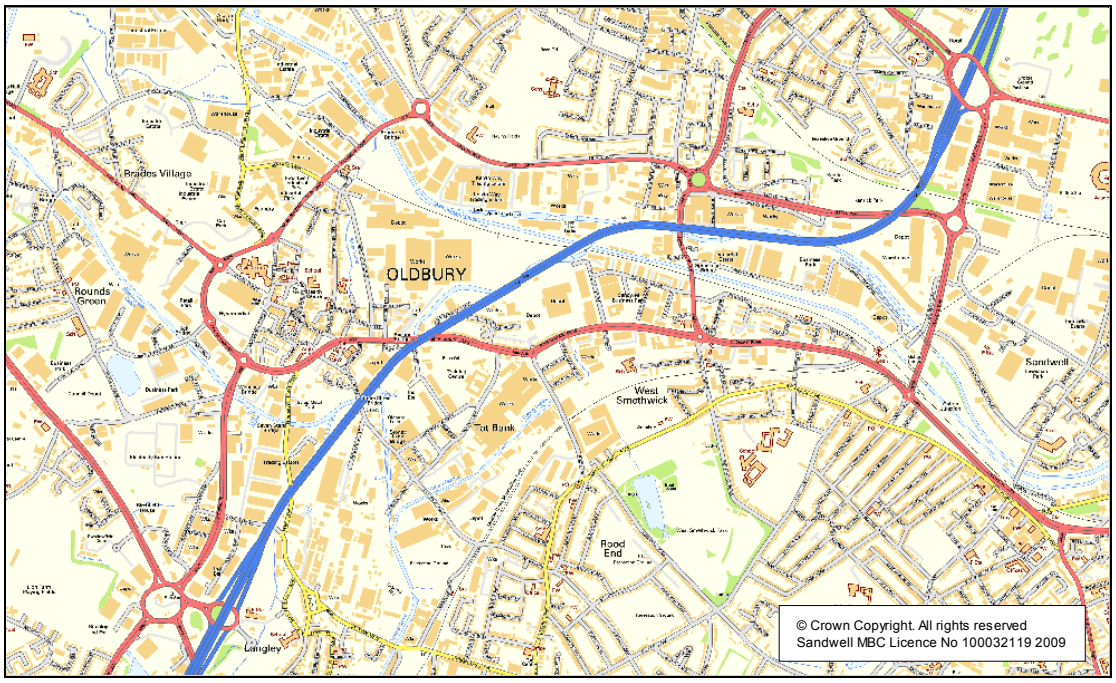
- A programme to deliver a faster response time of 20 minutes (previously 60 minutes) for incidents on the M6 has been implemented
- An improved system of incident contingency planning for Area 9 (includes relevant sections of the M6 and M5) of the motorway network has been implemented this plan is reviewed every four months
- The installation of Active Traffic Management (ATM) has begun and will progress along the M6 J4-5, M6 J8-J10a, M42 J7-J9 and M40 J16-M42. Evaluation of the suitability of Active Traffic Management for the following stretches M6 J5-J8, M5 J6-M6 J8 and M6 J10a-J19 is currently underway.
- A link between the M54 and the M6 / M6 Toll is programmed for completion in 2012 to relieve M6 junctions 8 to 10A and to improve access to the M54 and Telford. Design work is underway.

8.13. ATM has been tested by the Highways Agency on the M42 between J3a and 7. The scheme directs drivers to use the hard shoulder during times of peak congestion using electronic signs above each lane; this is in congestion with variable speed limits which help to smooth the flow of traffic. Results from this assessment have shown that hard shoulder use during peak periods has been a success with average journey times falling by more than a quarter on the northbound carriageway. In addition Highways Agency statistics have shown that fuel consumption has decreased by around 4% and vehicle emissions fell by up to 10%. When drivers were polled 84% felt that it was safe to use the hard shoulder. Variable speed limits and hard shoulder running are being introduced on the M6 between J8 and J10a (and J4 to J5). In addition variable speed limits will be introduced on J16 of the M40 to J3a of the M42. These ATM schemes are likely to have a positive impact on Sandwell's air quality, particularly the M6 J8 to 10a scheme (and the M5 J6 to M6 J8 scheme if this goes ahead).

8.14. Consideration was given to widening the M5 / M6 but this idea was rejected due to the considerable construction difficulties particularly through the elevated sections.

8.15. Freight movements – The government has set a target to increase the current rail freight share by 80% over the next 10 years. A number of new freight terminals are under consideration; these would help the transfer from road to rail.

Figure 8.4 - M5 J1 - J2 Oldbury and West Bromwich



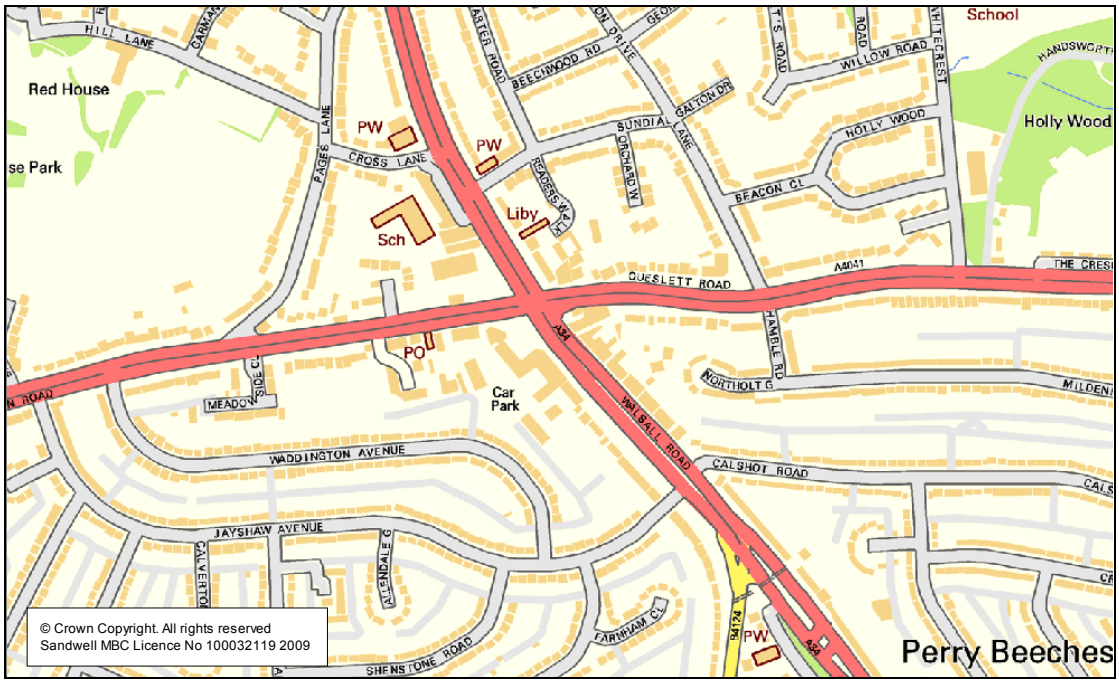
8.16. The Highways Agency has trialled ramp metering on the northbound slip road to junction 1 of the M5 (this trial took place between March 2007 and January 2008). Ramp metering is the system of controlled access of traffic from the slip road onto the main motorway using traffic signals responding to motorway traffic density and speed, with the aim of achieving smoother more uniform flow. The Highways Agency carried out air quality monitoring before and after the system came into operation to identify any air quality benefits. Both NO_2 and PM_{10} were monitored at a site in close proximity to junction 1, the monitoring commenced in September 2006 and continued until January 2008. It was found that the pollution levels monitored were higher after the ramp metering was installed, though it was suggested that changes in meteorological conditions pre and post the ramp metering installation may have influenced the results. As a result of this study the potential air quality benefits of ramp metering have been put into some doubt, however it has also been recommended that a longer period of monitoring pre and post implementation be carried out in order to be truly representative. Any additional ramp metering trials carried out by the Highways Agency will be considered in Sandwell's progress reports.

8.17. As part of the Influencing Travel Behaviour Project the Highways Agency implemented a travel plan for the Birmingham Business Park near the M6/M42, which should be beneficial for Sandwell's air quality. They also hope to offer assistance in developing Travel Plans for other large developments near the motorway network.

Newton Road / Birmingham Road (A34), Great Barr

8.18. This junction, known as the Scott Arms junction, is a busy crossroads that gets heavily congested particularly during rush hour. In addition to the M6, the A34 is a significant road traffic source in Great Barr.

Figure 8.5 - Newton Road / Birmingham Road (A34)



8.19. Measures implemented along the A34, in the vicinity of junction 7 of the M6 and the Scott Arms junction are expected to improve traffic flows and reduce queue lengths.

These measures known as the Route 51 improvements were implemented during 2007 and 2008 and were jointly funded by both Red Route and Bus Showcase initiatives. The works were completed in phases with phase 1 completed in November 2007, phase 2 in February 2008 and phase 3 in March 2008. The measures included a package of road improvements and traffic control systems to improve the flow of traffic along the A34 in the vicinity of Junction 7 of the M6. The following improvements to the current signal arrangements were made:

- Providing greater provision for pedestrians
- Installing advanced equipment (such as microprocessor optimised vehicle actuation (MOVA)) to increase capacity
- Increasing the right turn provision from Newton Road onto the Scott Arms junction

- Potentially linking the junction to Birmingham's split cycle offset optimisation technique (SCOOT) system on the A34 corridor

8.20. Bus services in the area have also been improved to bus showcase standards, which are being developed across the West Midlands. This has improved the service and made it a more appealing travel option.

8.21. The improvements should result in reduced congestion and reduced emissions. Monitoring will continue in this area to evaluate whether there are any improvements in air quality have been made as a result of the Route 51 improvements.

8.22. The A34 is also a route being considered for the enlargement of the Midland Metro network and this Phase 2 route is included as a priority in the LTP. Construction would be unlikely to commence before 2016.

Bearwood Road, Smethwick

8.23. Bearwood is a local shopping centre consisting of a ribbon of shops many of which have residential premises at the first and/or second floor. The road is narrow with high buildings either side creating a canyon affect. The busy junctions with Hagley Road and Three Shires Oak Road are also included in the area of exceedance. A 50% reduction in NO_2 levels is required to meet the objective in this area, to achieve this a 54% reduction in NO_x generated from traffic is likely to be required.

Figure 8.6 – Bearwood Road

8.24. The proximity of the buildings to the road edge precludes road widening and the limited options for diverting traffic from this area restricts the number of viable options to improve air quality. For example making Bearwood Road one way is not an option as there are no alternative roads in the vicinity for the traffic to flow on, nearby roads are narrow and heavily residential. In addition as bus showcase measures are now in place it would be prohibitively expensive to consider re routing buses away from Bearwood Road.

8.25. The bus services along Bearwood Road have been upgraded to Bus Showcase standards, the Hagley Road Bus Showcase scheme includes a junction improvement to the Hagley Road / Bearwood Road junction to ease congestion (estimated 10% reduction) and is programmed for 2009/10. Bus Showcase along Bearwood Road will not introduce a dedicated bus lane as there is no space for one here, Showcase measures should improve the attractiveness of the bus service in this area however which should hopefully result in higher patronage and consequently reduced congestion due to fewer vehicles being on the road.

The Birmingham West Route Metro along Hagley Road West should provide an attractive alternative form of transport. The Phase 2 Metro programme is currently under review but construction is unlikely to start prior to 2016.

8.26. During the consultation phase for this document concerns were raised about the illegal parking of delivery lorries along Bearwood Road. Parking enforcement is undertaken by Sandwell MBC's civil enforcement officers. These officers cover the entire borough in mobile patrols, with additional foot patrols covering key areas for enforcement in Bearwood and West Bromwich. Generally there are around 20 civil enforcement officers on duty on a typical day. Bearwood Road is currently a key area for parking enforcement and a daily foot patrol is in action here to target the specific illegal parking issues in this area.

8.27. In January 2006 Camden Council commenced a trial of a pavement designed to lower pollution levels. The surface of the slabs contain titanium dioxide (TiO_2), which acts as a catalyst in the presence of sunlight to break down the pollutant nitrogen dioxide gas (NO_2) into nitrates. These are neutralised by the concrete and so removed from the air. The Camden trial demonstrated a reduction in annual mean NO_x concentrations of 12% over the trial period of February 2006 – February 2007; however NO_x concentrations at a number of London monitoring stations showed a similar 12% reduction in NO_x concentrations over the same period. An analysis of diurnal changes in NO_x concentrations was made which demonstrated that the 12% reduction in NO_x concentrations occurred both at night and during the day, as the reaction taking place on the slabs is photo-catalytic if the slabs were the cause of the reduction you would expect to only perceive the reduction during the day when the sun is shining.

As a result of these findings Camden Council have concluded that the trial delivered insufficient evidence to prove that the paving is responsible for the reduction in NO_x concentrations. As a consequence of these findings Sandwell MBC will not currently be investing in this pollution abatement technology. The decision may be reviewed if further research results in more positive findings.

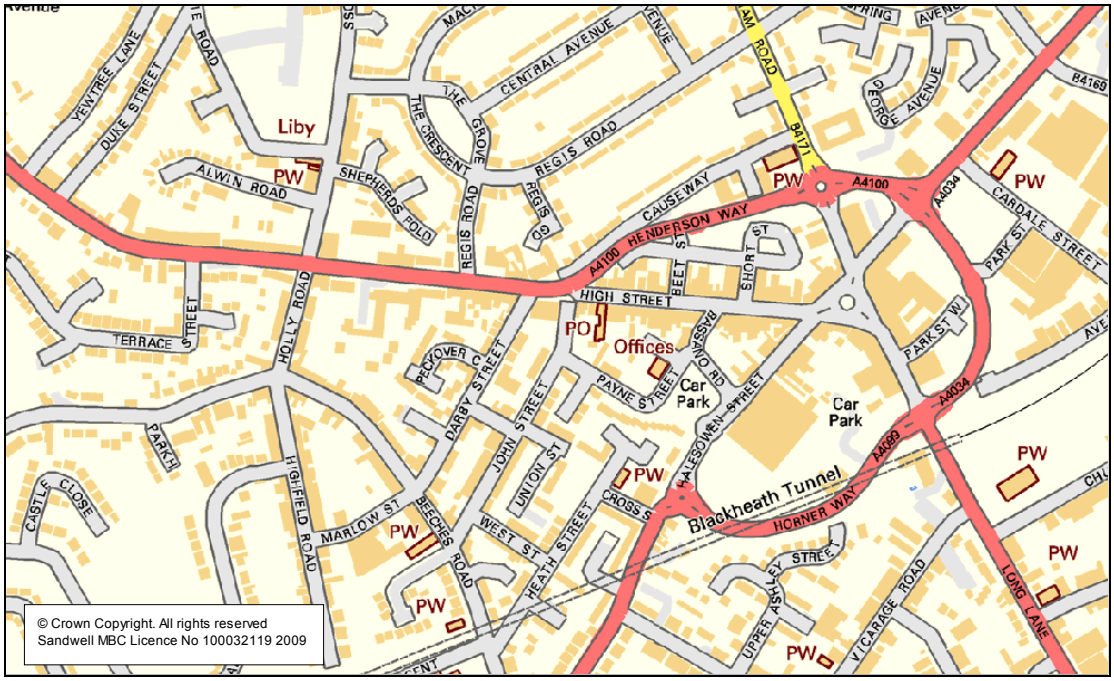
Oldbury Road / Birmingham Road, Blackheath

8.28. Blackheath is another of Sandwell's town centres serving a significant population in the south west of the borough. This junction is located in the centre of Blackheath. A bypass of the town centre has recently been completed and should significantly reduce traffic and improve air quality at this junction. However, the benefits of the bypass will not fully materialise until traffic management proposals in the centre of Blackheath have also been implemented. Traffic management will focus on reducing vehicular traffic but specific proposals are yet to be formulated. Options and issues under consideration in Blackheath include:

- the creation of a public square in the vicinity of market place
- the removal of through traffic
- improved access for buses, taxis and the disabled
- priority for bus access and improved bus layover facilities
- consideration of bus interchange facilities closer to the market place area
- consideration of the needs of pedestrians

As a result of the bypass and traffic management proposals a traffic reduction of 50% may be possible.

Figure 8.7 – Oldbury Road / Birmingham Road

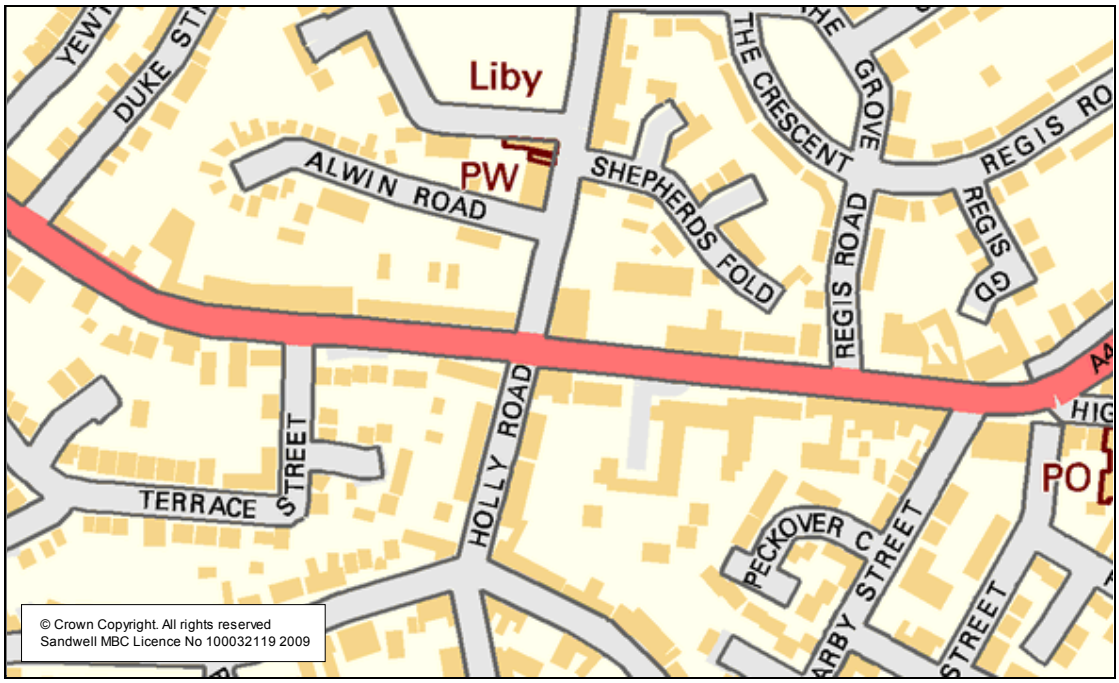


8.29. NO_2 diffusion tube monitoring will continue in the town centre to evaluate the effectiveness of the bypass and any traffic management works on the NO_2 levels at this junction.

High Street / Powke Lane, Blackheath

8.30. This junction is on the outskirts of town and is not likely to benefit from the new bypass. Existing buildings preclude widening at this junction. Two lane approaches would significantly increase capacity but this is not viable. Therefore, no specific actions can be applied to this junction, but the borough wide actions will aim to provide improvements.

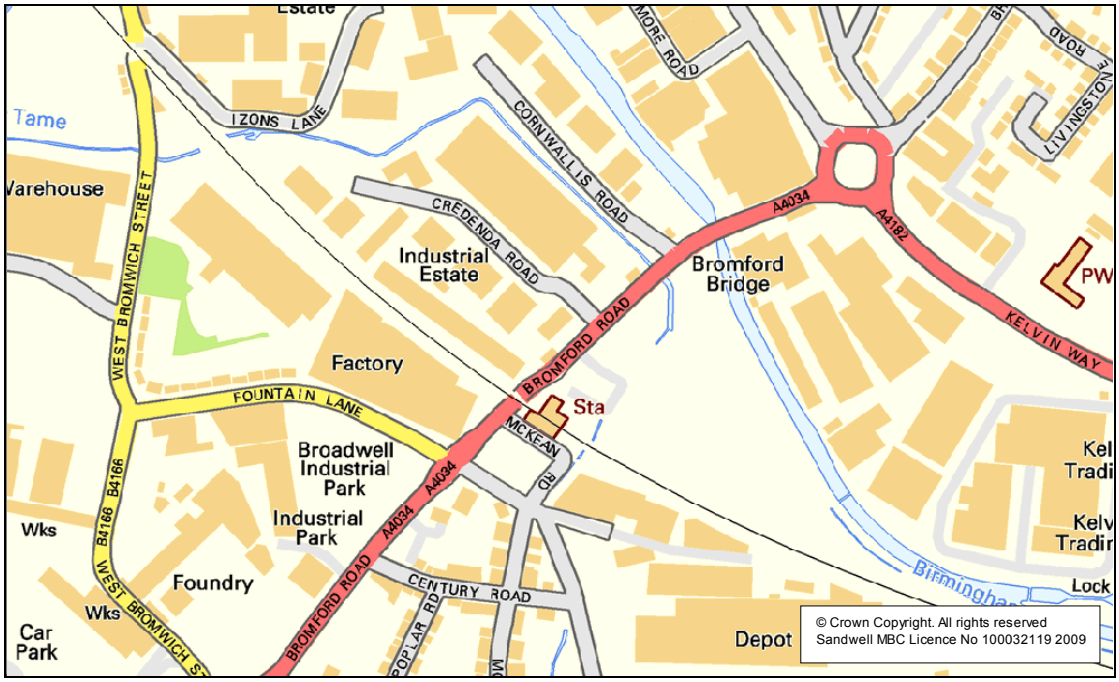
Figure 8.8 – High Street / Powke Lane



Bromford Road, West Bromwich

8.31. Bromford Road is a main route between the towns of Oldbury and West Bromwich. There are a number of residential properties along this road, within the area of exceedance.

Figure 8.9 – Bromford Road



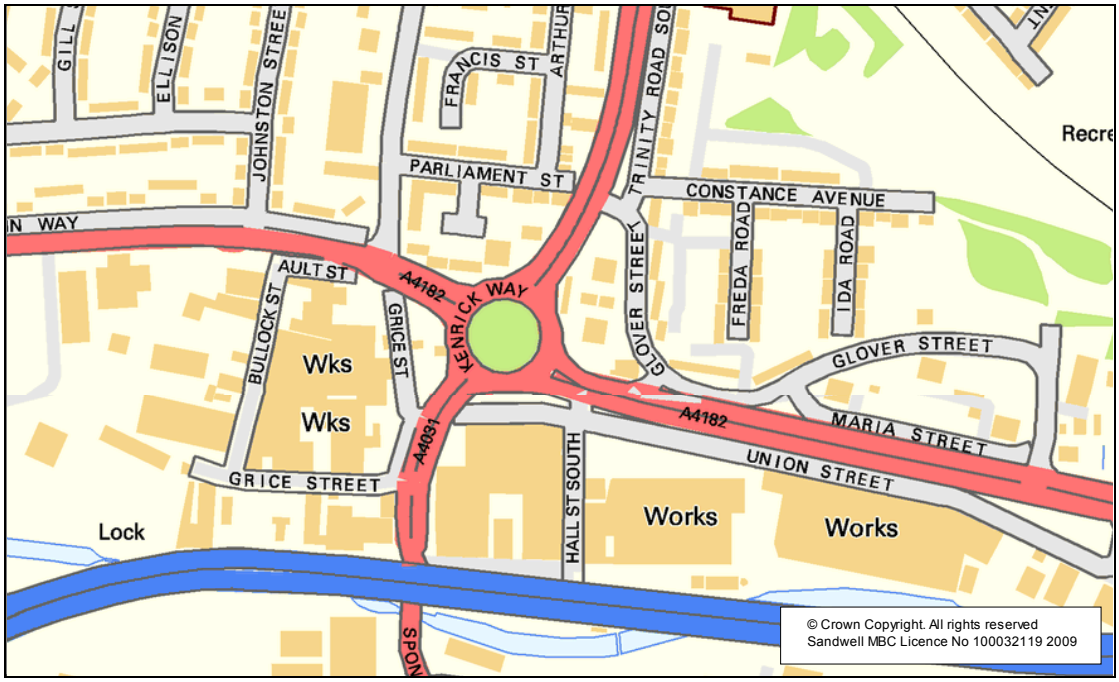
8.32. Bus stop facilities have already been upgraded to Showcase standard as part of Route 404. Red Route treatment is also proposed along this stretch of road and construction is anticipated to take place between April 2010 and October 2010. Initial appraisal of the route identified the following improvements:

- Bromford Road roundabout to be reviewed and options to reduce congestion to be considered
- Fountain Lane Signals are to be reviewed and upgraded as required
- Pelican crossings to be upgraded to Puffin crossings

Trinity Way / Kenrick Way, West Bromwich

8.33. The junction is a busy roundabout on the outskirts of West Bromwich with residential properties to the north of the junction and commercial / industrial to the south. It has been identified for Red Route treatment; construction works are anticipated to commence between April 2010 and October 2010. Initial appraisal of the route has identified potential for improvement around the Trinity Way roundabout. This roundabout will be reviewed and options to reduce congestion will be considered as part of the red route treatment.

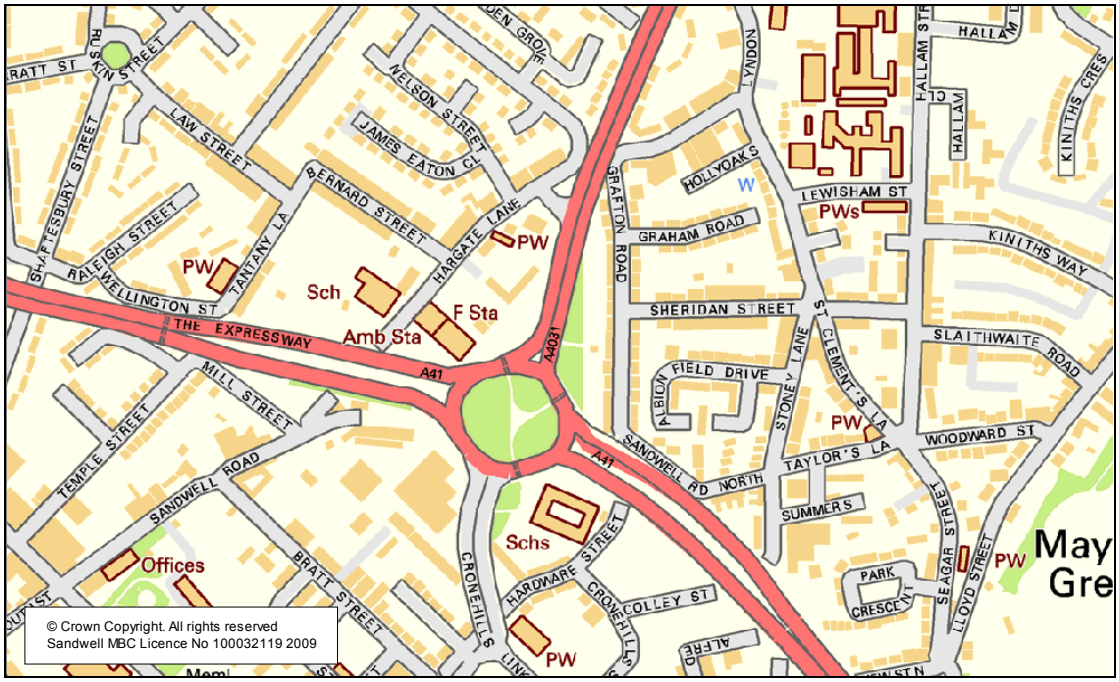
Figure 8.10 – Trinity Way / Kenrick Way



All Saints Way / Expressway, West Bromwich

8.34. This is the main arterial route on the A41 leading to junction 1 of the M5 and into Birmingham. Improvements proposed for this junction will provide a vehicle underpass along the line of the A41 beneath the existing roundabout. The scheme is to infill pedestrian subways, which will be replaced with surface crossings. The junction will also have bus priority measures. Although this will reduce congestion it is not clear to what extent air quality will improve due to increased vehicle speeds. Air quality will continue to be monitored at this junction in order to evaluate any air quality impacts from the proposed road improvements. This scheme is an LTP firm priority and a regional priority. Preliminary work has commenced and the bypass is expected to be completed in 2010.

Figure 8.11 – All Saints Way / Expressway



All Saints Way / Newton Road, West Bromwich

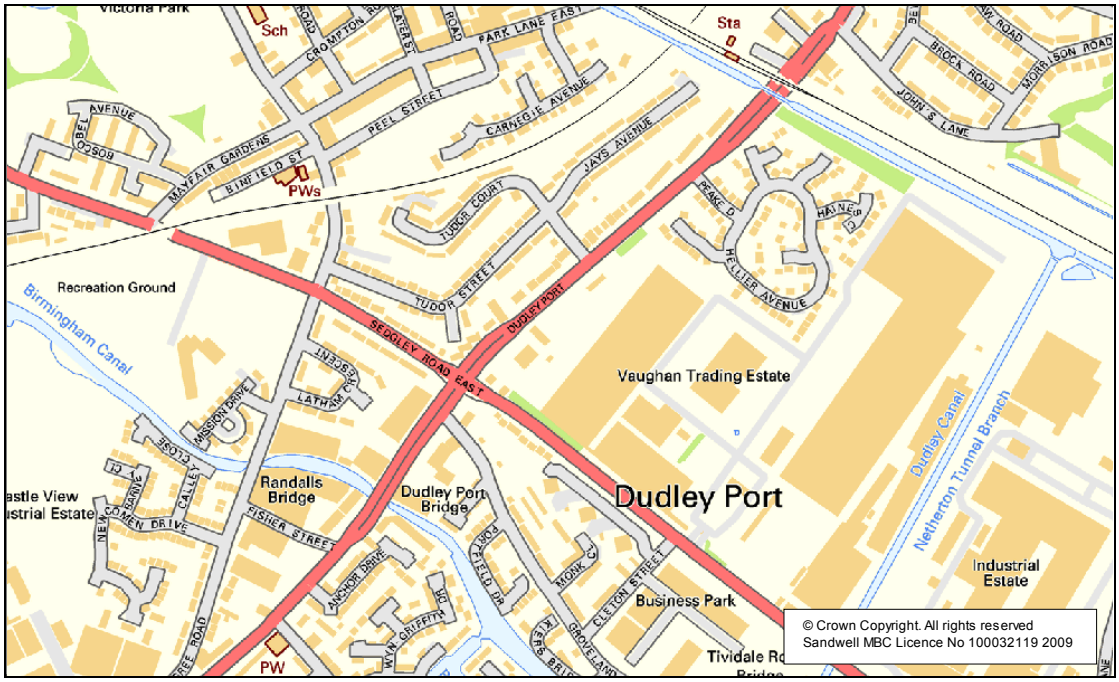
8.35. This traffic light controlled junction lies on the main route between West Bromwich and Great Barr. Residential properties lie to the north and west of this junction. Red route treatment is proposed along this stretch of road and it is expected that it will be completed in 2009. Monitoring will continue along this route to allow evaluation of any improvement.

Figure 8.12 – All Saints Way / Newton Road

Sedgley Road East / Dudley Port, Tipton

8.36. This is a traffic light controlled junction with residential properties mainly to the north of the junction. Red Route treatment is proposed along Dudley Port (A461) between Great Bridge and Burnt Tree Island and along A457 Sedgley Road East. Several of the junctions along both routes will be signalised with pedestrian facilities linked to platoon traffic that should reduce the stop start nature of the current junctions/pelican crossings. The signal operation at this junction will also be reviewed and upgraded as appropriate. Design work began in summer 2006, implementation is anticipated to commence between June 2009 and June 2010.

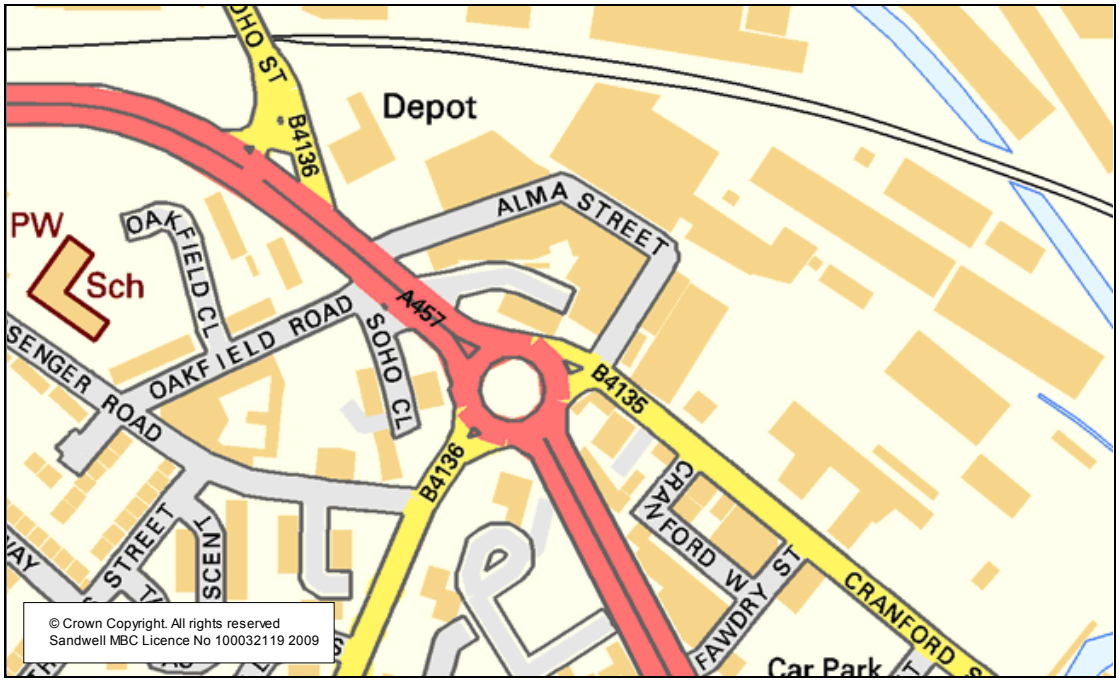
Figure 8.13 – Sedgley Road East / Dudley Port



Soho Way / Grove Lane / Cranford Street junction, Smethwick

8.37. This small four-arm roundabout is situated on the busy A457 in a mixed residential and industrial area of north Smethwick. Red Route treatment is proposed along the A457 and this junction will be investigated. Queuing traffic on the Cranford Street arm in peak periods is the main problem. Work is anticipated to take place between June 2009 and June 2010. It is thought that the Red Route treatment on this section of road will help to improve A & E access to the proposed hospital near this junction. A & E services here are set to replace those lost at Sandwell General. The hospital is likely to increase traffic flows in its vicinity but the impact has been carefully assessed in the Transport Assessment that has been prepared for the hospital. Public transport access to the hospital has been given specific consideration, in the Transport Assessment. For example bus stops are to be upgraded, bus timetable information and cycle maps are to be distributed in addition car sharing proposals are to be implemented, these measures will be effective in reducing the use of the private car and increasing the use of other more sustainable modes.

Figure 8.14 – Soho Way / Grove Lane / Cranford Street junction



9. ACTIONS TO IMPROVE AIR QUALITY ACROSS THE BOROUGH

9.1. Consideration is given in this section of the report to improving air quality across the borough as a whole. The proposals considered can be divided into six headings:

- Reducing vehicle emissions
- Improving public transport to reduce traffic volumes
- Improving the road network to reduce congestion
- Using area planning methods
- Changing levels of travel demand / promotion of alternative modes of transport
- Reducing air pollution from industry, commerce and residential areas

Actions considered under each of these headings have been discussed below and specific actions are listed in Table 10-6.

Reducing Vehicle Emissions

9.2. The actions listed below are aimed at reducing emissions from vehicles, both the councils own vehicle fleet and vehicles generally across the borough.

9.3. Improve council fleet - The council will aim to reduce emissions from the council fleet by purchasing Euro 4 cars where possible. Currently at least 5% of the council fleet are to Euro 4 standards. The council have a general policy that biodiesel up to a 5% blend can be used (this is the maximum a lot of manufacturers will allow). Greater fuel efficiency among the drivers will be encouraged through regular user group meetings and monthly fuel reports. The council have also experimented with the use of LPG / Petrol cars, though mixed results have meant that the procurement of these vehicles is currently suspended. The council are currently only buying the most efficient diesel vehicles available i.e. Euro IV engine as a minimum and Euro V wherever possible. A study was carried out for Sandwell's Ground Care Unit in 2006. This study looked into a number of possible means of greening the Ground Care Units fleet. These included the downsizing of vehicles, offering drivers safe and fuel efficient driver training, the use of telematics in vehicles, biodiesel trials and the use of electric vans. The downsizing of vehicles included replacing 4.5 tonne vehicles with 3.5 tonne ones although as most of these large vehicles are on a 7 year lease this process will take a number of years, additionally a number of the 3.5 tonne vehicles are being replaced by 2 tonne ones, though some 3.5 tonne vehicles will need to be retained for operational reasons. Additionally there has been some natural loss of vehicles due to the restructure of the section. Telematic systems have been installed in four road sweepers and these systems are still used in these vehicles today, there are savings to be made using these systems via route planning other valuable information can be gained using these systems such as statistics on fleet carbon emissions and assessments regarding whether or not the drivers of these vehicles are deemed good or bad in terms of their driving style which is judged on factors such as whether or not they are speeding. The biodiesel 5% blend is used in the ground care fleet as across the rest of the council fleet. Other areas where some work has taken place but has not been fully adopted include the following; the possibility of looking into a system of pool vehicles, providing safe and fuel efficient driving training and the investigation of the use of electric vans. Work on these projects will be revisited though to see if the existing issues and obstacles can be overcome.

9.4. Eco Driving – driving more efficiently (or eco-driving) can reduce emissions and fuel consumption by up to 25%. Sandwell MBC will develop a promotional strategy to encourage drivers to drive economically. Part of this strategy will be to provide eco-driving training to drivers of the council fleet.

9.5. Stop Idling – Travelwise have provided the following information on the benefits of stopping idling engines: an idling engine produces 80% more pollution than when a vehicle is in motion, more fuel is used sitting waiting in a queue with the engine idling for just 45 seconds than if switching off and restarting 45 seconds later. Travelwise are a UK based association working to promote sustainable travel. Sandwell MBC will develop a strategy to encourage drivers not to allow their engines to idle.

9.6. Vehicle Emissions Testing - Regulations enabling English local authorities with air quality management areas to conduct roadside vehicle emissions tests came into force in 2002. Participating local authorities can issue fixed penalties (£60) to drivers whose vehicles are found exceeding current emissions limits. Alternatively voluntary vehicle emission testing programmes can be carried out to identify vehicles that do not meet the required standard and also provide publicity for the wider clean air action plan. Voluntary emissions testing is more likely to result in positive public relations. The effectiveness of such measures will depend on the amount of publicity associated with the measure given the relatively small number of vehicles that can be tested in such a programme. The council will establish a programme of vehicle emission testing and an associated promotional campaign.

9.7. During the action plan's consultation phase it was suggested that the Council consider a low emission zone (LEZ) for Sandwell however this has limited applicability in the borough, as there is no clear area to focus on. Concentrating the LEZ on hotspot areas could be considered but this may have limited applicability, as results may be limited when the costs involved are taken into consideration. As an alternative to a formal LEZ various incentive schemes could be put in place. For example a free emissions test combined with discounts at local garages for work to achieve compliance. Car clubs could be considered in hotspot areas where relatively new vehicles (less than 2 years old) are parked up for people to use. Parking incentives could be introduced in employer's car parks where possible, where the closest spaces are reserved for car sharers and those with minimum Euro standards.

9.8. During the action plan's consultation phase it was suggested that the Road Haulage Association were set to allow larger vehicles onto the UK's road network, however it has been confirmed that the Road Haulage Association does not support the introduction of larger vehicles. The Department for Transport are set to carry out an objective trial on the introduction of larger vehicles. The Road Haulage Association supports this trial but depending on the results, the Association will only support the use of such vehicles on specific roads at specific times for specific jobs. This should help to limit any potential impact of these vehicles should they be introduced.

Improving Public Transport to Reduce Congestion

9.9. Actions in this section aim to reduce the overall emissions by encouraging more people onto public transport and hence reducing the amount of traffic on the roads within the borough. Traffic growth on much of the primary route network in the West Midlands has slowed to less than 1% per annum due to the limiting factor of congestion but traffic growth is still predicted to rise. However, demand for person movement across the West Midlands is predicted to increase by 27% from 2000 to 2031. Although NO_2 emissions from transport are reducing due to improved vehicle technology, a continuing growth could effectively negate these air quality improvements.

9.10. Major bus operators are reducing the environmental impact of their vehicles. National Express West Midlands (NEWM) is major operator of buses across the West Midlands. Around 68% of buses with the West Midlands operate on corridors with intervals of ten minutes or less between each vehicle. Almost 90% of the population are within 250m of a bus stop; these standards are set by Centro and are applicable to Sandwell. NEWM strongly markets travel cards (with discounted fares) through Travelwise plans. NEWM is attempting to improve bus network connections in order to encourage modal shift away from the private car.

Figures provided by NEWM show that emissions from bus operations have decreased across the period 2002 to 2006 despite the number of km travelled increasing by approximately 5%. All new buses purchased by NEWM are to Euro 4 standard. In addition they are adding a substance called 'Ad Blue' to engines to reduce NO_x emissions. Ad Blue is a solution of urea used in selective catalytic reduction to alter NO_x gases in emissions changing them to water and nitrogen. NEWM vehicle maintained programme is certified to ISO 9001. Vehicles are tested frequently to ensure the engine is working efficiently and that there is no breakdown during the combustion process. All vehicles are tested every 28 days and this includes an emissions test. The National Express Group is one of ten companies involved in the initiative called 'We're in this together'. This is a carbon reduction campaign fronted by the government for large companies to work together to reduce their carbon footprint. Efforts to reduce carbon emissions will also often have the additional effect of reducing NO_x emissions.

Centro are also working with bus operators for better more fuel-efficient vehicles standards such as Euro IV compliant buses minimum for subsidised bus services. All new vehicles and engine types must comply with Euro V standards from 2008. Existing and future showcase routes are to have low emission buses with a minimum Euro IV standard.

As identified in the Local Transport Plan (LTP) Centro aims to achieve improved air quality through better fuel efficiencies road schemes and technologies by:

- Demand management
- Efficient Vehicles (red routes)
- Quality bus stations and interchanges
- Alternative fuels (including bio-diesel and gas powered buses)

9.11. The Road Traffic Act 1998 requires Sandwell MBC as the local highways authority, to assess traffic levels and make proposals to reduce levels or the rate of growth of traffic and publish these in a report. The latest West Midlands Local Transport Plan incorporates options for achieving this target. They include:

- Showcase and Super Showcase route extension and improvements
- Improvements of branding to increase attractiveness of public transport
- Improving access to information regarding transport options
- Encourage travel plans for employers, schools & hospitals
- Extensions to Midland Metro including the Phase 1 Extension Wednesbury to Brierley Hill due to be open in 2011/12

9.12. There are a number of planned extensions to the existing Metro Line, which runs between Wolverhampton and Birmingham serving Wolverhampton, Bilston, Wednesbury and West Bromwich. Any extension of the Metro has the potential to improve air quality in Sandwell, even if the route does not pass directly through Sandwell, as it may still reduce the number of vehicles on Sandwell's roads.
The first of these is between Birmingham Snow Hill and Five Ways via Corporation Street, New Street Station and Broad Street.
The second will be between Wednesbury and Brierley Hill via Dudley Town Centre and Merry Hill.
Four other routes are being developed, these are:

- Birmingham City Centre to the Airport
- Birmingham City Centre to Great Barr (long term target 2015 – 2020)
- Five Ways to Quinton
- Wolverhampton to Wednesbury via Walsall.

Some of these routes will benefit Sandwell more than others, though the overall expansion of the network will make it possible to make more journeys using the Metro, thereby reducing the number of vehicles on the road. The Metro offers high quality public transport service that offers a step change from other modes currently available in reliability and attractiveness.

9.13. There are several park and ride sites across Sandwell located at Metro, bus and rail stations. These sites allow people to use public transport for part of their journey, which would probably normally be made by car alone. The site at the Hawthorns Metro / Rail Station has approximately 190 spaces. The site at the Wednesbury Parkway Metro station / bus interchange has 161 spaces. The Black Lake Metro station has approximately 81 spaces. The Tipton rail site has 55 spaces and at Sandwell & Dudley there are 204 spaces.

Centro plan to promote greater use of Park and Ride (rail and Metro) facilities by creating additional car parking spaces and cycle racks at park and ride sites. As well as Metro route extensions there are also planned rail extensions.

9.14. These measures should lead to an improvement in air quality by encouraging the use of public transport and reducing private vehicle use. In addition improvements are being made in public transport safety; Sandwell's community wardens now have access to free public transport while in uniform. These wardens provide a high visibility presence on the buses in order to prevent anti social behaviour. Though their main function is to provide a visual deterrent they have been involved in taking the names and addresses of those involved in anti social behaviour and passing them to the police, they have also aided staff with removing hostile / antisocial people from buses. The wardens work across the borough from bases in Langley and Oldbury. There are 3 senior wardens and 18 general wardens in Sandwell. In addition CCTV is now installed on many buses and in park and ride centres.

9.15. The possibility of congestion charging coupled with public transport improvements has been examined in the West Midlands Transport Innovation Fund reports: 'Choices and Challenges for the Future', 'Towards an Integrated Transport Strategy' and 'Tackling Congestion and Delivering Growth' produced on behalf of the West Midlands Metropolitan Boroughs and Centro. These reports were issued in September 2006, July 2007 and March 2008, respectively. They set out to identify current and predicted future levels of traffic congestion within the West Midlands conurbation and to examine the comprehensive range of solutions for tackling the problem, options for road charging that need to be accompanied by substantial improvements to all forms of public transport were explored.

The WMAMMS recommended the introduction of congestion charging by 2011 and full electronic road pricing by 2021. However within 'Tackling Congestion and Delivering Growth' it has been stated that road user charging is not appropriate for the West Midlands at the current time. In favour of this approach minor junction capacity improvements (quick wins) and enhanced Travelwise activity (smarter choices) are being pursued.

9.16. Sandwell MBC's Travelwise campaign encourages sensible car use and promotion of alternative ways to travel that are more environmentally friendly, cheaper and healthier. The aim of this is to cut congestion and pollution. Travelwise initiatives include:

- Car Share Sandwell
- Encouragement of Cycling
- Encouragement of Walking
- Encouraging Working From Home
- Journey Planning (with the aim of minimising the use of the
- private car)
- Encouraging the use of Public Transport
- Sandwell Company Travelwise (encourages companies and their employees to consider more carefully their transport options)
- Sandwell MBC Travel Plan (information for Sandwell Council employees on reducing the impact of their travel)
- School and Young Persons Travel (schools within the borough have to devise a school travel plan)
- Travel Plans (Travel plans are required for retail and residential developments)

At the beginning of November 2008 there were 146 companies signed up to Travelwise, this comprises around 41,000 employees.
Forty-two signs promoting Car Share have been mounted alongside major roads in Sandwell. The Car Share Sandwell website is free to use and allows members of the public to state where they are travelling from and to and whether they are offering and / or seeking a lift, the website will then search for appropriate matches.
Cycling is encouraged via employer discount schemes offering help with purchasing bicycles.
The use of public transport is encouraged via employer discount schemes of 5% off the cost of purchasing of annual public transport travel cards.
In conjunction with the Highways Agency, Sandwell's Sustainable Transport Team are hoping to target business parks across Sandwell and implement Travelwise style initiatives for these parks as a whole.

Improving the Road Network to Reduce Congestion

9.17. The aim is to reduce the emission levels by improving the flow of traffic. There are a number of existing proposals at various stages of implementation including the Route 51 proposals, which will directly impact on the areas of exceedance in Great Barr, described in section 8.19. Other actions to reduce congestion contained in the Local Transport Plan include:

- Introduction of Red Routes to ease congestion
- Improvement of Urban Traffic Control Systems designed to reduce congestion
- Improvements to traffic flow on M6 by implementing a programme to reduce incident response times to 20 minutes (from 60 minutes)
- Implement an improved system of contingency planning for the motorway network to improve traffic flows
- Bus Showcase improvements
- Burnt Tree Island improvements
- Owen Street Level Crossing Relief Road
- Cradley Health by-pass
- A41 Expressway / A4031 All Saints Way Junction Improvements

These measures are supported in this action plan, as they are all expected to reduce emissions.

9.18. During the action plan's consultation phase it was recommended that the use of HGV corridors and weight limits was explored. Methods that have previously been employed in Sandwell to encourage HGV's to use appropriate routes have included, a signing scheme implemented approximately 10 years ago in Smethwick directing HGV's to industrial estates via the main highway network and certain selected access roads this scheme was considered partially successful but it was expensive and time consuming establishing the signage.
In 2005 the West Midlands authorities came together to produce a West Midlands Commercial Vehicle Drivers Road Atlas, this atlas highlighted various points of interest including industrial estates, shop service areas, weight restrictions and lay over points to help HGV drivers plan appropriate routes across the West Midlands.
In many residential streets across Sandwell requests are made by residents to prevent HGV's using the streets people live on. In these cases a Council approved assessment method is applied and if the result is positive, a measure such as an Environmental Weight limit of 7.5 tonnes is implemented. Success rates vary as there is little resource for enforcement; consequently such schemes rely on driver compliance.
Consultation with the Council's Traffic and Road Safety section resulted in the recommendation that extending HGV corridors would be unlikely to serve a useful purpose and that better use of the existing structure would be more beneficial.

If funding could be resourced, clear on street signage of existing route hierarchy would be useful, though extremely expensive to implement borough wide. In addition it was recommended that more traffic regulation orders (i.e. width, height, and length restrictions) be implemented and enforced. All such measures would need to be carefully considered in order to ensure any local benefit would not be negated by HGV's driving longer distances in the borough.

Using Area Planning Methods to reduce traffic volumes and exposure

9.19. In addition to the Local Transport Plan, planning decisions can also have a significant, longer term impact on travel behaviour and levels. The Unitary Development Plan (UDP) contains policies that can influence new development to ensure that it is designed and located to reduce the need to travel and provide more alternative means of travel. The Local Development Framework (LDF) will replace the existing UDP it will be phased in between 2009 and 2012. The Air Quality Team are working with the strategic planners to ensure that development of the new planning framework includes measures to minimise any adverse impact of new development on air quality.

9.20. The Environmental Protection Division will also continue to work with Development Control to consider air quality issues associated with new planning applications in accordance with the agreed planning protocol. Sandwell MBC aim to improve the way air quality is considered in the development control process by producing a Supplementary Planning Document on Air Quality to assist developers when submitting applications. This guidance is being developed in coordination with the Development Control Department.

Reducing air pollution from industry, commerce and residential areas

9.21. Industrial emissions to air are regulated by both the Environment Agency and the Local Authority depending on the size and nature of the process. Permits are issued for relevant processes, which set conditions that control operation and appropriate emission standards or pollution levels. In permitting processes the relevant authority is required to take account of the proximity of sites to any AQMA's. These industries are inspected once or twice a year and more frequently where problems arise. Breach of permit conditions can lead to prosecution. Consideration can also be given to reducing emission concentration limits where it can be demonstrated that the industrial source is a major contributor to poor air quality in an area.

9.22. There are a number of council projects aimed at improving energy efficiency, although these are designed to achieve CO_2 savings they will also have an impact on NO_x emissions. Some relevant initiatives are outlined in section 9.23 to section 9.27.

9.23. Sandwell Energy Efficiency Advice Centre was set up in 1993 and funded by Sandwell council to publicise energy efficiency and respond to enquiries. In 2003 it also started giving advice on renewable energy for households. Since 1996 some 27,500 households have received energy advice in this way. Research indicates that those who complete the surveys are likely to follow some of the advice given and go on to save between 0.4 and 1 tonne each. At the present rate of 2,700 households being advised each year, it leads to an estimated combined annual saving of up to 1,800 tonnes of CO_2.

9.24. Business in Sandwell Network of Environment Support (BISNES) Energy Advice Service is an energy advice service for local businesses that is being funded by Sandwell Council and Advantage West Midlands. The Sandwell Energy Advice Centre manages the service; it aims to serve 10 businesses each year. Based on information from the first 40 companies that have received an energy survey, the scheme has identified average carbon dioxide savings per business of 10% with no or low cost actions. As a result it's estimated that a combined saving of 4,600 tonnes of carbon dioxide has been achieved since 2005. This represents a 0.5% reduction in carbon dioxide and nitrous oxide emissions from Sandwell's industrial sector (a reduction rate of 1,150 tonnes of carbon dioxide being made by 10 companies each year).

9.25. Sandwell MBC's Warm Zone Scheme provides general energy efficiency advice and installation of energy efficient measures for householders within Sandwell. This will help to reduce the amount of energy required for residential properties, reducing the amount of local air quality and greenhouse gases that will need to be emitted in electricity production. This will also result in reduced fuel bills for householders.

9.26. Sandwell MBC Housing aim to improve homes within Sandwell to the decent homes standard, this includes improving the Standard Assessment Procedure (SAP) rating (this rating is the Governments recommended system for the energy rating of dwellings). Sandwell MBC Housing have responsibility for electricity supplies to power communal lighting (energy efficient bulbs are used), lifts, and close circuit television in their buildings. In one block of flats in West Bromwich photovoltaic cells (which can convert light into electricity) are used to power lighting. The Energy Savings Trust will audit Sandwell MBC Housing's vehicle fleet; this audit will include a consideration of their delivery to site arrangements, removal of waste from site and vehicle replacement strategy.

9.27. The Black Country Housing Association are developing a scheme with a long term aim of replacing all the roofs in Sandwell with photovoltaic cells in order to produce electricity. Though the scheme has the support of elected members no funding has been raised as yet. In order to proceed with this scheme at the level proposed the Black Country Housing Association will need to raise £500million.

Promotion of alternative modes of transport

9.28. The WMAMMS indicates that to achieve the required reductions in traffic growth a behavioural change will be needed to achieve the modal shift to alternative forms of transport. The West Midlands Local Transport Plan incorporates a number of options for achieving this target. They include:

- The enlargement of the Midland Metro network
- The bus showcase programme
- Promotion of walking
- Promotion of cycling
- Improving access to information regarding transport options
- Encourage travel plans for employers, schools & hospitals

9.29. Travel plans are a package of measures aimed at encouraging and enabling staff to travel in healthier and more environmentally friendly ways. Sandwell Council assists companies in setting up Travel Plans by providing the following support:

- Arranging sales of travel cards at discount rates through Centro and Travel West Midlands
- Promoting discounts from support companies
- Analysing travel options audit for the workplace
- Helping with travel survey design and analysis
- Producing postcode maps to identify the potential for car sharing and public transport use
- Advising on alternative working practices e.g. home working

9.30. Sandwell MBC actively encourage schools to introduce walking buses and walking incentive schemes. In 2005 before the introduction of government grants for walking buses there were around 10 active walking buses serving 12 schools. Sandwell MBC are undertaking an audit of the current situation with regard to walking buses in Sandwell. All the schools in Sandwell have been contacted to find out whether or not they have an active walking bus in place. A government grant for walking buses was introduced in 2006 in order to encourage schools to establish such schemes. Grants of £1,000 a year for 3 years were offered to state-funded primary schools in England who want to set up walking buses. Smaller grants of £500 a year were also made available as an alternative to support other school-based initiatives, to increase walking to and from school. There were a total of 15 schools in Sandwell who successfully bid for these grants, 12 gained the walking bus grant and 3 gained the walking incentive scheme grant. The walking bus grant may be used to help initiate a walking bus scheme at the school, for example it could be used to pay for a teaching assistant for 2 hours a week to organise and administer a walking bus, and to seek child and parent volunteers for the walking bus.

Walking incentive schemes that have been implemented in Sandwell include giving badges to children if they manage to walk to school once a week for a month, if they collect badges for all the months in a term they are provided with a certificate and if they collect all the certificates for that year they are given a t-shirt. Walk to School Week in May is promoted and supported by Sandwell MBC across the borough. Sandwell MBC have also introduced a grant scheme 'Little Acorns' where Sandwell schools can bid for £500 to promote sustainable transport in the school, 16 of Sandwell's schools successfully applied for this grant, different schools have focused on different areas most primary schools have focused on walking based initiatives but secondary schools have also looked into schemes to encourage cycling.

9.31. The Council is committed to improving walking access surfacing, lighting and alignment; they are all constantly being improved and there is a public rights of way improvement plan. Walking and cycling are always considered first in junction / road design. Design guides are provided for developers and general urban design principles try to include green spaces. Green spaces and planting can encourage people to walk more, though planting should always be carefully considered as in some places planting can increase the perceived threat from crime (where it may provide some screening). Planting can also provide some limited screening from particulate pollution, so trees and bushes between a pollutant source and residential properties can provide some limited benefit.
Sandwell MBC has a Parks and Green Spaces Improvement Strategy; this document was produced in 2006. The Strategic Aims of the strategy include providing an appropriate distribution of quality Parks and Green Spaces throughout the six towns of Sandwell by 2020. Other objectives included regenerating parks and establishing priorities for future improvement opportunities.

9.32. Sandwell MBC endorses the Cycling Strategy created by Cycling in Sandwell in 1999 and is committed to playing its part in delivering the 35 actions contained within the strategy. The actions include creating a safer cycle route network, promoting safety and health, offering training and improving facilities. The cycle route network in Sandwell is constantly being updated.

9.33. Bicycle storage facilities are being offered at a variety of council buildings that are visited by the public, those with stands are listed below:

Council Offices

- Oldbury Council House
- Smethwick Council House
- Development House, West Bromwich
- Training and Development Centre, Oldbury

Libraries

- Glebefields, Tipton
- Stone Cross, West Bromwich
- Hamstead, Great Barr
- Great Barr
- Great Bridge, Tipton
- Oldbury
- Rounds Green, Oldbury
- Langley, Oldbury
- Thimblemill, Smethwick
- Bleakhouse, Oldbury
- Brandhall, Oldbury

Leisure Centres

- Wednesbury Leisure Centre
- Tipton Sports Academy
- Tipton Baths
- Oldbury Leisure Centre
- Langley Baths
- Harry Mitchell Leisure Centre, Smethwick
- Hadley Stadium, Smethwick
- Smethwick Baths
- Haden Hill Leisure Centre, Cradley Heath

Community Centres

- Yewtree Community Centre
- Friar Park Millenium Centre, Wednesbury
- Charlemont Community Centre, West Bromwich
- St Paul's Community Centre, Tipton
- Gayton Community Centre, West Bromwich
- Tipton Muslim Centre
- Farley Park Community Centre, West Bromwich
- Kenrick Park Community Centre, West Bromwich
- Coneygre Community Centre, Tipton
- Lodge Road Community Centre, West Bromwich
- Windmill Community Centre, Smethwick
- Brick House Community Centre, Rowley Regis
- Cradley Heath Community Centre
- Hurst Road Community Centre, Smethwick
- Langley Lodge Community Centre, Oldbury

Neighbourhood Offices

- Wednesbury Neighbourhood Office
- Woods & Mesty Croft Neighbourhood Office, Wednesbury
- Stone Cross Neighbourhood Office, West Bromwich
- Ocker Hill Neighbourhood Office, Tipton
- Hateley Heath Neighbourhood Office, West Bromwich
- Great Bridge Neighbourhood Office
- Greets Green Neighbourhood Office, West Bromwich
- Tividale & Oakham Neighbourhood Office
- Smethwick Neighbourhood Office
- Lion Farm Neighbourhood Office, Oldbury
- Cape Hill Neighbourhood Office, Smethwick
- Cradley Heath Neighbourhood Office
- Blackheath Neighbourhood Office, Rowley Regis
- Bristnall Neighbourhood Office, Oldbury
- Bearwood Neighbourhood Office, Smethwick

9.34. Tax efficient bike purchases can be made through work. Bike purchase schemes can enable employers to loan bicycles to their staff over a period of typically 12 to 18 months. Businesses are able to reclaim VAT on bike purchases. Employees can cover the cost of bikes through monthly 'salary sacrifice', as the employee makes a sacrifice from their gross salary they can make savings in tax and national insurance contributions. Most employers are also able to pass on a further VAT saving which means that employees end up saving between 43% and 50% of the value of the bike, depending on their personal tax circumstances.

9.35. Sandwell MBC held a Bike Week Event in June 2008; this event was held at the Council's Lombard Street offices. People taking part in the event travelled a total of 478 miles. This event was held in order to try and encourage more people to use more sustainable means of transport to travel to and from work, on a more regular basis. The event is to be repeated and people who have limited experience of on road cycling were encouraged to contact the PCT in order to arrange cycle training.

9.36. Alternative forms of transport are publicised via a number of means for example the Help2Travel website provides live travel information for the Midlands area. Information is provided on sites of congestion, bus, Metro and train timetables, car parks, air travel, cycling and air quality monitoring. Real time bus information is provided at bus stations and at a number of bus stops across the Midlands.

9.37. The Sandwell car share scheme was set up in July 2005 by Sandwell MBC's transportation section, to make it as easy as possible for people to find a suitable match to share their journey. It is free to use and has been designed for both drivers and passengers seeking matches for one-off trips or regular journeys. If half of UK motorists received a lift one day a week, congestion and pollution would be reduced by 10% and traffic jams by 20%. Sandwell MBC will continue to promote car sharing among residents and businesses in the area.

9.38. There is potential to encourage car sharing schemes across the borough. Charities such as Carplus can provide information to support businesses and commuters in setting up their own car share schemes.

9.39. To raise public awareness and encourage a modal shift away from car use, the Council will continue to monitor air quality and publicly report on monitoring results. The suitability of air quality monitoring will be regularly reviewed and both historic and real time data is now available on Sandwell's website. This not only aims to raise awareness with the general public but also provide data for developers in order to inform the planning process. All previous air quality reports are presented on the website, further development of the website will take place as the action planning process evolves.

9.40. To raise awareness about the causes of poor air quality in school's presentations will be made and information will be distributed to pupils and teachers. Information regarding sustainable transport will be provided in the hope that pupils will relay the information to their parents / guardians with the aim of encouraging modal shift away from the car. In addition it is hoped that through educating Sandwell's younger generation about poor air quality the decisions they will make as adults will be influenced.

10. COST – BENEFIT ANALYSIS

10.1. As part of the action planning process the council have considered the cost and effectiveness of each action to ensure that a balanced and realistic approach is being pursued. The cost benefit appraisal has been carried out by considering the impact of each action on air quality, other impacts, both positive and negative, and the costs associated with the proposed action.

10.2. No attempt has been made to accurately quantify the impact of air pollution in Sandwell or the AQAP in terms of lives or life years lost or gained because this is already factored into the National Air Quality Objectives and the AQAP guidance states that 'local authorities should not attempt to redo these calculations'.

10.3. Due to the wide-ranging nature of the actions, it is difficult to accurately assess the likely improvements in air quality or the other impacts of the proposals. In many cases, the total costs of the proposal may also be difficult to measure.

10.4. Many of the actions contained in this plan form part of the latest (2006) West Midlands Local Transport Plan (LTP2). The Strategic Assessment also considers the wider impacts of the LTP2 proposals.

10.5. To provide a form of ranking of the actions in terms of the costs and benefits each action has been given a score based on its benefits to air quality, other impacts (both positive and negative) and cost of the proposal. Table 10-1, Table 10-2 and Table 10-3 show the criteria used for this scoring. The table of actions (Table 10-5 and Table 10-6) details the various impacts that have been considered in deriving these scores.

Table 10-1 - Air Quality Impact

Air Quality Impact	Score
Minor potential improvement in air quality	1
Low to medium potential improvement in air quality *(option could help achieve air quality objective)*	2
High potential improvement in air quality *(option could achieve air quality objective)*	3

Table 10-2 - Other Impacts

Other Impacts	Score
No positive or negative impact	0
Minor positive or negative impact	+/-1
Significant positive or negative impact	+/-2
Highly significant positive or negative impact	+/-3

Table 10-3 - Cost

Cost	Score
Low cost (under £50,000)	3
Medium cost (£50,000 - £1,000,000)	2
High cost (over £1,000,000)	1

Ranking the Options

10.6. The scoring detailed above was used to rank the proposed actions to reflect the relative cost-effectiveness of each measure in improving air quality, while taking into account the potential wider environmental, economic and social consequences. The final score was calculated by adding together each of the scores for air quality improvements, other impacts and cost, this is then ranked as high, medium or low priority depending on the final score. Table 10-4 presents the criteria used for this ranking. This relatively simple screening assessment is summarised for each of the actions in Table 10-5 and Table 10-6.

Table 10-4 - Ranking

Rank	Final Score
High priority	≥7
Medium priority	5-6
Low priority	≤4

Table 10-5 – Specific Actions

Cost / Benefit Key: AQ = air quality impacts; +ive = other positive impacts; -ive = other negative impacts.
Funding Key: A = additional funding required; S = funding secured; W = within existing funds.

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Oldbury Ringway/Birmingham Road (A457), Oldbury										
1	The council will consider the possible relocation of existing residential properties	Sandwell Metropolitan Borough Council (SMBC) Planning / Housing	▪ Would not improve air quality but would reduce the number of people exposed to concentrations above the objective ▪ Improve quality of housing ▪ Help to achieve UDP ▪ Resentment by residents	3*	3	1	1	Med 6	Long term	A
2	Red route treatment - Red Route treatment including the control of parking which would ease congestion (predicted 10% reduction) but there is no obvious place to displace residential parking	SMBC Transportation (LTP commitment)	▪ Minor air quality improvement ▪ Reduced congestion ▪ May inconvenience local residents	1	2	1	2	Low 4	2010	S
Dudley Road East/Roway Lane, Oldbury										
3	Red route improvements	SMBC Transportation (LTP commitment)	▪ Minor air quality improvement ▪ Reduced congestion ▪ May inconvenience local residents	1	2	1	2	Low 4	2010	S
M5 J1-J2, Oldbury & West Bromwich & M6 J7-J8/M5, Great Barr & Yew Tree										
4	Improvements to traffic flow on M6 through implementing a programme to reduce incident response times to 20 minutes (from 60 minutes) 24 hours a day, seven days a week	Highways Agency	▪ Reduced queuing times following incident providing a minor improvement in air quality ▪ Reduced congestion ▪ Improved safety	1	2	0	1	Low 4	Completed	S

* Although there would be no improvement in air quality, receptors would be removed from the area of exceedance hence this has been scored as 3.

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
M5 J1-J2, Oldbury & West Bromwich & M6 J7-J8/M5, Great Barr & Yew Tree										
5	An improved system of contingency planning for the motorway network has been implemented to improve traffic flows	Highways Agency and Local Authorities	▪ Predicted minor air quality improvement ▪ Reduced congestion ▪ Improved road safety	1	2	0	2	Med 5	Completed	S
6	Evaluate the suitability of active traffic management to improve traffic flows on the M6	Highways Agency	▪ Not known whether improvements in air quality would result, but minor improvements anticipated ▪ Reduced congestion ▪ Improve road safety	1	2	0	2	Med 5	Ongoing	A
7	A link is planned between the M54 and the M6 / M6 Toll this will relieve congestion on the M6 Junction 8 to 10A.	Highways Agency	▪ Minor improvement in air quality due to improved flow ▪ Reduced congestion ▪ May result in increased traffic flow due to improved capacity of these junctions	1	2	1	1	Low 3	2012	A
8	Ramp metering of junctions (M5 (J1 + 2) and M6 (J11 +16))	Highways Agency	▪ Minor improvements are anticipated (study carried out to date inconclusive) ▪ Reduced congestion ▪ Potential increased congestion on the slip road	1	2	1	2	Low 4	Trial completed at M5 J1 in 2008 further trials to be carried out	S

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Newton Road/Birmingham Road (A34), Great Barr										
9	Route 51 improvements – a programme of works to improve traffic flows and reduce queue lengths. The package includes red route treatment, road improvements, traffic control systems and improvements in the bus service to bring them up to the bus showcase route standards	SMBC Transportation (LTP commitment)	▪ Minor improvement in air quality due to improved flow ▪ Reduced congestion ▪ May result in increased traffic flow due to improved capacity of the junction	1	2	1	2	Low 4	Completed	S
10	Future Metro Phase 2 – Varsity North	Centro & SMBC Transportation	▪ Reduced congestion ▪ Fast and effective transport ▪ Increases personal travel choices ▪ Encourages local employment opportunities ▪ Costly to implement	2	2	0	1	Med 5	2015	A
Bearwood Road, Smethwick										
11	Bus Showcase	Centro & SMBC Transportation	▪ Reduce congestion by reducing rate of traffic growth ▪ Increases personal travel choices ▪ Encourages local employment opportunities	1	3	0	2	Med 6	2009	S
12	Photocatalytic Paving – currently suspended due to poor results in the trial carried out by Camden Council	SMBC Environmental Protection	▪ Supplier suggests that 60-70% reduction in pollution can be achieved. However the trial carried out by Camden Council found reductions in NO_x concentrations of 12% across a year which could not definitely be ascribed to the paving. ▪ Costly to implement	1	1	0	1	Low 3	Suspended pending further research	A

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Bearwood Road, Smethwick										
13	Future Metro Phase 2 - Birmingham West Route along Hagley Road West	Centro	▪ May improve visual amenity ▪ Reduced congestion ▪ Fast and effective transport ▪ Increases personal travel choices ▪ Encourages local employment opportunities ▪ Costly to implement	2	2	0	1	Med 5	Long term	S
14	Red route along Hagley Road	SMBC Transportation (LTP commitment)	▪ Minor air quality improvement ▪ Reduced congestion	1	2	0	2	Med 5	2009 / 10	S
Oldbury Road / Birmingham Road, Blackheath										
15	Blackheath Bypass was completed in 2006, the council will implement traffic management scheme to maximise the use of the bypass. As a result of the bypass and Traffic Management proposals a reduction of 40% may be achieved	SMBC Transportation	▪ Could have highly significant improvements on air quality and potentially bring NO_2 levels below objective ▪ Reduced congestion ▪ Improve safety in town centre ▪ Local amenity may improve in town centre but may be of detriment to amenity around bypass ▪ Does not encourage modal shift to public transport ▪ Local economy may be affected by loss of trade	3	3	1	1	Med 6	2009	A
16	Close roads in Blackheath town centre for “In Town Without my Car Day”	SMBC Transportation & Environmental Protection	▪ Promote use of new bypass ▪ Raise awareness of air quality issues ▪ May inconvenience local residents and businesses	1	2	1	3	Med 5	2009 / 10	A

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
High Street / Powke Lane, Blackheath										
17	Possible Red Route Treatment *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation	▪ Minor air quality improvement due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2010	A
Bromford Road (including the Kelvin Way / Brandon Way junction), West Bromwich										
18	Implement Red Route Treatment *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation	▪ Minor improvement on air quality due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2010	S
Trinity Way / Kenrick Way, West Bromwich										
19	Implement Red Route Treatment *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation (LTP commitment)	▪ Minor improvement on air quality due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2010	S
All Saints Way / Expressway, West Bromwich										
20	Junction improvements will provide a vehicle underpass along the line of the A41 beneath the existing roundabout. The junction will also have bus priority measures.	SMBC Transportation (LTP commitment)	▪ Reduced congestion ▪ Although there is reduced congestion higher traffic speeds may mean there is no improvement in air quality	1	2	0	1	Low 4	2010	A
All Saints Way / Newton Road, West Bromwich										
21	Red Route *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation (LTP commitment)	▪ Minor improvement on air quality due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2009	S

	Action / Option	Lead Role	Impacts	Cost / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Sedgley Road East / Dudley Port, Tipton										
22	Implement Red Route Treatment *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation (LTP commitment)	▪ Minor improvement on air quality due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2010	S
Soho Way/Grove Lane / Cranford Street, Smethwick										
23	Implement Red Route Treatment *(may include side road entry treatments, new/revised traffic signals and new/revised stopping, loading and parking restrictions)*	SMBC Transportation (LTP commitment)	▪ Minor improvement on air quality due to improved flow ▪ Reduced congestion	1	2	0	2	Med 5	2010	S

Table 10-6 - Borough Wide Actions

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Reducing Vehicle Emissions										
1	Improve the council fleet by – • Where possible any new SMBC vehicles purchased are to Euro 4 standard • Monthly fuel reports are produced and regular user group meetings held to try and improve efficiency	SMBC Transportation	▪ Reduce emissions from council fleet ▪ Reduction in greenhouse gases and particulates ▪ Lead by example	1	2	0	2	Med 5	Ongoing	S
2	Promote Eco-Driving – develop promotional strategy to encourage drivers to drive economically	SMBC Transportation & Environmental Protection	▪ Improves awareness of fuel efficiency & environmental impact of vehicles, ▪ Reduced greenhouse gases, ▪ More economical driving, ▪ Improve road safety	2	3	0	3	High 8	2009 / 10	W / A
3	Develop strategy to encourage drivers not to allow their engines to idle when parked	SMBC Transportation & Environmental Protection	▪ Reduced greenhouse gases, ▪ More economical driving ▪ Improve air quality	1	1	0	3	Med 5	2009 / 10	A
4	Establish a programme of vehicle emission testing	SMBC Environmental Protection	▪ Encourage vehicle maintenance ▪ Educate ▪ Reduces gross polluting vehicles ▪ Potentially reduce noise	1	1	0	3	Med 5	2009 / 10	A

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Improving Public Transport to Reduce Traffic Volumes										
5	Showcase route extension and improvements (not all route funding secured).	SMBC Transportation / CENTRO (LTP commitment)	▪ Improve local air quality ▪ Encourage less car use by providing attractive alternative ▪ Reduced congestion ▪ Increased social inclusion and accessibility ▪ Reduced greenhouse gas emissions ▪ Possible impact on parking availability on routes and perceived negative impact on local trade	2	3	0	1	Med 6	Ongoing	S/A
6	Improvements of branding to increase attractiveness of public transport	Travel West Midlands / CENTRO (LTP commitment)	▪ Encourage less car use by providing attractive alternative ▪ Reduced congestion ▪ Increased social inclusion and accessibility ▪ Reduced greenhouse gas emissions	1	2	0	2	Med 5	Ongoing	W
7	Improving access to information regarding transport options	SMBC Transportation / CENTRO (LTP commitment)	▪ Encourage less car use by providing attractive alternative ▪ Reduction in congestion ▪ Increased social inclusion and accessibility ▪ Reduction in greenhouse gases	2	2	0	2	Med 6	Ongoing	W
8	Promote Midland Metro extension (Wednesbury to Brierley Hill)	SMBC Transportation / CENTRO (LTP priority)	▪ Encourage less car use by providing attractive alternative ▪ Reduced congestion ▪ Increased social inclusion and accessibility ▪ Reduced greenhouse gas emissions	2	2	0	1	Med 5	2012	A
9	Future Metro Phase 2 – 5W's. Wednesbury to Walsall Varity North – A34 Birmingham to M6 Junction 7 Birmingham West – Birmingham to Quinton.	SMBC Transportation / CENTRO (LTP priority)	▪ Encourage less car use by providing attractive alternative ▪ Reduced congestion ▪ Increased social inclusion and accessibility ▪ Reduced greenhouse gas emissions	2	2	0	1	Med 5	Long term	A

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Improving Public Transport to Reduce Traffic Volumes										
10	Increased bus lane enforcement (increase number of cameras on buses for bus lane enforcement)	Travel West Midlands	▪ Encourage less car use by providing attractive alternative ▪ Reduced congestion	1	3	0	2	Med 6	Ongoing	S
Improving the Road Network to Reduce Congestion										
11	Introduction of Red Routes to ease congestion	SMBC Transportation (LTP commitment)	▪ Reduced congestion ▪ Minor improvement on air quality due to improved flow ▪ Improved road safety ▪ May inconvenience local residents	1	2	1	2	Low 4	Ongoing	S
12	Improvement of Urban Traffic Control Systems designed to reduce congestion	SMBC West Midlands Wide Initiative (LTP commitment)	▪ Improved road safety ▪ Reduced congestion ▪ Reduction in greenhouse gases and local air quality pollutants	2	2	0	1	Med 5	Ongoing	S
13	Burnt Tree Island improvements	SMBC / Dudley MBC Transportation (LTP priority)	▪ Reduced congestion ▪ Reduction in greenhouse gases and local air quality pollutants, although objective is not currently exceeded ▪ Improved road safety ▪ Improve bus journey times	1	2	0	1	Low 4	2009	A
14	Owen Street crossing	SMBC Transportation / Highways Direct (LTP priority)	▪ Reduced congestion ▪ Reduction in greenhouse gases and local air quality pollutants, although objective is not currently exceeded ▪ Improve safety	1	2	0	1	Low 4	2009	A

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Improving the Road Network to Reduce Congestion										
15	Cradley Heath Bypass	SMBC Highways Direct (LTP commitment)	▪ Reduced congestion ▪ Reduction in greenhouse gases and local air quality pollutants, although objective is not currently exceeded ▪ Improved road safety ▪ Local amenity may improve in town centre but may be detriment to amenity around bypass. ▪ Does not encourage modal shift to public transport	2	3	1	1	Med 5	Completed	S
Using Area Planning Methods to Reduce Traffic Volumes and Exposure										
16	Ensure AQ considerations are included in the new Local Development Framework Ensure policies seek to reduce the need to travel and promote the use of modes other than the car	SMBC Planning & Environmental Protection	▪ Improve air quality ▪ Reduce car use ▪ Reduce exposure to poor air quality ▪ Possible general environmental improvements ▪ Potential social and economic impacts ▪ Perceived reduction in development opportunities ▪ May increase cost of development	3	2	1	3	High 7	Ongoing	W

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Using Area Planning Methods to Reduce Traffic Volumes and Exposure										
17	Section 106 – Investigate the practicability of S106 agreements being used to secure monitoring funding and balancing measures in applications where AQ is an issue (section 106 agreements are to be replaced in the future with two new routes which together are designed to have the same effect as section 106 does now, the provisions retain the existing negotiated route while also providing for a set contribution payable by developers).	SMBC Planning & Environmental Protection	▪ To mitigate the effects of development on air quality ▪ To secure funding to monitor impact of developments ▪ May increase cost of development	2	2	1	3	Med 6	Ongoing	W
18	AQ guidance Provide guidance in relation to air quality for developers to follow when submitting planning applications	SMBC Environmental Protection & Planning	▪ To adopt consistent approach to AQ assessments for developers	2	2	0	3	High 7	Ongoing	W
19	Support use (reopening) of Stourbridge – Walsall line for rail freight	SMBC Transportation / Planning	▪ Reduction in greenhouse gases and local air quality pollutants ▪ Reduced congestion ▪ Reduce freight on roads	2	2	1	1	Low 4	Ongoing	A
20	Congestion charging – the council will continue to monitor the implications and effectiveness of any congestion charging proposals	SMBC Transportation	▪ Improve air quality ▪ Raise money for transport/public transport improvements ▪ Reduced congestion ▪ Reduce noise ▪ Cost to motorist ▪ Potential equity issues ▪ Unpopular with some motorists	2	2	3	1	Low 2	2014 subject to further research	A

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Using Area Planning Methods to Reduce Traffic Volumes and Exposure										
21	Development Control – continue to consider air quality issues for new planning applications in line with the agreed planning protocol	SMBC Environmental Protection & Planning	▪ Improve air quality ▪ Reduce car use ▪ Reduce exposure to poor air quality ▪ Perceived reduction in development opportunities ▪ May increase cost of development	2	3	1	3	High 7	Ongoing	W
Reducing Air Pollution from Industry, Commerce and Residential Areas										
22	Continuation of Sandwell Energy Efficiency Advice Centre	SMBC Agenda 21	▪ Improve air quality (local pollutants and greenhouse gases) ▪ Reduce energy consumption	1	2	0	3	Med 6	Ongoing	W
23	Improvement of the energy rating of dwellings. The Warm Zone Scheme provides general energy efficiency advice and installation of energy efficiency measures.	SMBC Housing	▪ Reduction in the amount of energy used in residential properties ▪ Reduced fuel bills for householders ▪ Reduction in the amount of greenhouse gases and local air quality pollutants emitted associated with the production of electricity	1	3	0	3	High 7	Ongoing	S
Changing Levels of Travel Demand / Promotion of Alternative Modes of Transport										
24	Promotion of Walking	SMBC Transportation (LTP commitment)	▪ Improved fitness, improved overall town, village and local environment ▪ Reduced congestion ▪ Improved choice ▪ Increased social inclusion and accessibility ▪ Perceived danger from traffic	2	3	1	3	High 7	Ongoing	S

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Changing Levels of Travel Demand / Promotion of Alternative Modes of Transport										
25	Promotion of Cycling	SMBC Transportation (LTP commitment)	▪ Improved fitness ▪ Improved overall town, village and local environment ▪ Reduction in congestion ▪ Improved choice ▪ Increased social inclusion and accessibility ▪ Perceived danger from traffic	2	3	1	3	High 7	Ongoing	S
26	Encourage travel plans for employers, schools & hospitals	SMBC Transportation / Travel West Midlands / CENTRO (LTP commitment)	▪ Reduces parking and congestion, improve wider environment (e.g. visual amenity and noise) ▪ Fosters improved relations between company, employees and local residents ▪ Reduction in greenhouse gases and local air quality pollutants ▪ Improved choice	3	3	0	3	High 9	Ongoing	A
27	Air Quality Monitoring • Reporting of results and publicity • Produce annual reports and publish results • Regularly review suitability of monitoring	SMBC Environmental Protection	▪ Raises public awareness ▪ Informs planning process	0	3	0	3	Med 6	Ongoing	W

	Action / Option	Lead Role	Impacts	Costs / Benefit				Rank	Timescale	Funding
				AQ	+ive	-ive	Cost			
Changing Levels of Travel Demand / Promotion of Alternative Modes of Transport										
28	Air Quality information on website • Publish AQ action plan on web and develop other service information	SMBC Environmental Protection	▪ Raises public awareness ▪ Easy access to relevant documentation and data	1	3	0	3	High 7	Ongoing	A
29	Promote car sharing among residents and businesses in the area	SMBC Transportation	▪ Improve air quality ▪ Reduced congestion ▪ Financial savings	3	3	0	3	High 9	Ongoing	A
30	Provide air quality information and promote sustainable transport in schools	SMBC Environmental Protection	▪ Raises public awareness ▪ Influences behavioural change ▪ Improves air quality ▪ Improved fitness (for those walking and cycling)	2	3	0	3	High 8	Ongoing	A

11. MONITORING AND EVALUATION

11.1. To evaluate the effectiveness of the action plan the Council will continue to monitor NO_2 in each of the AQMA's with the use of diffusion tubes and continuous analysers. This will show whether the expected and required reduction in NO_2 concentrations is occurring and whether the objective level is likely to be achieved.

11.2. Each action identified by this plan will be reviewed during the regular review and assessment process to evaluate its success and to ensure that actions are being progressed.

12. PUBLIC CONSULTATION

12.1. The action planning process has involved direct consultation with all of the key stakeholders. The wider stakeholders were consulted via a variety of means. Presentations were made at each of the Council's six Town Team meetings, which are attended by Councillors, Council Officers, Members of the Public and the Press. Each presentation was tailored with aspects of the Action Plan most relevant to the town in question being highlighted and was followed by a question and answer session; Action Plan summary reports and leaflets were distributed at these meetings.

12.2. The Action Plan summary report and leaflets were also made available through public buildings, local libraries and through Sandwell MBC's website. A display stand was established at West Bromwich library for several weeks where summary reports and leaflets were distributed to members of the public. A manned display stand was also established at the Adult and Community Services Annual Staff Conference, where summary reports and leaflets were distributed.

12.3. A scrolling power point presentation was established at the Council House in Oldbury; this presentation highlighted the key issues and presented contact details. The presentation was in the main foyer of the building which has a high foot fall, due to members of the public making use of Council services.

12.4. Action plan information and a questionnaire were sent to members of the Cycling in Sandwell Group to illicit their opinions on the plan and the experiences of cyclists in Sandwell. Responses received will be collated and analysed in the Action Progress Report.

12.5. An article requesting comments on the draft Action Plan was published on the Sandwell Webwell page this site (http://www.webwell.org.uk/) provides information on health and well being related topics in Sandwell. An article was also included in the Sandwell Travelwise newsletter, which provides information on sustainable travel for Sandwell businesses, residents and communities. Press articles were published in the Express & Star, the Great Barr Observer and the Sandwell Herald.

12.6. A large response was received to the consultation; all the comments queries and additional information received were used to improve and inform Sandwell's final Action Plan.

13. SUMMARY

13.1. Actions to improve air quality across Sandwell have been identified and ranked according to their air quality, wider environmental, economic, and social impacts. This will provide Sandwell MBC with the information required to determine where efforts to improve air quality in Sandwell should be focused.

13.2. Once the consultation period has been completed it will be possible to begin the implementation of the most beneficial actions identified. Monitoring will continue to assess the efficacy of action planning once in place.

13.3. Actions will be subject to continual review and once a significant period of monitoring has been undertaken Sandwell MBC will be even better placed to assess the efficacy of the actions that will be implemented across the borough.

13.4. Any comments or suggestions concerning the contents of this plan should be referred to:

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APPENDICES

Appendix 1 - National Air Quality Objectives

Appendix 2 - Source Apportionment and Reductions Required

Appendix 3 - Derivation of the eight Source Apportionment Areas

Appendix 4 - Key Amendments made since the publication of the Draft Air Quality Action Plan

Appendix 1 National Air Quality Objectives

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg/m^3	Running annual mean	31 December 2003
	5 μg/m^3	Annual mean	31 December 2010
1,3 butadiene	2.25 μg/m^3	Running annual mean	31 December 2003
Carbon monoxide	10 mg/m^3	Maximum daily running 8 hour mean	31 December 2003
Lead	0.5 μg/m^3	Annual mean	31 December 2004
	0.25 μg/m^3	Annual mean	31 December 2008
Nitrogen dioxide	200 μg/m^3 (not to be exceeded more than 18 times a year)	1 hour mean	31 December 2005
	40 μg/m^3	Annual mean	31 December 2005
Particles (PM_{10})	50 μg/m^3 (not to be exceeded more than 35 times a year)	24 hour mean	31 December 2004
	40 μg/m^3	Annual mean	31 December 2004
Sulphur dioxide	266 μg/m^3 (not to be exceeded more than 35 times a year)	15 minute	31 December 2005
	350 μg/m^3 (not to be exceeded more than 24 times a year)	1 hour mean	31 December 2004
	125 μg/m^3 (not to be exceeded more than 3 times a year)	24 hour mean	31 December 2004

Appendix 2 Source Apportionment and Reductions Required

Source apportionment work was carried out using the existing West Midlands emissions database for 2005. This emissions database is currently under review and once all input data has been updated it will be possible to reissue our source apportionment work with increased confidence in its accuracy.
Initially all roads and all vehicle types within an area are selected to elicit the total amount of NO_x emitted by road traffic in that area.
Then separate vehicle types are selected one by one in order to estimate the amount of NO_x generated by each vehicle type. The amount generated by each vehicle type in an area is divided by the total amount for the area in order to give the proportion generated by each vehicle type.
No estimate of industrial and domestic emissions has been made as traffic is considered to be the main pollutant source of concern.

NO_x reductions required were calculated using the highest monitored NO_2 concentrations. For each exceedance area the diffusion tube recording the highest annual mean concentration in 2005 was identified. These highest monitored NO_2 concentrations were entered into the NO_x from NO_2 calculator spreadsheet produced by Bureau Veritas which is available on the Air Quality Archive website at the following address http://www.airquality.co.uk /archive/laqm/tools/nox_from_no2_calculatorv2.xls.
Background NO_x concentrations were also entered (these were drawn from the air quality archive http://www.airquality.co.uk/archive/laqm/tools/222_2004.csv). The calculator then generated a total annual mean NO_x concentration and an annual mean road increment of NO_x.
It was calculated that a NO_x concentration of 106$\mu g/m^3$ is approximately equivalent to the NO_2 annual mean objective concentration of 40$\mu g/m^3$.
This allowed a target concentration for the roadside NO_x increment to be calculated by subtracting the background NO_x concentration from 106$\mu g/m^3$. This target roadside NO_x increment was then divided by the roadside increment generated by the calculator in order to discern the roadside NO_x reduction required.

Appendix 3 Derivation of the eight Source Apportionment Areas

Six original AQMA's	Thirteen exceedance areas identified in the 2003 Updating and Screening Assessment	Two additional areas identified in the 2006 Updating and Screening Assessment	Current total of fifteen areas of exceedance	Eight grouped areas used to carry out source apportionment
The area to the north of J8 on the M6	M6 J7 – J8		M6 J7 - 8	Great Barr and Yew Tree
The area to the north west of J7 on the M6				
The area to the south of J8 on the M6				
The area to the south east of J7 on the M6				
The area to the south west of J7 on the M6				
	Newton Road / A34 junction		Newton Road / A34 junction	
	Oldbury Ringway / Birmingham Road (A457)		Oldbury Ringway / Birmingham Road (A457)	Oldbury
The area surrounding the point the M5 crosses the Birmingham Road	M5 J1 – J2		M5 J1 - 2	
	Dudley Road East / Roway Lane		Dudley Road East / Roway Lane	
	Trinity Way / Kenrick Way		Trinity Way / Kenrick Way	
	Bromford Road		Bromford Road	
		Bromford Lane / Brandon Way junction	Bromford Lane / Brandon Way junction	
	Oldbury Road / Birmingham Road		Oldbury Road / Birmingham Road	Blackheath
	High Street / Powke Lane		High Street / Powke Lane	
	Bearwood Road		Bearwood Road	Bearwood Road
	All Saints Way / Newton Road		All Saints Way / Newton Road	All Saints Way / Newton Road
	Sedgley Road East / Dudley Port junction, Tipton		Sedgley Road East / Dudley Port junction, Tipton	Sedgley Road East / Dudley Port junction, Tipton
	The Expressway / All Saints Way junction, West Bromwich		The Expressway / All Saints Way junction, West Bromwich	The Expressway / All Saints Way junction, West Bromwich
		The Soho Way / Grove Lane / Cranford Street junction, Smethwick	The Soho Way / Grove Lane / Cranford Street junction, Smethwick	The Soho Way / Grove Lane / Cranford Street junction, Smethwick

Appendix 4 Key Amendments made since the publication of the Draft Air Quality Action Plan

Paragraph	Alteration
4.2	Additional health impact information supplied by the Primary Care Trust
6.1	Updated key stakeholder information
7.4	Updated information received from the Chief Engineers and Planning Officers Group
7.7	Conclusions of the final West Midlands Transport Innovation Fund report
7.9	Additional information on the up to date position in relation to the West Midlands Area Multi Modal Study
7.10	Additional information supplied on Red Routes
7.14	Update on the Community Plan
8.3	Updated likely Red Route construction dates
8.10	Updated information relating to the M6 provided by the Highways Agency
8.11	Additional information provided by the Road Haulage Association in relation to use of the M6 Toll by freight services
8.12	Updated information on the M5 / M6 corridor from the Highways Agency
8.15	Additional information provided by the Road Haulage Association
8.16	Additional information provided by the Highways Agency
8.17	Additional information provided by the Highways Agency
8.19	Updated information on the Route 51 proposals provided by Sandwell's transportation division
8.24	Additional information regarding options for Bearwood Road supplied by Sandwell MBC's transportation division
8.26	Additional information on parking enforcement supplied by Sandwell MBC's transportation division
8.27	Additional information supplied on Camden Council's trial using titanium dioxide containing paving slabs
8.28	Additional information on work that has been carried out in Blackheath supplied by Sandwell MBC's transportation division
8.31	Additional information on the Red Route proposed along Bromford Road by Sandwell MBC's transport division
8.32	Additional information on the Red Route proposed along Trinity Way / Kenrick Way by Sandwell MBC's transport division
8.33	Additional information regarding the A41 underpass supplied by Sandwell MBC's transport division
8.35	Additional information regarding the Red Route treatment along Dudley Port (A461) and along Sedgley Road East (A457)
8.36	Additional information regarding the Red Route treatment along Sedgley Road (A457) provided by Sandwell MBC's transportation division
9.3	Additional information regarding Sandwell MBC's fleet provided by the Sandwell MBC fleet manager and ground care unit fleet manager

Paragraph	Alteration
9.5	Additional information supplied regarding the source of the stop idling information
9.7	Additional information considering the potential for a low emission zone
9.8	Response to a consultation query from the Road Haulage Association
9.10	Additional information regarding work being carried out by National Express West Midlands in order to reduce the environmental impact of their vehicles
9.12	Additional information supplied on the planned extensions to the Metro
9.13	Additional information supplied regarding the provision of park at ride facilities at Metro stations
9.14	Additional information on public transport safety has been provided by Sandwell MBC's transport division
9.15	Additional information regarding the potential for congestion charging in the West Midlands
9.16	Additional Travelwise information was provided by Sandwell MBC's sustainable transport team
9.18	Additional information regarding HGV corridors was provided by Sandwell MBC's transportation division
9.19	Additional information on the introduction of the new planning framework
9.27	Additional information provided on a Black Country Housing Association energy efficiency scheme
9.30	Additional information on Sandwell MBC schemes to encourage the use of more sustainable modes of transport to travel to school
9.31	Information on Sandwell MBC's commitment to encouraging people to walk and for developing green spaces.
9.32	Additional information on Sandwell MBC's cycling network
9.33	Information on the bicycle storage provision of Sandwell MBC
9.34	Information provided on employer schemes to provide tax efficient bike purchases
9.35	Information provided on the Bike Week event held in June 2008
9.36	Information supplied regarding the Help2Travel website
Table 10-5 Action 3 – Dudley Road East	Altered date for predicted red route treatment completion
Table 10-5 Action 8 – Ramp metering of junctions	Trial completion date entered
Table 10-5 Action 9 – Route 51 improvements	Now completed

Paragraph	Alteration
Table 10-5 Action 11 – Bearwood Road	Altered date for predicted red route treatment completion
Table 10-5 Action 12 – Photocatalytic Paving	Altered air quality impact value instead of 3 now 1. Was previously ranked as Medium now Low priority action. Date of completion now altered also.
Table 10-5 Action 15 – Blackheath Bypass	Altered predicted date of completion of traffic management work
Table 10-5 Action 16, 22 and 23	Altered timescales
Table 10-6 Action 2, 3 and 4	Altered timescales
Table 10-6 Action 20 – Congestion Charging	Pending research
12.1 to 12.6	Additional information on consultation