London Borough of Ealing

Air Quality Action Plan

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Executive Summary

Ealing Council declared its whole borough an Air Quality Management Area (AQMA) on 14th December 2000. This was required after a review and assessment of air quality within the borough predicted that the levels of two pollutants, PM_{10} (fine particles) and nitrogen dioxide were predicted to fail to meet nationally set objectives. Under section 84(2) of the Environment Act 1995, such a declaration required Ealing to undertake a further review and assessment of air quality (recognised as Stage 4) within the AQMA, to refine the outcomes of the earlier review and assessments, and to produce an action plan setting out measures they intend to take to meet these objectives.

This Action Plan contains proposals to improve air quality in Ealing with the aim of achieving the National Air Quality Objectives. It is inextricably linked to Ealing's Interim Local Implementation Plan and Unitary Development Plan and takes into account the Mayor's Air Quality Strategy and statutory guidance.

The policies and proposals within this Action Plan have been grouped into six sections.

- Traffic reduction
- Reducing the need to travel
- Promotion of cleaner technologies and alternative fuels
- Improving environmentally friendly forms of transport
- Non-traffic measures
- Awareness raising

The results of the Stage 4 report confirmed the findings of previous review and assessments in that parts of the borough will exceed the Air Quality Strategy objectives. The Council was therefore justified in its decision to declare the whole borough an Air Quality Management Area.

The modelling employed demonstrates that the main contribution to nitrogen dioxide concentrations within the borough is road traffic, whilst the majority of PM_{10} concentrations can be attributed to background sources, with road traffic making up between 15 and 40% of that total depending on location.

As road traffic is the main source of nitrogen dioxide and a major source of fine particle emissions within the borough it is natural that many of the measures relate to attempting to reduce emissions from this source. It should be noted however, that the roads within the borough that are of most concern in relation to high air pollution levels, namely the A40 Western Avenue and A406 North Circular roads, are the responsibility of Transport for London and therefore outside the direct control of the Council. The Council will work with Transport for London in reducing emissions from these roads.

The measures included within this Action Plan represent a comprehensive range of proposals designed to improve air quality in Ealing. 60 measures have been proposed. The major policy measure being the introduction of a Low Emission Zone for the borough, Others include:

- Roadside emission testing
- Development and adoption of Green Travel Plans
- Improving public transport speeds and reliability
- The introduction of new cycling infrastructure and the upgrading of existing facilities
- Improving pedestrian facilities and encouraging walking as a whole

The strategy is consistent with council's Corporate Plan, in that one of the Plan's goals is to make Ealing a better place to live, and, as part of this, aim to be a "green borough".

Introduction

The days of the "pea soupers" may be over but London still suffers from poor air quality. Thankfully, levels of visible air pollution are substantially lower today than in the 1950s when severe episodes of air pollution caused the deaths of substantial numbers of people and left many suffering severe ill health. Even so, levels today are high enough to be associated with premature mortality, chronic illness and discomfort for a range of sensitive groups. A Department of Health report estimated that up to 24,000 people may die prematurely every year as a result of air pollution. It is reasonable to assume that London accounts for a disproportionately high number of these deaths, due to its large population and its higher pollution concentrations. The weeklong period of high pollution in December 1991 for example, is thought to have caused 160 premature deaths in London.

Air quality is however, not just an issue of human health. Air pollution degrades both the natural and man-made environment, including, lakes, crops, wildlife and buildings. It is also damaging to the economy, causing lost work and reduced productivity through illness, and making London a less attractive place for business to invest.

There have been considerable improvements in ambient air quality since the 1950's. Extreme air pollution is now a thing of the past, but we do sometimes suffer unacceptably high levels due largely to the increasing volume of traffic experienced on our roads. This harms human health and the environment we live in. Certain groups within society are more susceptible than most. People with lung diseases or heart conditions, particularly if they are elderly, and those suffering from asthma, are more likely to be adversely affected by daily changes in pollution.

The Government recognises that everyone has the right to clean air and not to suffer from the air they breathe. To this end, the Government launched the Air Quality Strategy for England, Scotland, Wales and Northern Ireland in January 2000. This set objectives for seven main air pollutants for which local authorities have the responsibility of achieving. Under Local Air Quality Management (LAQM), local authorities have a duty to periodically review and assess the air quality in their areas. If this process indicates that the objectives are unlikely to be met, then local authorities are required to designate Air Quality Management Areas (AQMAs) and to draw up action plans in consultation with other bodies.

This Action Plan is the outcome of such a process. Ealing Council designated the whole of the borough an AQMA in December 2000 as a result of its Stage Three Review and Assessment of air quality. This action plan will set out the steps that the London Borough of Ealing will take in order to work towards meeting these objectives.

2. The Policy Context

2.1 National Context

Air Quality Strategy for England, Scotland, Wales and Northern Ireland

In January 2000, the Government launched the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland. The main aim of this strategy is to make sure that everyone can enjoy a level of outdoor air quality which poses no significant risk to health or quality of life. The Local Air Quality Management (LAQM) process under Part IV of the Environment Act 1995, requires local authorities such as Ealing Council to work towards achieving national targets (Objectives) for 7 main air pollutants by a periodic Review and Assessment of current and future air quality in their areas. The targets originally set for all the pollutants were based on the level at which no significant risk to health is posed. The standards are based on an assessment of the effects of each pollutant on public health. They are based on recommendations by the Expert Panel on Air Quality Standards (EPAQS), standards used by the European Council (EC), and guidelines used by the World Health Organisation (WHO). These pollutants and relevant objectives are:

Pollutant	**Objective**	**Date to be achieved by**
Benzene	16.25µg/m^3 (5ppb) expressed as a running annual mean	31st December 2003
1,3-Butadiene	2.25µg/m^3 (1ppb) expressed as a running annual mean	31st December 2003
Carbon monoxide	11.6µg/m^3 (10ppm) expressed as a running 8-hour mean	31st December 2003
Lead	0.5 µg/m^3 expressed as an annual mean 0.25 µg/m^3 expressed as an annual mean	31st December 2004 31st December 2008
Nitrogen dioxide	200 µg/m^3 (150ppb) not to be exceeded more than 18 times a year expressed as an hourly mean 40µg/m^3 (21ppb) expressed as an annual mean	31st December 2005 31st December 2005
Particulates (PM_{10})	50 µg/m^3 not to be exceeded more than 35 times a year expressed as a 24 hourly mean 40 µg/m^3 expressed as an annual mean	31st December 2004 31st December 2004
Sulphur dioxide	350 µg/m^3 (132ppb) not to be exceeded more than 24 times a year expressed as a 1 hour mean 125 µg/m^3 (47ppb) not to be exceeded more than 3 times a year expressed as a 24 hour mean 266 µg/m^3 (100ppb) not to be exceeded more than 35 times a year expressed as a 15 minute mean	31st December 2004 31st December 2004 31st December 2005

The averaging periods reflect the nature of potential health effects, the pollutants with shorter averaging periods having an acute health effect and those with longer averaging periods representing a chronic health effect. "The strategy is consistent with council's Corporate Plan, in that one of the Plan's goals is to make Ealing a better place to live, and, as part of this, aim to be a "green borough"."

The strategy also set an objective for ozone but local authorities are not required to deal with it as it is recognised as a national and international issue rather than a local one. This is because of the particular nature of ozone and its chemistry in the atmosphere. Ozone is not directly emitted from any man made source, but is formed by chemical reactions, mainly involving volatile organic compounds and nitrogen oxides, in the atmosphere under the influence of sunlight. Formation takes place over hours or days, persists that long, and may arise hundreds or thousands of kilometres from the original source of the contributing pollutants. The result is that much of the ozone measured in SE England is blown over from continental Europe.

It should also be noted that the PM_{10} objective, adopted in the 2000 Air Quality Strategy and Regulations, is less stringent than the original health-based objective that applied under the 1997 Air Quality Regulations. The Government has relaxed this health based Objective because it was considered impossible to achieve. Had this objective been retained it would have led to the whole of Greater London failing to meet it in 2005. The Government has since stated its intention to strengthen this Objective. For London, an Objective of a 24 hour mean of 50µg/m3 not to be exceeded more than 10–14 times per year and an annual mean of 23-25µg/m3, both to be achieved by 2010, has been proposed. It is further proposed that the Mayor and London authorities should work towards a target of 20µg/m3 after 2010, with the aim of achieving it by 2015 where cost effective and proportionate local action can be identified.

The Strategy sets out the contribution key sectors, such as industry, transport and local government, will need to make towards achieving objectives. Improvements in air quality will not be made without cost. Consequently, the objectives introduced under the Environment Act 1995 will be achieved through the best available techniques not entailing excessive cost.

The UK is also required to implement European Union directives. The Ambient Air Quality Directive (96/62/EC) provides member states with a basis for local air quality management. Daughter directives will set new standards for specified pollutants. The first daughter directive covering sulphur dioxide (SO_2), nitrogen dioxide (NO_2), particulates (PM_{10}) and lead has now reached a common position and is expected to be enacted imminently. The next daughter directive will cover carbon monoxide and benzene. The UK Government believes that the National Air Quality Strategy will provide the principal means of carrying out its commitments under the EU framework.

The Strategy focuses solely on managing outdoor, ambient air quality. It does not cover occupational exposure, indoor air quality or exposure in vehicles. Workplace air quality is regulated by the Control of Substances Hazardous to Health Regulations 1999 (COSHH). Within COSHH, the Health and Safety Commission sets exposure limits for chemicals and related agents, to guide duty holders on controlling exposure by inhalation. These limits are only meant to protect the relevant section of the population, which is people of working age who are healthy enough to work.

2.2 London Context

The Greater London Authority Strategies

The Greater London Authority Act 1999 requires the Mayor of London to prepare a state of the environment report and a number of strategies for London on the following topics:

- **Air quality**
- **Ambient noise**
- **Biodiversity**
- **Culture**
- **Economic development**
- **Spatial Development**
- **Transport**
- **Waste**

These strategies are aimed at providing a framework for consistent, integrated decision making by the four Functional Bodies under the Mayor's control (Transport for London, the London Development Agency, The London Fire and Emergency Planning Authority, and the Metropolitan Police Authority), and by London's 33 local authorities. Each strategy must have regard to the principle purposes of the GLA and to the three cross-cutting issues of sustainable development, health and equality of opportunity in support of the Mayor's vision to develop London as an exemplary sustainable world city. The most relevant strategies for air quality are on Air Quality, Transport, Spatial Development and waste management.

GLA Air Quality Strategy for London

The Air Quality Strategy must include proposals and policies for implementing the National Air Quality Strategy within Greater London, and meet statutory Air Quality Objectives under the Environment Act 1995.

The Mayor's Air Quality Strategy was published in September 2002. The aim of the strategy is to minimise the adverse effects of air pollution on human health. The Strategy adopts the National Air Quality Standards and Objectives set by the government and includes all measures proposed by the Mayor to improve air quality.

In London, two pollutants, PM_{10} and NO_x, do not currently meet and are not predicted to meet the National Air Quality objectives by the required dates. Meeting the targets for these two pollutants is the primary concern of the Strategy and so the policies focus on reducing those emissions, whilst recognising that in many cases the policies will also reduce emissions of other pollutants.

As road traffic is the primary cause of air pollution in London, the strategy concentrates on reducing emissions from road vehicles, specifically targeting those vehicles that are most polluting. In addition the strategy also includes measures to tackle emissions from:

- Airport related activity
- Industrial activity
- Construction, non-road vehicle transport, fires
- Energy and heating

The London Air Quality Strategy sets out 30 policies and 87 proposals to improve London's air. The Strategy does not replace local authority duties under LAQM, but London local authorities do have to take account of it when carrying out their LAQM duties. London local authorities must consult the Mayor on their AQMA action plans.

GLA Transport Strategy for London

The Mayor's Transport strategy was published in July 2001. The policies contained within in the Strategy are expected to achieve absolute reductions in weekday traffic levels of 10 to 15 per cent in central London, a smaller reduction in inner London and halve the growth in traffic in Outer London. This will make a significant contribution to reducing air pollution.

The Mayor's Transport Strategy also set out a radical programme of measures to improve public transport and encourage drivers to switch from cars to trains, buses and trams. In particular, the Transport Strategy seeks to reduce the number of unnecessary short car journeys, which are also disproportionately polluting, as the vehicles' engine gives out more pollution before it is warm. Together these radical measures will significantly reduce emissions from vehicles and improve air quality. These include:

- Measures to reduce traffic and traffic congestion – including a proposed congestion charge
- in central London;
- making radical improvements to bus services in London, include improving emissions from
- buses;
- developing and promoting the alternatives of public transport, walking and cycling so that the proportion of trips made by car is reduced;
- overcoming the backlog of investment on the Underground so as to safely increase capacity, reduce overcrowding, and increase both reliability and frequency of services;
- better integration of the National Rail system with London's other transport systems and move towards a London-wide, high frequency 'turn-up-and-go' metro service;
- supporting boroughs' local transport initiatives, including improved access to local town centres and regeneration areas, walking and cycling schemes, safer routes to school, and improved co-ordination of streetworks;
- making the distribution of goods and services in London more reliable and efficient, and minimising environmental impacts;
- increasing the capacity of London's transport systems by major new cross-London rail links,
- improved orbital rail links in inner London, new Thames river crossings in east London, and new guided bus or tram projects in central, inner and outer London.

The Transport Strategy includes a large number of policies and proposals which require action by the boroughs. A positive and cohesive partnership with Transport for London and the boroughs will need to be developed to ensure that the aims and objectives of the Transport Strategy are realised.

GLA Spatial Development Strategy for London

The Mayor published his initial proposals for a Spatial Development Strategy in June 2002. The overall vision of which is to create an exemplary sustainable world city by supporting the economy, enhancing environmental sustainability and improving Londoners' quality of life. It supports the air quality strategy, in through policies to:

- locate high density, mixed use and mixed tenure developments around the framework of an improved public transport network – although the number of journeys in London is

set to rise, this will help keep down the proportional increase in car journeys to a minimum and reduce the need for people to make short journeys

- improve urban design and quality of architecture by providing robust design guidance – this will include measures to improve the sustainability of new buildings, reduce the amount of energy required for heating and lighting and create 'greener' buildings, thereby cutting emissions.

GLA Draft Municipal Waste Management Strategy

There are a large number of vehicles operated by waste authorities, or by contractors on their behalf, for the collection and transport of waste. They are often heavy vehicles, working under stop-start operation and using considerable amounts of fuel. The Mayor's Municipal Waste Management Strategy will set out the actions that should be taken by waste authorities. They should promote waste minimisation, increase the proportion of waste that is recycled, and ensure that all waste is handled in the most sustainable manner, with minimum impact on the environment. The policies will be based on the premise that London will radically redirect the way it manages its municipal waste by prioritising waste reduction and the recycling and composting of waste. There are two primary policies:

London will aim to exceed the recycling and composting targets set by the Government in 'Waste Strategy 2000'. It will aim to recycle at least 25% of household waste by 2005, and to exceed the targets for 2010 and 2015. The Mayor will also lobby the Government to put in place legislative changes and other measures necessary, to increase the recycling and composting targets for 2010 and 2015, in line with the recommendations by the House of Commons Select Committee on the Environment, to 50% and 60% respectively.

It will aim to meet the recovery targets for municipal waste specified in 'Waste Strategy 2000' by prioritising reduction, recycling and composting, and by recovering value from 40% of municipal waste by 2005, from 45% by 2010, and from 67% by 2015. The Mayor will insist that waste authorities maximise the reduction, recycling and composting of waste before energy recovery is considered.

Action that will be put forward within the Strategy will be the encouragement of all waste authorities, when awarding new waste contracts, to ensure a full assessment of routes, fuel consumption and emissions from these vehicles in line with Euro standards is considered. Also to encourage more of the waste transported out of London to be taken by rail and water-borne transport. A consultation draft of the strategy was released in September 2002.

2.3 Regional Context

West London Alliance

The Council is committed to creating imaginative and collaborative partnerships across existing boundaries. Ealing Council and five neighbouring local authorities form part of the West London Alliance (WLA). In 2001, the WLA issued its environment strategy, which set out a commitment to work together on the issue of local air quality. Ealing's Pollution Control team meets at regular intervals with its WLA counterparts to discuss air quality issues and to exchange ideas. The WLA has just produced a draft WLA Air Quality Strategic Plan which provides a strategic overview of actions the WLA will take as a group to act positively, in a measurable way to achieve improvements in air quality across the region. A copy of the Draft Strategic Plan (work in progress) can be found in the Appendices.

The Plan is designed to provide a framework for Boroughs own Action Plans, highlighting synergies and resolving potential conflicts as the plan reaches the implementation phase. A number of actions have been agreed on within the scope of eight key objectives:

- Transport and Air Quality Action Assessment
- Low Emission Zones (LEZs) – Examination and Support
- Transit Schemes – Support and Development
- Land Use Planning Integration
- Bus Corridor improvements
- Sustainable and Integrated Transport Action
- Freight Movements – Quality Partnerships
- Heathrow Terminal 5

Park Royal Partnership

The Park Royal Partnership includes the London Boroughs of Brent, Ealing and Hammersmith and Fulham. The Park Royal area has been recognised as a package area since 1995/1996, and during this period the Partnership has promoted a programme of sustainable transport, focusing on the improvement of access, and complementing the regeneration requirements of the area. The transport strategy seeks to positively contribute to regeneration by addressing issues of accessibility, by ensuring businesses can continue to function and expand, and local people can access jobs on the estate

The main challenges to the future viability of Park Royal, as identified through surveys and consultation, are:

- Congestion;
- Unsustainable modal split;
- Inadequate pedestrian and cyclists facilities;
- Parking problems
- Public transport reliability;
- Road safety

A number of opportunities have been recognised that will positively contribute to a modal shift in the area:

- Rail services – Park Royal is well served on the periphery by a number of rail lines. There is also the opportunity for new stations on existing lines.
- A40 improvements – Transport for London is currently improving the Gypsy Corner junction on the A40.
- Intermodal Transfer – The Willesden Freight Terminal provides an intermodal transfer facility within the area.
- Footpaths – There are a number of footpaths around the estate that could, with some improvement, provide viable off-road short cuts for both pedestrians and cyclists.
- Changing Attitudes – Companies on the estate are increasingly aware of the need to change their views on transport modes to and from the area. This results particularly from the recognition of the impact of local congestion on HGV movements during peak traffic periods.

2.4 Ealing Context

The Council of the London Borough of Ealing welcomes the introduction of the Air Quality Strategy for England, Scotland, Wales and Northern Ireland which compliments the Council's own aims and objectives.

Ealing council has a vision to be an excellent example of modern local government by 2003. The Council aims to achieve this goal by:

- ensuring the delivery of excellent services;
- creating effective partnerships;
- being recognised as an excellent authority;
- being an employer of choice.

Everything the Council does is driven by values of:

- promoting diversity;
- ensuring equality of opportunity;
- working for social inclusion;
- promoting sustainability.

In its most recent Best Value Performance Plan, the Council's set six main pledges:

- ensure Council services provide value for money
- raise standards in education
- protect our environment
- provide high quality housing
- promote better health and social services
- promote a better quality of life for the people of Ealing

The Best Value Performance Plan for 2002/03 includes the following set of annually reviewed priorities:

- Make more use of technology to provide better access and faster delivery of services
- Create better partnerships delivering top-class facilities to all
- Continue to monitor costs to ensure value for money
- Build our reputation and increase customer satisfaction by improving services

- Make quality education open to all
- Involve tenants in improving the quality and range of housing in Ealing
- Increase the number of affordable homes for those in need
- Improve street cleaning
- Build a workforce to match the diversity of our multicultural community
- Help the vulnerable to be independent yet safe.

The Council's Cabinet is divided into eight policy portfolios. Apart from the Leader of the council, each cabinet member has responsibility for a specific policy portfolio. These portfolios have been designed to cut across the traditional council services and ensure more joined-up thinking and working. The Portfolios are:

- Community Regeneration
- Community Safety
- Developing Young People
- Environmental Management
- Housing Improvement
- Independent Living
- Leisure & Learning
- Transport & Sustainable Development

Air Quality falls under the remit of Environmental Management (formerly Community Health). Within the Best Value Performance Plan for 2001/02, one of the priorities under the Community Health Portfolio was:

- develop an Air Quality Action Plan aimed at a significant improvement in air quality across the borough

Ealing Council's Environmental Charter

The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland fully compliments the aim and objectives of Ealing Council's Environmental Charter (1995). This was produced as a direct response to Agenda 21, which was signed and adopted by over 170 nations at the Earth Summit, held in Rio de Janeiro in 1992. Agenda 21 calls for the integration of environment and development concerns with an aim of achieving sustainable development. It highlights the need for greater attention to be paid to these concerns, so as to lead to the fulfilment of basic needs, improved living standards for all, better protection and management of ecosystems and a safer, more prosperous future. It also highlights the crucial role of local authorities in planning for sustainable development under the label 'Local Agenda 21'.

Ealing Council's Environmental Charter states:

We will work with local, civic, community, business and industrial organisations to:

- Reduce air pollution and traffic congestion caused by unnecessary car use in the borough
- Prevent unacceptable development at Heathrow Airport
- Oppose major road schemes in the borough
- Work with transport companies towards improved public transport

- Improve and increase facilities for cyclists and pedestrians
- Continue the fight against all forms of pollution
- Continue to maintain and develop public parks and open spaces
- Ensue that everybody who lives, works or spends any part of their time in the borough can do so in a safe and healthy environment
- Ensure that our environmental agenda for the 21st century contributes to the improvement of the global environment

Community Strategy

The development of a Community Strategy is a statutory duty for local authorities, required by the Local Government Act 2000. This introduced a duty to promote social, economic and environmental well-being, and the development of a Community Strategy which sets out how these objectives will be interpreted and achieved locally. It should provide a process for creating a shared vision of local priorities and solutions on which different agencies agree to work together. Actions to deliver the Community Strategy targets will be taken forward by a Local Strategic Partnership (LSP). This is a voluntary partnership of key local organisations including the business, community and voluntary sectors as well as the public sector. The purpose of the LSP is to:

- Bring together key agencies and strategies in the borough;
- Co-ordinate the delivery of local services;
- Rationalise planning and consultation;
- To promote joint working to meet a shared vision and targets for the well being of the borough.

The Community Strategy has identified a number of priorities for Ealing over the next three years;

- Crime
- Young People
- Transport
- Health Promotion
- Employment, skills and learning
- Local Environments
- Housing

Health and Well Being Strategy

The Health and Well Being Strategy contains information on key priorities for health improvement and tackling health inequalities. It focuses on health and well being work within the local authority. The strategy has been developed in place of the Health Improvement Programme (HImP), which over the past two years has endorsed a number of overarching principles, also reflected in the corporate priorities of the Ealing Primary Care Trust. One of these principals is:

- Healthier people and communities - to reduce health inequalities and promote social inclusion and to improve the life chances of our young people.

Waste Minimisation and Recycling Strategy

Under Section 49 of the Environmental Protection Act 1990 (EPA), the London Borough of Ealing, as a Waste Collection Authority (WCA) has a duty to produce and update from time to time a waste recycling plan. To ensure that national targets are met the Government has set statutory recycling and composting targets for each local authority based on previous recycling performance. The aim is to double domestic waste recycling within three years and treble it within five years. The statutory targets are enforceable and the Government intends to ensure they are adhered to. This strategy sets out a plan for achieving a recycling rate of 20% by the end of 2003/04 and for increasing recycling levels in subsequent years to meet government targets. The Strategy will need to be reviewed and updated to incorporate issues raised in the Mayor's Draft Municipal Waste Management Strategy. This will include stipulations that contractor vehicles must meet agreed emission standards.

Ealing's Interim Local Implementation Plan

The Government's White Paper, "A New Deal for Transport", set out how it plans to achieve an integrated transport system to cut congestion and pollution. It introduced a new approach to transport, through integrating:

- within and between different types of transport, so that each type works properly and people can make easy connections between them;
- transport with the environment, so that transport choices cause less damage;
- transport with land use planning at all levels, to support more sustainable travel choices and reduce the need to travel; and
- transport with other government policies for education, health and wealth creation so that transport helps to make a fairer, more inclusive society.

How this is to be achieved was set out in the Government's Ten Year Transport Plan, published in July 2000. Recognising that many of the problems associated with transport can only be tackled on a London-wide scale, the plan makes it clear that the new powers and resources available to the Mayor of London will give him the opportunity to make a real difference to transport in the capital. The main elements include:

- delivering increased public transport capacity and efficiency to cater for London's growing economy and to reduce overcrowding.
- Tackling road congestion and improved public transport and congestion charging in central London to encourage motorists to transfer to other modes of transport.
- Improving access to jobs, regeneration areas and key local facilities to promote social inclusion,
- Reducing road accidents and improving the environment through town centre and local area improvements, and
- Providing a better door-to-door journey for all – including cyclists and pedestrians – for example through measures to improve safety, personal security, accessibility, integration and information.

The co-ordination of transport across the capital is being addressed with the publication of the GLA's Transport Strategy for London. In turn, this strategy is implemented at a local level through Local Implementation Plans.

Ealing's Interim Local Transport Plan (ILIP) published in 2002 sets out the Council's transportation policies and strategy for the next five years. It also outlines the bids for funding from Central Government for transportation projects in the borough for the following year. Ealing Council recognises the human, social and economic costs caused by increasing congestion, pollution and fragmented public transport systems. The strategies and policies included within the ILIP have been adopted to achieve the Council's corporate vision and are in all cases designed to achieve measurable improvements to the environment, health and the economy of Ealing and to its residents. Future Borough Spending Plans will build on this foundation.

Ealing's Unitary Development Plan

Ealing's unitary development plan (UDP) sets out policies and proposals on how the borough should develop over a ten year period. It provides a framework for dealing with proposals for property development and contains policies on issues such as regeneration, environment, community and transport that all have a bearing on air quality. It will promote sustainable development and sustainable communities and has an overall aim of securing:

> "a good environment for all, having regard to the needs of the different sections of the community, the areas of the borough, and the borough's role in wider planning issues, now and in the future."

Ealing's current UDP was adopted in 1998, but a new one has been produced and placed 'on deposit' since February 2002. The air quality elements within the new plan have been strengthened as a direct response to the issues raised in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Other policies within the plan, which as a by-product of their main purpose, have positive impacts in terms of air quality. The plan will be developed in parallel with the GLA's Spatial Development Strategy and the Council will incorporate this emergent strategy as both plans develop. In preparing the UDP the Council has taken into account all available planning policy guidance.

The UDP can have a huge influence on local air quality as it controls the location of development and the specific characteristics of individual schemes and proposals. Ealing Council does not see air quality as a bar to development but rather a bar to poor quality development. Developers recognise this and have started to take concerns about air quality on board with many examples of contemporary thinking being applied at the planning stage. Ealing has a commitment to the material consideration of air quality throughout the planning process and is prepared to argue this at Planning Inquiry if necessary.

Carbon Dioxide Reduction Strategy

Ealing's CO_2 Reduction Strategy sets out the Council's programme towards achieving its target of a 30 percent reduction, from 1990 levels, in carbon dioxide (CO_2) emissions due to energy and transport use within the Borough, by the year 2005. The NAQS naturally compliments Ealing's CO_2 Reduction Strategy as many of the measures that will bring about reductions in particulates and nitrogen dioxide emissions will also help in reducing carbon dioxide emissions, and vice versa. The CO_2 Reduction Strategy focuses on five areas to reduce CO_2 emissions in Ealing:

- CO_2 emissions resulting from the Council's own activities.

- CO_2 emissions resulting from energy use in buildings, both domestic and commercial, but excluding Council buildings
- CO_2 emissions resulting from transport use in the Borough, both business and pleasure, but excluding Council business travel
- Power generation within the Borough.
- The natural removal of CO_2.

3. Ealing Council's Review and Assessment Process

The Government recommended a phased approach to the review and assessment of air quality process, involving a number of stages whereby each stage increases in detail and complexity. The complexity and detail of the review and assessment is consistent with the risk of failing to achieve the air quality objectives by the end of 2005.

For Stages 1, information on the different sources of atmospheric pollution in the Borough was collated and an assessment made for each pollutant, in accordance with official guidance. In Stage 2, the pollutants identified in Stage 1 were studied in greater detail so that a first prediction could be made as to the kinds of levels which were expected to prevail in 2005. After these initial Stages it was found that two of the original seven pollutants, benzene and 1,3-butadiene did not require further study.

The third stage of the review and assessment process was completed in January 2000, and the results presented to the London Borough of Ealing by our consultants, the *South East Institute of Public Health Environmental Research Group* (SEIPH ERG), Kings College London (now ERG). Stage 3 involved a more detailed and accurate assessment for those pollutants identified by previous reports, using appropriate pollution monitoring, computer modelling and inventories of pollutant emissions to the atmosphere. This work enabled the Council to determine whether parts of its area are likely to fail to meet the objectives for any of the pollutants.
The pollutants investigated in the Stage 3 report were:

- Nitrogen dioxide
- Sulphur dioxide
- Particles (PM_{10})
- Carbon monoxide
- Lead

The Report's main finding was that the levels of two pollutants, PM_{10} (particles) and nitrogen dioxide, are predicted to fail to meet objectives set by the Government.

The objective for particles and nitrogen dioxide was predicted to be exceeded along major roads in Ealing, but met at background locations. The major roads affected were found to include the A40 Western Avenue, A406 North Circular Road, A4020 Uxbridge Road and the A4000 Gunnersbury Lane/Horn Lane. The objective for particles also exceeded at some minor roads as well. These were mainly at the eastern end of the borough where the 'background' levels of air pollutants are higher as a result of being closer to the more densely built up and heavily trafficked areas of central London.

Section 83(1) of the Environment Act 1995 requires local authorities to designate as Air Quality Management Areas [AQMAs] those areas where air quality standards or objectives are unlikely to be achieved on time. This means that areas will be designated for which the Council, under section 84(2) of the Act, will draw up a written action plan describing how it intends to use the measures and powers at its disposal to reduce air pollution to meet to the objectives.

Following on from the results of the Stage 3 Review and Assessment Report and taking into account the views expressed during a lengthy consultation process, the London Borough of Ealing resolved to designate the whole borough as an Air Quality Management Area. The order for the designation of the AQMA came into effect on the 14th December 2000.

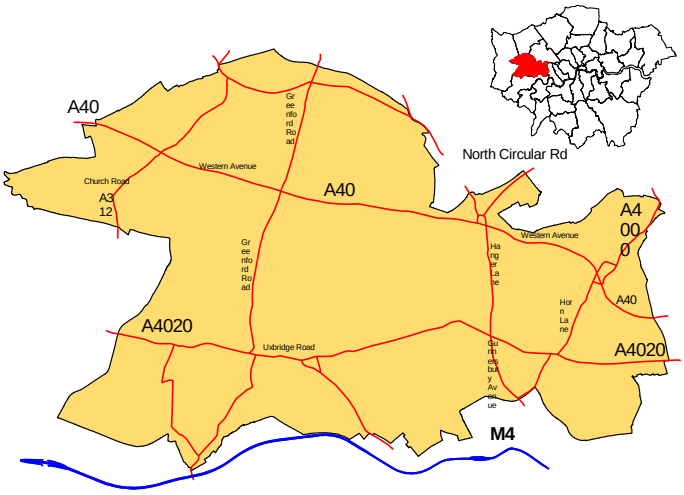
Within the scope of the designated AQMA and the subsequent action plan, it was proposed to identify a number of exceedance areas, or “hot spots”, for more targeted actions and policies. The London Borough of Ealing is sub-divided into seven area committees, and it was expected that these will take an active role in developing and monitoring action plans for their respective “hotspots”, within the framework of the borough-wide action plan.

4. The London Borough of Ealing

Ealing is one of the thirty three London Boroughs, situated in the north western part of outer London, a few miles north of the River Thames. It covers approximately 5500 hectares and extends from Acton and Chiswick in the east, heading westwards to Ealing, Hanwell and then Southall. To the north is Northolt, Greenford and Perivale. Major through routes include the Western Avenue (A40) and the Uxbridge Road (A4020) from east to west, and the North Circular Road (A406) from north to south.

Despite being in the outer north-western area of Greater London, Ealing is one of the most highly developed of the outer London Boroughs and has many similarities with both inner London and suburbia. The borough is home to both a strong industrial and commercial base, notably around the Park Royal estate which is experiencing considerable regeneration at present. Ealing is a multi-racial and multi-cultural society of just over 300,000, the third highest population of any London borough. The borough occupies an important strategic position in London and experiences a wide range of environmental, economic and social conditions. Although known as the Queen of the Suburbs and with many green and pleasant sub-urban communities, it also has many characteristics associated with inner London boroughs, including areas of deprivation. Indeed 10 of the boroughs 25 wards are recognised by the Government Office for London as ranking among the most deprived in the country.

Figure 1. **Ealing within the London context**



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5. Air Quality Action Plans

In producing an action plan, local authorities must set out how they will use their powers in pursuit of the air quality objectives, and should give details and the timescales in which they propose to implement the plan. The Environment Act 1995 does not prescribe any timescale for preparing an action plan, but the Government expects them to be completed within 12-18 months of designation of the AQMA.

Statutory guidance emphasises that in developing an action plan, local authorities should:

- carefully assess the options available to them to improve air quality in AQMAs;
- involve all relevant local authority professionals and departments to ensure a properly balanced and integrated approach;
- strike the right balance between the use of regulatory powers and other non-regulatory measures;
- ensure that the relative contributions of industry, transport and individuals are cost-effective and proportionate; and
- appraise and where possible quantify the wider environmental, economic and social consequences of each option.

Although local authorities have statutory responsibilities, the Air Quality Strategy makes it clear that all sections of the community are responsible for achieving local air quality objectives.

In addition to an air quality action plan, local authorities with designated AQMAs are required to undertake a further review of air quality (recognised as Stage 4) within the AQMA. The object being to refine the outcomes of the earlier stages of review and assessment.

As part of this further review, the local authority should calculate how great an improvement is needed and the extent to which different sources contribute to the problem. This should allow local authorities to determine which sources it can control or influence and will allow the action plan to incorporate contributions from the local authority and those that must come from other sectors. The further review should also consider the cost-effectiveness and feasibility of different abatement options, to allow for the development of proportionate and effective action plans.

6. LB Ealing's Stage 4 Review and Assessment

Ealing's draft Stage 4 Review and Assessment Report was released in March 2002 and uses both improved modelling techniques and up to date data sets to provide new modelling predictions for air quality in Ealing. The full Report, produced by Consultants ERG, King's College London, can be found on Ealing Council's web site.

The modelling takes into account a range of different factors, including the number of vehicles on particular roads, the speeds being travelled, projected vehicle stock and exhaust emissions up to 2005 etc as well as the likely weather conditions. It also includes data on industrial emissions; emissions from rail, river and air traffic, from gas, oil and coal combustion and agricultural and natural sources. It should be noted that emissions from aircraft over Ealing are treated as background emissions due to the atmospheric conditions prevalent at the heights at which they operate. They are therefore incorporated into the modelling as a background source.

Although the use of the best available techniques and data have been used, there is still some degree of uncertainty associated with the air quality predictions, as indeed there is with all modelling processes. Government guidance suggests that where such modelling uncertainty exists, particularly where health impacts are concerned, local authorities should err on the side of caution.

The results of the Stage 4 report confirm the findings of the Stage 3 report in that parts of the borough will exceed the Air Quality Strategy objectives. Namely:

- Across the borough, the A 40 (Western Avenue);
- Travelling north – south, the A 406 (North Circular Road and Gunnersbury Avenue) and the A 4005 (Hanger Lane);
- In the western part of the borough, the A 312 (The Parkway and Church Road);
- In the eastern part of the borough, the A 4000 (Wales Farm Road, Victoria Road and Horn Lane)
- Along parts of the Uxbridge Road A4020.

The London Borough of Ealing was therefore justified in its decision to declare the whole borough an Air Quality Management Area.

Figure 2 shows the predicted concentrations of annual average NO_2 in 2005. The areas coloured yellow to red are those that exceed the air quality objective of 40µg/m^3 (21ppb). Figure 3 shows predicted number of days with daily average PM_{10} levels above 50µg/m^3 in 2004. Again, the areas coloured yellow to red are those that exceed the air quality objective, when levels greater then 50µg/m^3 occur more than 35 days each year. The inserts on the maps focus in on the Hanger Lane Gyratory area and shows the extent of residential exposure for each pollutant.

Figure 2. Annual mean nitrogen dioxide levels (ppb) for 2005, based on 1999 meteorology. (21ppb = 40µg/m^3)

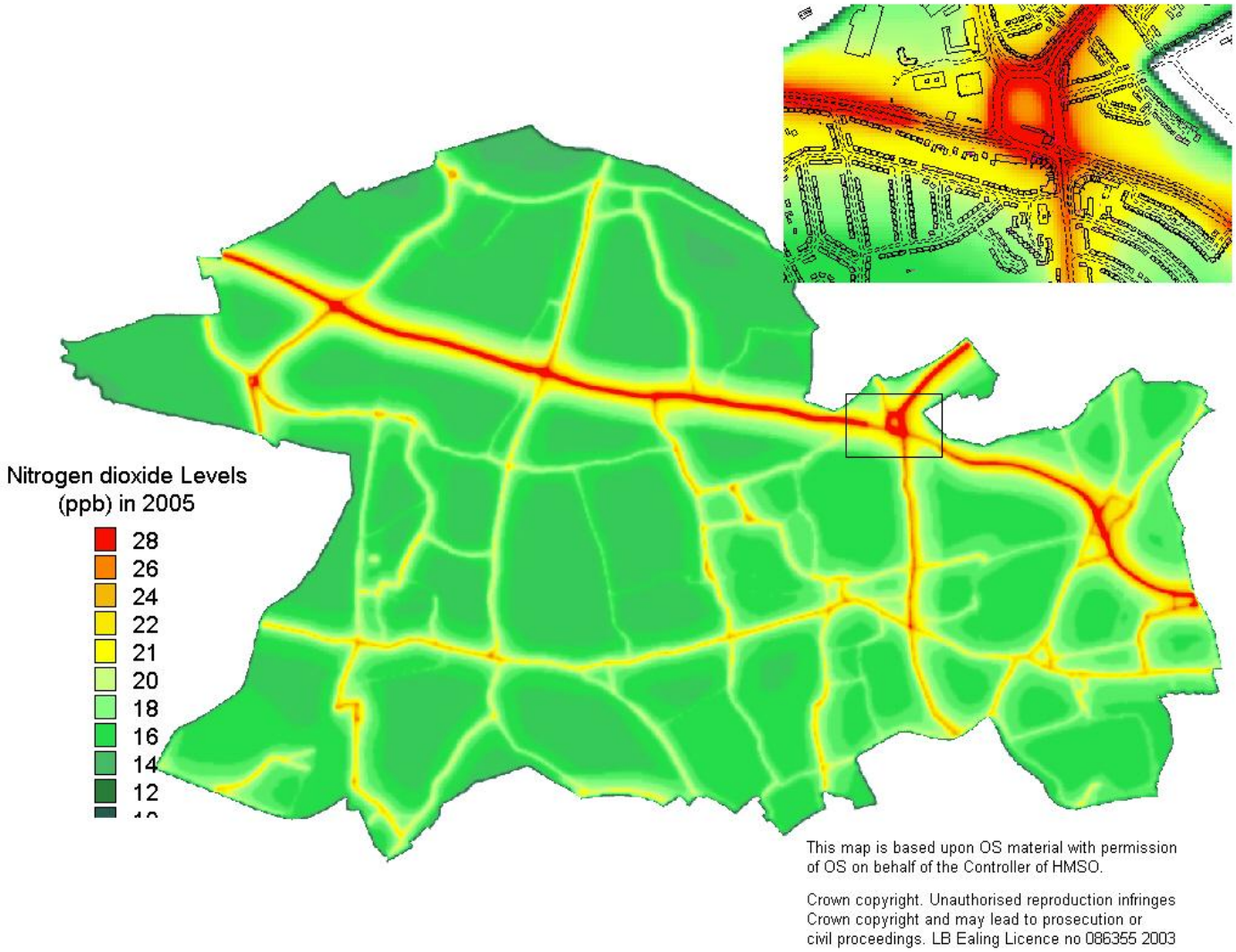

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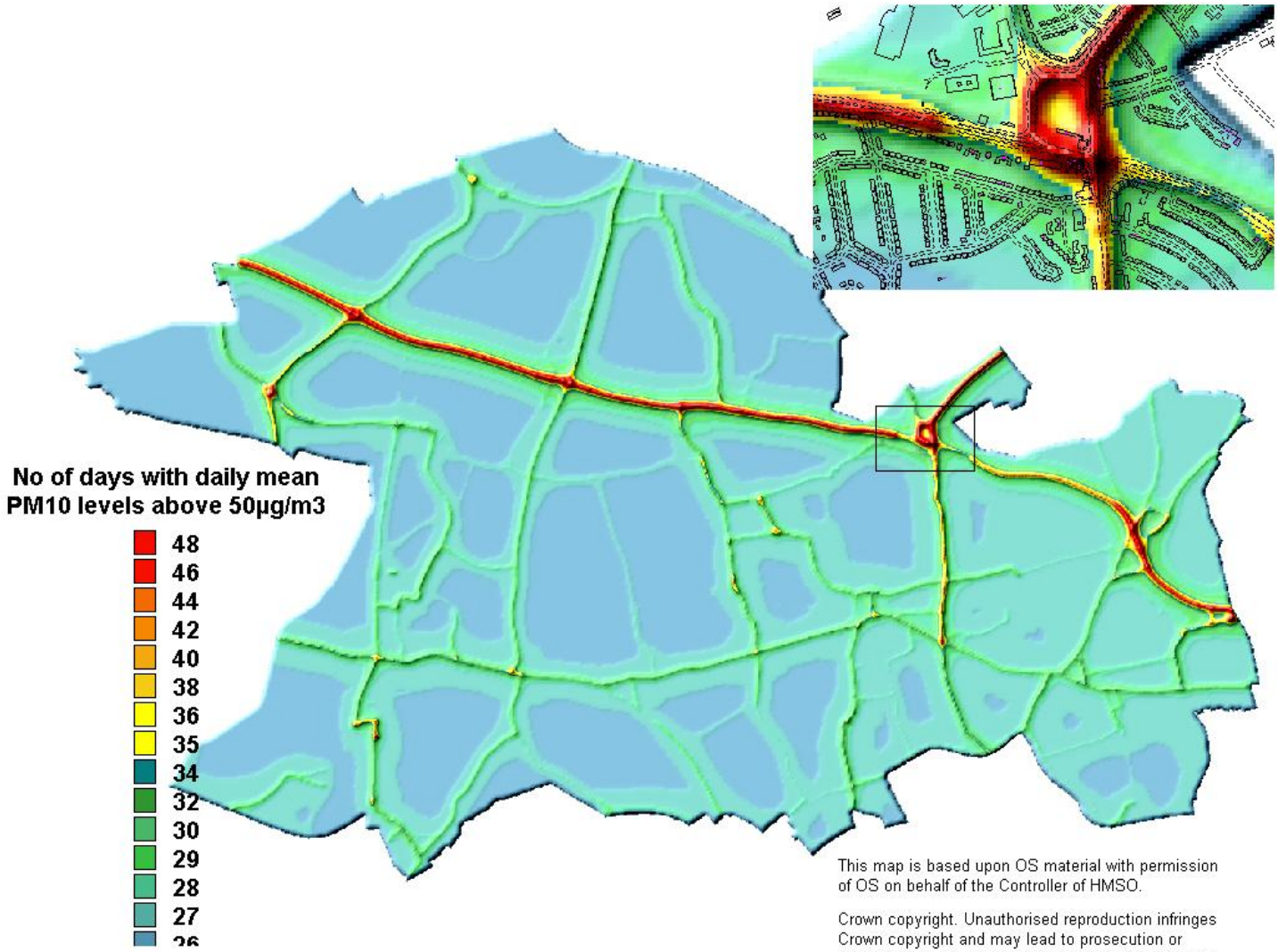
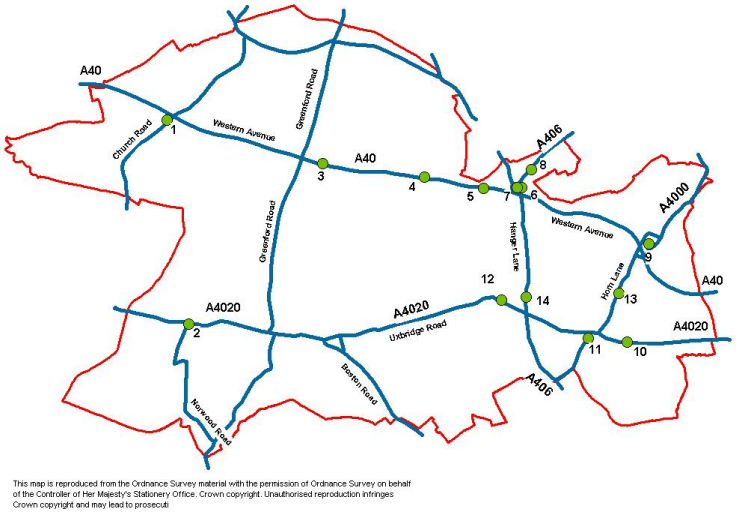
Figure 3. Number of days with daily mean PM_{10} levels greater than 50µg/m3 for 2004, based on 1996 meteorology.



Source Apportionment

From the Stage 3 report, a number of exceedance areas, or "hot spots", were identified. From within these, a series of building facades (point locations) were chosen with a view to understanding the extent to which different sources of air pollution contribute to the problem at that point. This source apportionment is necessary in order to develop a sensibly targeted Action Plan to tackle the problem and in furthering Ealing with an understanding of how much of an improvement is required at that point.

Figure 4. **The location of facades identified within the LBE AQMA for more detailed source apportionment.**



For NO_2, the source apportionment shows that approximately 50 - 80% of the concentrations relate to road transport at those points, with the remainder relating to the background sources. The actual contribution from different sources varies dramatically across the borough as can be seen from figures 5 and 6. Cars are the major source of NOx in the west of the borough, particularly along the A40. Along the A406, a greater proportion of emissions comes from HGVs, whilst in Acton (east) it is the background sources that form the major contribution to local air pollution.

However, as figure 7 shows, the modelling further confirms that the background sources can also be partly ascribed to road transport sources, such as those outside the borough, with approximately half the background contribution of NO_x arising from such road transport sources.

Background roads include the contribution from those roads not directly modelled in Ealing and those roads outside the borough, which contribute to the overall background concentration for London. Other background is the contribution derived from natural/rural emissions outside of London.

Figure 5. **Predicted NO_x concentration ($\mu g/m^3$) for different sources at each of the 14 chosen sites.**

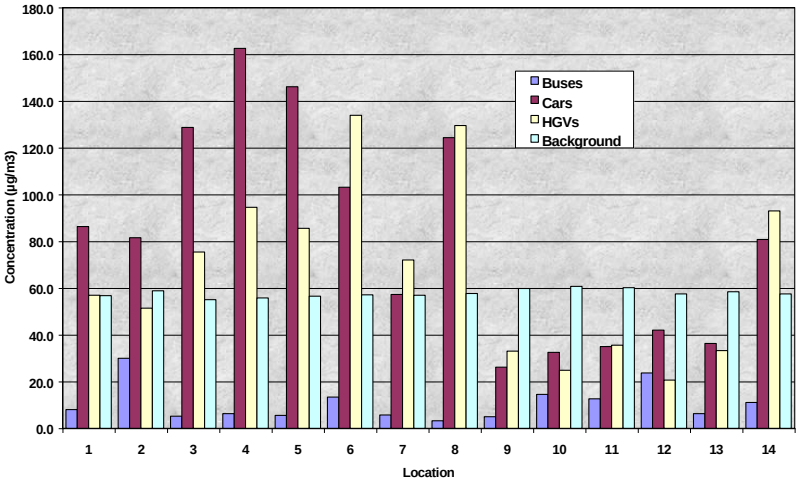


Figure 6. **Proportions of source contributions at chosen sites**

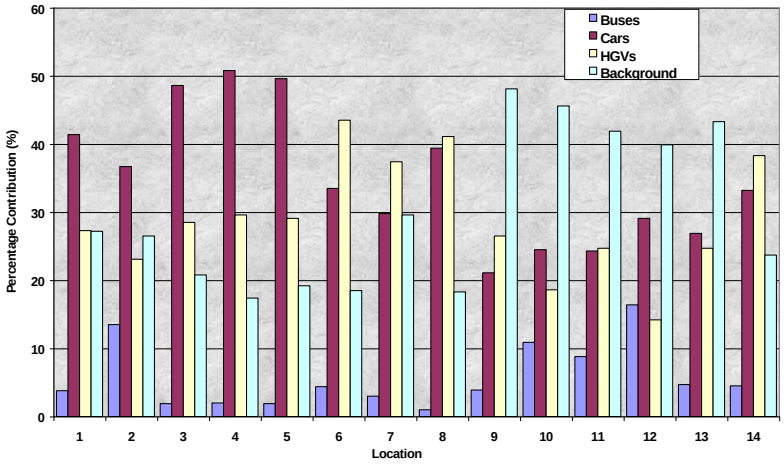
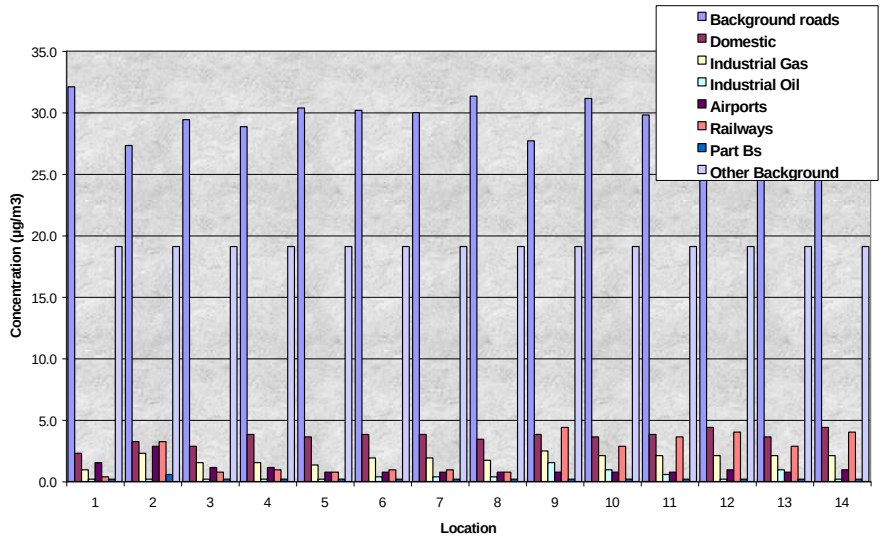


Figure 7. **Predicted NOx contributions (µg/m^3) for different background sources.**



For PM_{10} the proportions vary from that of NO_x as a result of the different components that contribute to total PM_{10}. The worst areas tend to be along the A406. As Figures 8, 9 and 10 demonstrate, the contribution from background sources is the most significant contributing between 60 – 85% of PM10 concentrations. Road transport in comparison, as a primary emission contributes between 15 – 40%. Looking solely at the vehicle contribution, it is HGVs that predominate as the main source. Of the total background sources, road transport only contributes between 5 and 8%, with the remainder arising mostly from secondary and coarse components (figure 11), which are beyond the control of local authorities.

Figure 8. **Predicted annual mean PM10 concentration (g/m^3) for different sources**

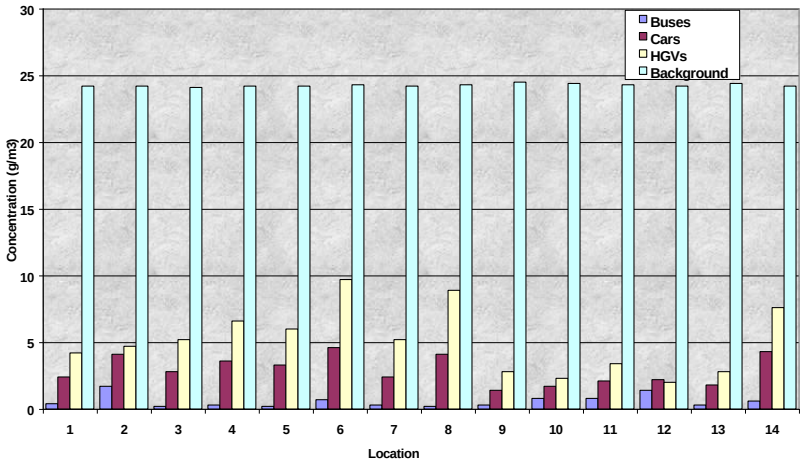


Figure 9. **Proportions of source contributions (%)**

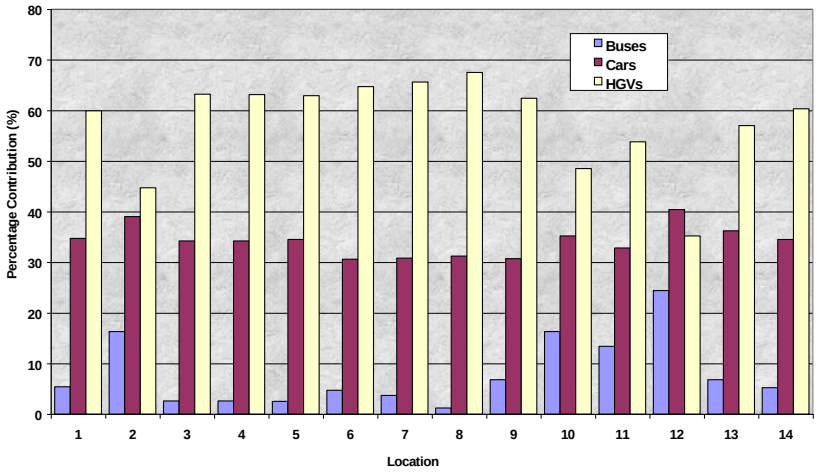


Figure 10. **Proportion (%) of vehicle category contributions to predicted PM_{10} concentrations**

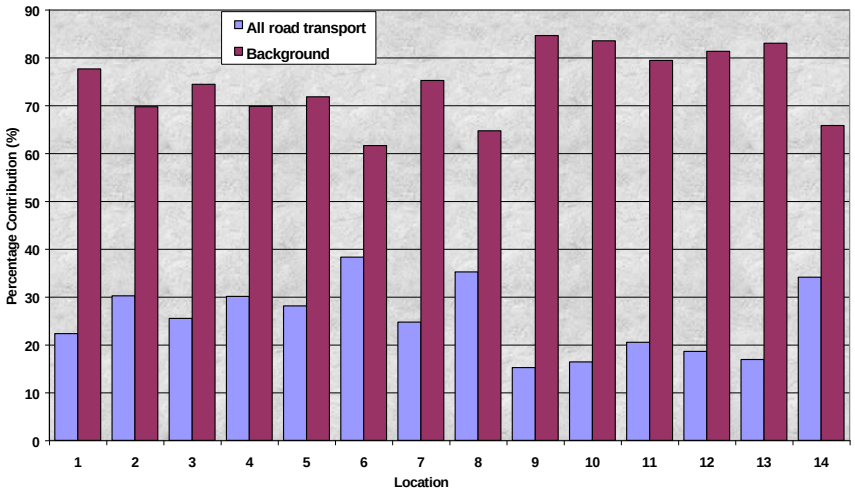
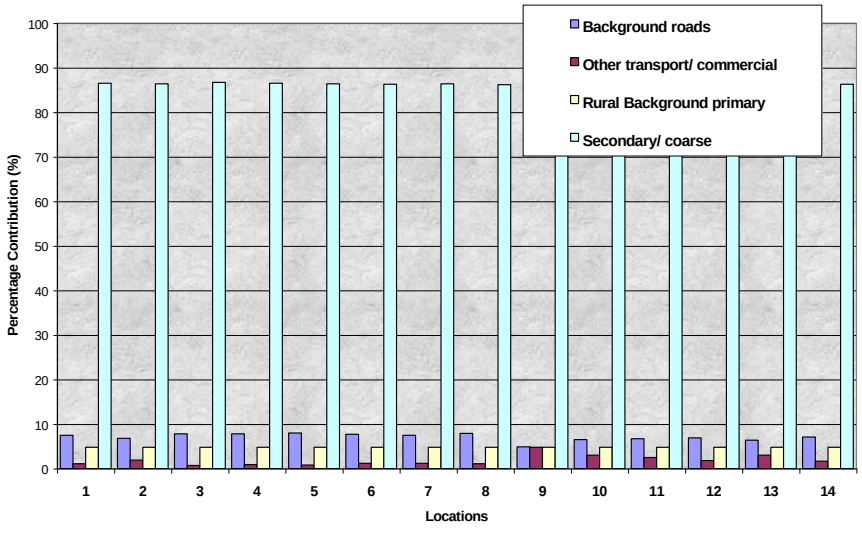


Figure 11. **Proportion (%) of source background contribution to predicted PM10 concentrations**.



Scenario Testing

The modelling techniques employed by ERG, King's College London, allowed for the testing of possible scenarios. Three example transport related scenarios were envisaged and fed into the model to ascertain possible outcomes and to assess the effectiveness of such measures if put in place. The three example scenarios modelled were:

- A stringent Low Emission Zone (LEZ), whereby all vehicles within the borough would have to meet strict emission standards (at least Euro III for most vehicles).
- A 10% reduction in the flow of cars and HGV's, which for cars reflects the modal shift to cycling, public transport and walking, and for HGV's reflects possible shifts to rail freight and the establishment of freight partnerships.
- The LEZ scenario plus a 10% reduction in the flow of cars and HGVs.

Low Emission Zone (LEZ) Scenario

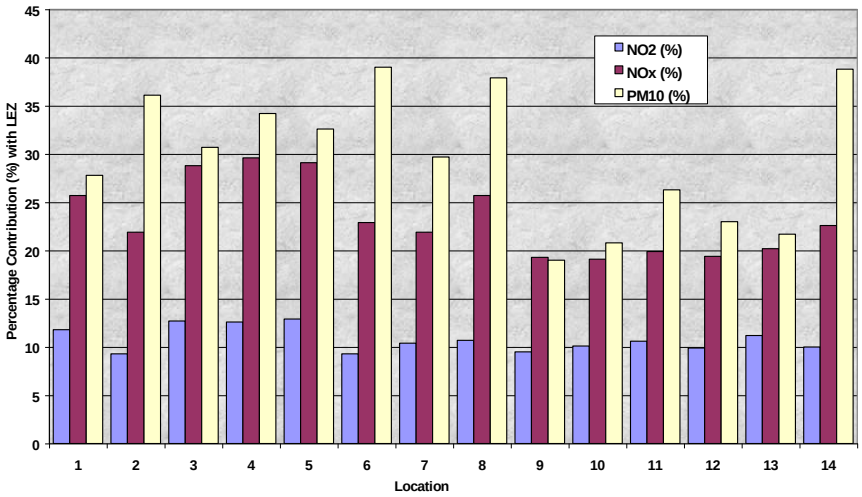
Since road transport is the main source of emissions in Ealing, it was decided (in agreement with the GLA) to test a scenario based on a low emission zone to reduce traffic emissions (for different categories of vehicle). As will be explained in section 9, a Low Emission Zone (LEZ) is widely felt to be the only acceptable means of achieving the required reduction in road traffic emissions.

A Low Emission Zone (LEZ) excludes specific vehicles from a specific geographic area. The intention is that the most polluted vehicles are removed thus reducing emissions in the area of interest, with a consequent reduction in air pollution and therefore an improvement in air quality, based on the two pollutants of interest, i.e. NO_2 and PM_{10}.

The scenario assumes that all vehicles within the borough would have to meet strict emission standards, at least Euro III for most vehicles. It should be pointed out that this particular scenario is not consistent with work undertaken by the London Low Emission Zone Feasibility Study, as it would target private cars and is not entirely consistent with policies within the Mayor's Air Quality Strategy.

Figure 12 shows the predicted percentage improvement with a LEZ scenario at the 14 locations against a business as usual approach, for NO_2, NOx and PM_{10}. More details of these scenarios can be found within the main Stage 4 Report available on Ealing's web site.

Figure 12. **Predicted improvement (%) with LEZ**



The results confirm the expected reduction in concentrations as a result of the continuing uptake of technology. For such a LEZ scenario, all locations would meet the above the AQS objective for PM_{10}.

For NO_2 however the predicted improvement is insufficient to ensure that all locations will meet the AQS annual mean objective. The predicted improvement varies between 4 and 7.1 $\mu g/m^3$ (i.e. between 9 and 13% improvement). This is sufficient for locations 9, 10, 11, 12 and 13 all of which are towards the east of the borough. Those locations that don't meet the NO_2 objective are all along the A40 or A406, except location 2 which is in South Road, Southall.

The improvement in the levels of NO_x and NO_2 predicted highlights the relationship between NO_x and NO_2. This relationship, which is location dependent and involves the photochemical processes that lead to the formation of NO_2 from NO_x, is non linear, which means that a reduction of the primary emission (NO_x) does not lead to a corresponding reduction in the secondary pollutant (NO_2). Hence, a reduction in vehicle emissions does not necessarily translate into a corresponding reduction in NO_2 concentrations at a particular location.

The results and the contour plots produced from the LEZ scenario highlight a number points:

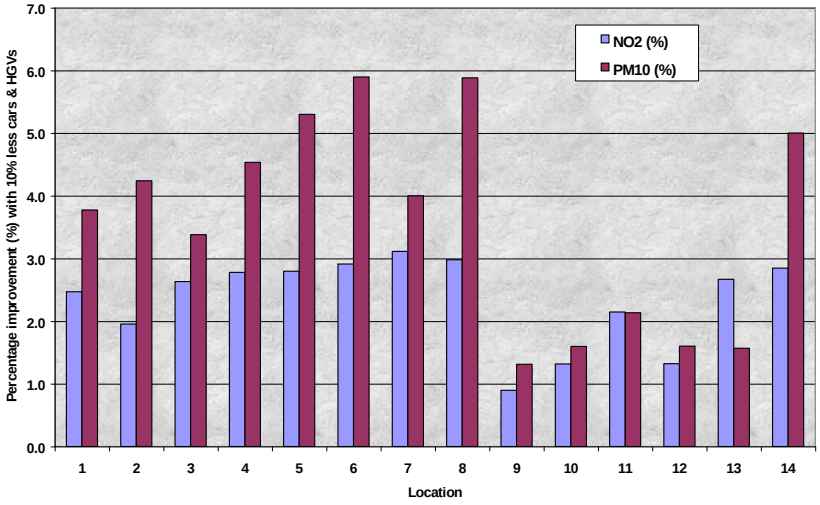
- With the introduction of an appropriate LEZ, the whole of the borough will meet the PM_{10} objective.
- That the NO_2 objective will be met, apart from long parts of the A40 and A406, and at South Road, Southall.
- That an LEZ should form a major part of Ealing's Air Quality Action Plan, but that this should be supplemented with a number of other measures if the Air Quality Objectives are to be met.

A 10% reduction in the flow of cars and HGV's Scenario

It would prove extremely difficult to model with any degree of accuracy the majority of individual measures available to improve air quality within the Borough. How, for instance, would one model the effect of introducing roadside vehicle exhaust emission testing or the effect that raising awareness of air quality issues has on pollution levels. Another difficulty is that, taken individually, many of the measures will not necessarily have a significantly measurable impact on pollution levels. However, if a number of the measures are considered collectively, then it is likely that the air quality improvement would be significant. In light of this, it was decided to model a 10% reduction in the flow of cars and HGV's to assess the potential impact from the introduction of a raft of differing options. For cars, a 10% reduction might reflect a modal shift to cycling, public transport and walking, whilst for HGV's, a 10% reduction would reflect a possible shift to rail freight and the establishment of freight partnerships.

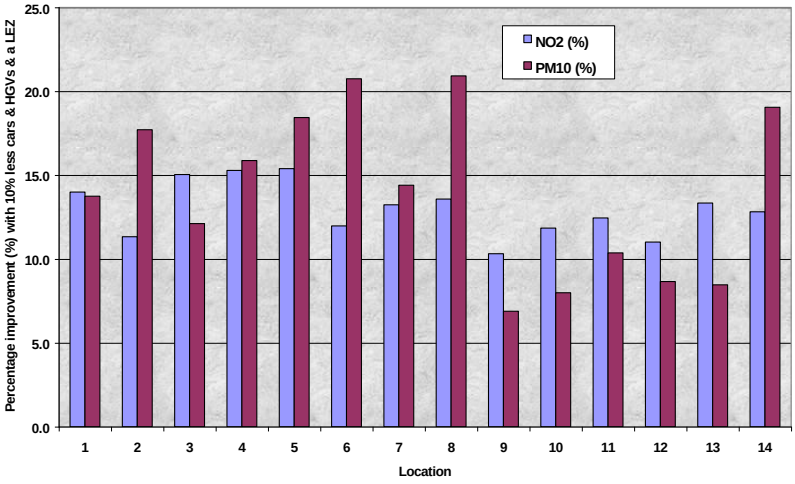
Figure 13 shows the predicted percentage improvement with a 10% reduction in the flow of cars and HGV's scenario, again at the 14 locations against a business as usual approach, for NO_2, and PM_{10}.

Figure 13. **Predicted improvement (%) with a 10% reduction in Cars & HGVs**



With the removal of 10 % cars and 10 % HGV's, the average NO_2 concentration reduces by 2.3 % and the average number of PM_{10} exceedence days reduces by 4 %. With this scenario alone, all locations are still predicted to exceed the NO_2 objective, whilst 8 out of the 14 locations are predicted to exceed the PM_{10} objective. The situation improves dramatically with a combination of the LEZ and a reduction in cars and HGVs by 10 %. Figure 14 shows the predicted percentage improvement for such a scenario. With a combination of a LEZ and the removal of 10% of the cars and HGV's, the average NO_2 concentration is reduced by 13 % and results in 6 out of the 14 source apportionment locations meeting the NO_2 objective. The average number of PM_{10} exceedence days is reduced by 15 % and results in only 3 out of the 14 source apportionment locations exceeding the PM_{10} objective.

Figure 14. **Predicted improvement (%) with LEZ and a 10% reduction in Cars & HGVs**



7. Policy proposals and Action Plan Development

The Stage 4 Report shows that to achieve the required reductions in air pollution will require the introduction of measures to reduce road traffic in the borough along with measures that will reduce the need for people to travel. The public consultation conducted as part of Ealing's Stage 3 Review and Assessment indicated that a blend of 'carrot and stick' measures would be the most acceptable.

The measures set out in this plan are a combination of ongoing policies already in place to reduce air pollution, and new policies to be introduced as a direct result of the AQS and Mayor's strategies. The policies and proposals within this Action Plan have been grouped into six sections. These sections are set out according to the likely effect each action will have, although it should be stressed that such groupings are subjective, certain measures being easily categorised under several sections. The six sections are:

- Traffic reduction
- Reducing the need to travel
- Promotion of cleaner technologies and alternative fuels
- Improving environmentally friendly forms of transport
- Non-traffic measures
- Non-traffic measures
- Awareness raising

The measures proposed take into account the Mayor's Air Quality Strategy and statutory guidance.

Most of the policies and proposals laid out here relate to road transport. This is because, as mentioned in section 6, it is the main source of NO2 and PM10 emissions within the borough, and there is a more realistic chance of reducing such emissions within the timescale involved. This means that this Action Plan is inextricably liked to Ealing's Interim Local Implementation Plan and Unitary Development Plan. The policies and proposals are not prioritised here according to their potential effectiveness or the timeframe within which they will be implemented. However, a number of measures stand out as having a potentially greater impact in helping Ealing achieve its air quality objectives:

- Low Emission Zone
- Roadside emission testing
- Development and adoption of Green Travel Plans
- Improving public transport speeds and reliability
- The introduction of new cycling infrastructure and the upgrading of existing facilities
- Improving pedestrian facilities and encouraging walking as a whole

The proposed LEZ aside, if taken individually, the impact on air quality from many of these measures could be considered small or medium. Collectively however, the measures will compliment each other and can make a significant contribution to reducing air pollution levels to meet the required objectives.

Action Plan development

The Action Plan has been prepared by the Environmental Quality Team (Environmental Health and Trading Standards) of the Council in consultation with a number of other council departments. An Air Quality Action Plan Working Group was established to facilitate the exchange of information

and ideas. This group was made up of Council officers from Environmental Quality, Planning Policy, Planning Services and Transport Strategy, and external representatives of environment groups, business, Ealing Primary Care Trust and local residents.

Area Committee involvement

The London Borough of Ealing is sub-divided into seven area committees. During the course of the consultation period, the Action Plan and Stage 4 Report was presented to these committees. Within the AQMA, a number of exceedance areas, or "hot spots" have been identified from the Stage 3 and 4 Reports and these areas will be subject to more targeted actions and policies. It is expected that the Area Committees will take an active role in developing and monitoring action plans for their respective "hotspots", within the framework of the borough-wide action plan. It is anticipated that the measures used at this local level will be more focused extensions of the borough wide measures detailed within this document. However, it is possible that new initiatives may be developed and these will be fed into the Action Plan as part of the consultation process.

Many of these "hotspots" are located along the A40 Western Avenue and A406 North Circular/Gunnersbury Avenue, which are outside the control of the Council. It is therefore difficult to imagine what can be done at a local level which is not already proposed at the borough level. Many of the other "hotspots" identified will, according to the modelling scenario, meet the Air Quality Objectives with the introduction of a suitable Low Emission Zone. The other generic measures proposed within this Action Plan will complement the improvements derived from the LEZ measure to ensure the objectives are met. It appears that the only "hotspot" which may benefit from additional measures targeted at a local level would be the area around the South Road and Uxbridge Rd junction in Southall. Local Area Treatments currently being designed in advance of the West London Transit proposals for the Uxbridge Road to protect residential areas from increased traffic levels, may have a positive impact on air quality levels within these hotspots. This will be a subject for further review.

Stage 3 Consultation

As part of its statutory obligations, Ealing Council consulted on the findings of its Stage Three Review and Assessment of Air Quality Report in 1990. The aim of this was two fold, to ensure that the work done in the Stage 3 Review and Assessment was agreed and accepted widely, and to assess the degree of support for a range of possible measures from residents and businesses alike. As part of this consultation process, a questionnaire was developed for distribution to Ealing residents and businesses. It was designed by the LA21 Pollution & Public Health Project Group with input from Ealing Council Pollution Control and Transport Services teams. A total of 11,000 resident questionnaires were printed, and an interactive version was available for completion online on the Pollution Control web site. Similarly, a version of the questionnaire for businesses was produced and mailed, together with a covering letter, to around 6000 businesses in Ealing. The results of this consultation can be found online at www.la21.org/groups/pollution/air-quality.htm. The Action plan has been developed with these results in mind and many of the measures proposed have received a positive response from residents and businesses in Ealing. A summary of this consultation exercise can be found in the Appendices.

8. Policy Proposal Checklist

Action	Date	Responsible Organisation	Air Quality Benefit	Cost
Promotion of cleaner technologies and alternative fuels				
1) Support and contribute to a feasibility study for the proposed Low Emission Zone (LEZ) for London and if appropriate implement such a scheme in LB Ealing.	Initial study completed April 2002. Final feasibility report due early 2003. Implementation unlikely before 2007.	London boroughs, ALG, GLA, TfL, DEFRA, DoT, West London Alliance.	Best available initiative for meeting AQ Objectives.	Potentially high. Funding sought from Central Government. Could be self-financing when up and running.
2) Consider adopting new powers to carry out roadside vehicle exhaust emission testing and issue penalty fines on those vehicles failing emission standards.	Implementation Spring 2003	GLA DoT, GLA, ALG, London boroughs, NSCA, Vehicle Inspectorate, The Police.	Will raise awareness and encourage more motorists to keep engines maintained.	Low-medium. DTLR funding available. Self-financing when up and running.
3) Issue penalty notices on the drivers of stationary vehicles who leave their engines running unnecessarily.			Emissions from idling engines can significantly impact on local air quality	Potentially self-financing.
4) Erect signs at appropriate locations informing motorists to switch their engines off whilst stationary	Spring 2003	LBE, LA21 Groups		DTLR funding obtained.
5) Work with companies in order to increase the number of retail outlets for clean alternative fuels in Ealing.	2003 - 2006	ALG, GLA, TfL, West London Alliance. Powershift programme. Fleet Operators.	Reduces emissions at source and will have long term cumulative benefits.	Low
6) Work with the Greater London Authority and fleet operators in order to further promote the take-up of cleaner vehicles and fuels within LB Ealing				
7) Review the Council's Waste Minimisation and Recycling Strategy and introduce measures to ensure contractors vehicles meet specified emission standards and encourage the use of alternative fuels.	2003	LBE, GLA, LBE contractors.		Low
Improve environmentally friendly transport				
Public Transport				
8) Work closely with other stakeholders to develop and extend the London Bus Initiative (LBI).	2003 - 2006	All local authorities, TfL, London Buses, Bus Operators, the Police.	Reducing the number of cars on the roads will reduce emissions of NO_2 and PM_{10}. Cumulatively, will lead to significant AQ benefits in the medium to long term.	Low - Medium
9) Continue to work closely with partners to bring about improvements to bus movements under the 'London Bus Priority Network'.	2003 - 2006	All local authorities, GOL, London Transport.		
10) Continue to work with the West London Alliance councils to develop the West London Integrated Transport Strategy.	2003 - 2006	West London Alliance, London Bus Services, Railtrack, Strategic Rail Authority, TfL, Town Centre and other partnerships.		
11) Continue to investigate the feasibility of a West London Transit scheme along the Uxbridge Road.				

12) Encourage improvements to all railway stations and public transport interchanges.	2003 - 2006	LBE, developers, TfL		Low
13) The Council, as the local planning authority, will facilitate the development of major transport projects consistent with the objectives of the UDP.				
14) Require the provision for bus service improvements with appropriate new developments.				
Cycling				
15) Continue it's support for the London Cycle Network (LCN)	2003 - 2006	GLA, ALG, London boroughs. Cyclist Groups	Cumulative benefit in the medium to long term.	Low to medium. Additional funding sought from Central Government and obtained through Section 106 planning agreements
16) Continue to support cycle training, including on-road cycle training for primary and secondary school children.	2002 - 2007	LBE, Cyclist Groups, Health Authority.		
17) Implement new traffic management measures to aid cyclists and improve safety, and upgrade existing cycle facilities		LBE		
18) The Council will, subject to successful bids for funding, install 100 new cycle stands across the borough every year for the next five years.				
19) Introduce policies in its UDP to ensure appropriate developments to have in place facilities for safe and secure cycle parking.	2003 - 20017	LBE, developers.		Low. Obtained through Section 106 planning agreements and conditions.
20) Ensure that development proposals meet standards for adequate provision for cyclists.				
21) Work to improve the network of cycle paths and footpaths in Major Open Areas and along the canal network within the borough.		LBE, British Waterways, Cyclist Groups.		Low
Walking				
22) Provide more pedestrian crossings along busy roads, at bus stops and outside local railway stations.	2002 - 2006	LBE	Cumulative benefit in the medium to long term.	Low to medium.
23) Initiate a rolling programme of high quality pedestrian routes into town centres.				
24) Carry out street lighting improvements to enhance walking environments and increase personal safety for pedestrians.	2003 - 2006			
25) Improve the network of cycle paths and footpaths in Major Open Areas within the borough.				
26) Ensure that development proposals include footpaths that are safe, attractive, well-lit and comfortable for all.	2003 - 20017	LBE, developers.		Low. Obtained through Section 106 planning agreements and conditions.

Traffic reduction				
27) Consult on ten new Controlled Parking Zones (CPZs) per year for the next five years.	2002 - 2006	TRL, LBE.,	Reduce traffic levels and therefore emissions.	Low to medium. Supported by Section 106 funding and Council's Parking Account
28) Develop new Home Zones every two years for the next six years, subject to winning the necessary funding.	2001 - 2007	DoT, TRL, LBE., TfL.	Improves local AQ and raises awareness of AQ issues.	Low to medium. Supported by Section 106 funding
29) Develop and adopt a Green Travel Plan and Green Fleet Management Plan.	2003	LBE	Reducing the number of cars on the roads will reduce emissions of NO_2 and PM_{10}. Significant AQ benefits in the short to medium term	Low.
30) Ensure appropriate developments have in place green travel plans covering all aspects of vehicle movements.	2003 - 20017	LBE, developers.		
31) Produce guidance for developers and business on Green Travel Plans.	2003 - 2006	LBE		
32) Promote the concept of Green Travel Plans and Fleet Management Plans to organisations and businesses within the borough.				
33) Encourage schools to prepare and adopt their own travel plans.				
34) Continue and extend its 'Safer routes to school' projects	2002 – 2006 and On-going	LBE	Benefits likely in some areas at peak times	Low to medium. Supported by Section 106 funding
35) Encourage developers to undertake to form or contribute to a City Car Club for particular developments.	2003 – 2006	LBE, developers.	Improves local AQ and raises awareness of AQ issues.	Low. Section 106 funded but eventually self-financing.
36) work with London City Car Club partners to develop a pilot scheme in the coming year 2002/03.	First scheme to start Summer 2003			
37) In considering new road schemes or alterations to the existing network, support schemes that help to reduce local congestion and improve environmental conditions and safety for all road users			Long term benefit.	Low – Medium
38) Encourage residential development which provides less than the maximum parking requirement.	2003 - 20017	LBE, developers.		Low
39) Encourage the development of freight partnerships for new developments in Major Employment Locations			Less HGV's on the roads means reduced emissions of NO_2 and PM_{10}. Benefits in mediun to long term.	Low.
40) Encourage the use of non-road freight transport such as rail and canal in industrial and warehousing development				
41) Investigate the potential of developing Freight Partnerships for the Park Royal and Ealing Town Centre areas.	2003 - 2006	LBE, Business, WLA.		

42) 41) Encourage TfL to take action to reduce emissions from A40 Western Avenue and A406 North Circular roads.	2003 - 2006	LBE, TfL, DEFRA	Would make a significant contribution to improving most of the boroughs air quality hotspots.	Medium/High (potentially)
Reducing need to travel				
43) Promote mixed-use development, particularly in town centres and other areas with good public transport accessibility.	2003 - 20017	LBE, developers.	Long term benefit.	Low
Non-traffic measures				
44) Continue to regulate Part B processes within the borough and assess the authorisation of such processes in light of air quality objectives. Liaison will also continue with the Environment Agency over the regulation of Part A processes within the borough.	2003 - 2006	LBE, DEFRA, EA, Local Industry	Continuing benefit	Low
45) Require an Air Quality Assessment for all new developments where there is potential for a significant increase in air pollution	2003 - 20017	LBE, developers, TfL,	Long term benefits. Will prevent development that hampers AQ improvements.	Low
46) Refuse planning permission where a development hinders the achievement of air quality objectives or results in significantly increased air pollution.				
47) Minimise emissions from buildings by encouraging developers to install energy efficient schemes	2003 - 20017	LBE, Developers	Long term measures to help reduce NO_2 emissions	Low
48) Minimise emissions from buildings by seeking the application of energy efficiency principles for new developments.				
49) Facilitate the development of Green Corridors along the A40 and A406	2003 - 2006	LBE, developers, TfL		Low. Joint funding with TfL.
50) Ensure that fugitive dust emissions from construction sites are kept to a minimum.	2003 - 2006	LBE, Developers	Local benefits	Low
51) Encourage domestic composting to reduce waste and discourage bonfires.	2003 - 2006	Residents, LBE, West London Waste	Local benefits	Low
Awareness raising				
52) Undertake local travel awareness campaigns to raise the level of understanding of the consequences of an individual's choice of transport mode and how people can make a difference themselves, also the reasoning behind the Council's sustainable transport policies.	2003 - 2006	LBE, West London Alliance, Health Authority, Businesses, Local Bus Services, LA21.	Improves awareness of AQ issues. Encourages the community to make a positive contribution to AQ improvements. Long term benefits.	Low
53) Work with retailers and other businesses to produce a publicity campaign to encourage people to travel to shopping centres by public transport.	2003	LBE, West London Alliance, Businesses, Local Bus Services, TfL.		

54) Publish a Sustainable Transport Guide to the Borough to give people information on the range of sustainable transport choices available to them.		West London Alliance, London boroughs, Health Authority, Businesses, LA21,		
55) Continue to monitor air quality within the borough and disseminate the results widely.	2003 - 2006	LBE, air quality consultants, West London Alliance, LA21		Low
56) Conduct further review and assessment of air quality in line with its statutory duties.	2004	LBE, air quality consultants,		Low. DEFRA funding sought.
57) Continue to participate in European Car Free day.	Annually (September)	LBE, LA21		Low
58) Continue it's 'Don't Choke Ealing' campaign and will work with its partners on ways to improve its effectiveness.	Annually (June)	LBE, LA21		
59) Review and improve the amount and quality of air quality information on its Pollution Control web site.	2003	LBE, LA21		Low
60) Continue to publish a quarterly Air Quality Bulletin and review and improve the provision of air quality information to the public.	Four per year. 2003 - 2006.	LBE, LA21		

Key

ALG Association of London Government
UDP Unitary Development Plan
DEFRA Department of the Environment, Food and Rural Affairs
DfT Department for Transport
TfL Transport for London
GLA Greater London Authority
LBE London Borough of Ealing
LA21 Local Agenda 21
WLA West London Alliance
GOL Government Office for London
TRL Transport Research Laboratory
EA Environment Agency

Cost bandings

Low <£100,000
Medium <£1,000,000
High >£1,000,000

9. Policy Proposals

9.1 Promotion of cleaner technologies and alternative fuels

9.1.1 Low Emission Zone

The scale of the air pollution problem in London requires new and innovative ways of reducing road traffic emissions. The largest potential impact on air quality and vehicle emissions would be the introduction of cleaner vehicles into the vehicle fleet. Many feel that accelerating the take up of these low emission technologies is the only way of achieving the required reduction in pollution emissions. To bring this about will require ambitious and innovative policies, in the form of both penalties and incentives. A Low Emission Zone (LEZ) is widely felt to be the only acceptable means of achieving this.

Vehicle technology is constantly improving. European legislation has established different emissions standards for new vehicles, requiring each generation to be progressively cleaner. For example, a vehicle built in 2000 is around 20 times cleaner than a vehicle built in 1970. Cleaner vehicle technology includes the latest conventional technologies used in newer petrol and diesel engines, the retro-fitting of older vehicles with emission reduction technology, and the use of alternatively fuelled vehicles such as gas, electric or fuel cells. The limiting factor in the emission reductions these technologies can achieve is not the technologies themselves but the rate of their adoption into the vehicle fleet.

An LEZ is a defined area that bars entry to polluting vehicles that do not comply with set emission standards, the purpose being to encourage targeted vehicle owners and businesses to adopt cleaner engine technologies, or to purchase newer, cleaner vehicles. New legislation is not required for such a scheme so local authorities will be able to use Traffic Regulation Orders (TROs) to ban certain classes of vehicle. The Environment Act 1995 also confirmed that TROs could be introduced for air quality purposes.

LEZs were pioneered in Sweden and have been introduced successfully in various cities in the country. They are being considered in a number of areas within the United Kingdom including Nottingham, Leicester, Bath and York.

Many London boroughs are in favour of such a scheme being implemented to some extent in London. The London Borough of Ealing is currently working with neighbouring local authorities, the Association of London Government (ALG), the Greater London Authority and others in a Low Emission Zone (LEZ) Steering Group. The purpose of this group is to undertake a feasibility study of LEZs in London, including the implementation, operation, air quality impact, viability, costs, benefits and public acceptability of various schemes. It has completed the first phase of its investigation and the second phase, which will gather sufficient information to allow a political decision to be made, is due for completion in early 2003. A number of geographical areas are being considered: Within the M25, within the inner ring road, within the North/South circular, and around the West London/Heathrow area. The possibility exists that the zone could be small and simple to start with, and expanded at a later date both in terms of geography, and stringency of emissions standards. The study will also be of importance to boroughs not participating in an LEZ as the effects of such a scheme will be felt outside of the LEZs boundaries. Early conclusions from Phase II suggests, that in order to work towards achieving the national Air Quality Objectives in London, an LEZ covering the whole of Greater London would be needed. However, with public consultation

required before a decision is taken to implement any LEZ, and the time to prepare a scheme, it is unlikely that an enforced LEZ could be in place before 2007.

Results from Ealing's own modelled scenario suggests that for an LEZ to make a significant contribution to meeting the Objectives, the emission standards required to be met for entry to the area will need to be as stringent as is feasible. Ealing will encourage such stringency in all discussions with the LEZ Steering Group.

Proposal 1. **The Council will support and contribute to a feasibility study for the proposed Low Emission Zone (LEZ) for London and if appropriate implement such a scheme in LB Ealing.**

9.1.2 Vehicle Emission Testing

At present, compliance with prescribed emission standards is enforced by the annual MOT test, although the Vehicle Inspectorate (VI) also undertakes a national programme of random roadside vehicle emission tests. In 1997, the Road Traffic (Vehicle Emissions) Regulations gave powers to seven local authorities around the country to carry out roadside emission tests and fine drivers whose vehicles failed to meet MOT emission standards.

A 1999 National Audit Office report into vehicle emissions testing concluded that a significant proportion of vehicles in Britain – between 10 and 20% - exceed legal emissions levels. This occurs despite the fact that the failure rate for annual MOT tests is around 5%. This discrepancy can be accounted for by wear and tear following an MOT test; there is a tendency on the part of some motorists to do no more than the bare minimum required to maintain their vehicles. The role of the pilot schemes was to demonstrate that through the use of roadside vehicle emissions testing powers, motorists will become more environmentally aware and take more care to ensure that their vehicles are consistently performing as per manufacturers' recommendations. All of the pilot authorities using the powers witnessed increasing levels of compliance over time.

The Road Traffic (Vehicle Emission) (Fixed Penalty) (England) Regulations 2001, came into force on 18th July 2002. They enable all local authorities with designated Air Quality Management Areas to apply to the Secretary of State for the power to carry out roadside vehicle emission testing and to enforce against those vehicles that fail the MOT emission standards. In London, 28 authorities (Ealing among them), have applied for and received such designation.

In order to provide for a co-ordinated and value added approach within London, it was decided early on to pursue a joint London-wide programme. The ALG Vehicle Emissions Testing Working Group was specially established to explore the options open to London boroughs for the use of the new powers. This working group comprised of representatives from the ALG, London boroughs, Police, GLA, TfL and the Vehicle Inspectorate.

At present, It is proposed that the testing regime will consist of three teams (each team comprising two testing officers and one police officer), carrying out 180 days of testing a year, most probably during the seven months of April to October. Testing is confined to this period because during the other months weather and air conditions are unsuitable (this is due to the fact that the emissions testing equipment cannot be relied upon to give accurate readings in cold/wet conditions). The actual distribution of the teams and of these testing days throughout the testing year is yet to be decided among the participating authorities. The scheme works out at approximately 19 test days in Ealing, per year.

Comment [SR1]: I make this 21 days – 540 days divided by 26 participating authorities.

As emissions testing can act as a useful tool to raise awareness and help reduce emissions by forcing drivers to take better care of their vehicles, it is the intention of the Council to carry out exhaust emission testing in the borough when deemed practicable.

Proposal 2. The Council will consider adopting new powers to carry out roadside vehicle exhaust emission testing and issue penalty fines on those vehicles failing emission standards

9.1.3 Stationary vehicles

In addition to roadside testing, regulation 98 of the Road Traffic (Vehicle Emissions) Regulations 1986 also makes it a requirement for drivers to switch off their engines in parked vehicles, where it is not necessary to keep the engine running. However, previously this could only be enforced by the police or trial authorities. The Road Traffic (Vehicle Emission) (Fixed Penalty) (England) Regulations 2001 which came into force on 18th July 2002, enables all local authorities to instruct motorists to switch off their engines while their vehicles are parked and to issue Fixed Penalty Notices to those who refuse to co-operate.

The primary objective of preventing stationary vehicle engines being run unnecessarily is to improve local air quality by encouraging responsible vehicle usage. Emissions from stationary vehicles are only a small contributor to overall levels of air pollution, but they can cause discomfort to people in the immediate vicinity, particularly where they occur in sensitive areas such as outside schools. The Council intends to enforce this through the issuing of fixed penalty notices. It is also the intention of the Council to place signs at appropriate locations throughout the borough informing motorists to switch their engines off whilst stationary.

Proposal 3. The Council will issue penalty notices on the drivers of stationary vehicles who leave their engines running unnecessarily.

Proposal 4. The Council will erect signs at appropriate locations informing motorists to switch their engines off whilst stationary.

9.1.4 Cleaner vehicles and fuels

The majority of vehicles on Ealing's roads are petrol and diesel powered and it is the incomplete combustion of these fuels that causes most of the pollution in the borough. A move towards cleaner fuels would help to reduce emissions at source. Clean vehicle technology includes conventional technologies used in newer vehicles constructed to meet more recent EU regulations, as well as alternatively fuelled vehicles. These include vehicles powered by compressed natural gas (CNG), liquefied natural gas (LNG) and liquid petroleum gas (LPG), as well as electric vehicles and, in the not too distant future, fuel cell vehicles. Older vehicles that are presently on the road can also be cleaned up with a variety of retrofit technologies, such as by fitting a particulate trap or an oxidation catalyst. Water diesel emulsion is a finished fuel that can be used as a direct replacement for conventional diesel fuel without any engine changes or modifications. Water diesel emulsion contains up to 20 per cent water, which is blended into the fuel as very fine droplets, and can lead to significant reductions in emissions of NOx and particulates.

Two DfT sponsored programmes – 'Powershift' and 'CleanUp' - will help to reduce the air quality impact of transport. Both programmes are administered on behalf of the DTLR by the Energy Saving Trust. Powershift provides grants towards the additional cost of purchasing alternatively fuelled vehicles that offer emissions benefits compared to their petrol or diesel equivalents. To date, most of the programme's activities have been in support of gaseous fuels, such as liquefied petroleum gas or natural gas, and electric vehicles. However, Powershift is now also supporting the early introduction of emerging technologies such as hybrid and fuel cell vehicles that offer the prospect of very low emissions of both local and global pollutants.

The CleanUp Programme aims to reduce emissions of NOx and particulates from existing urban vehicles by providing grants towards the cost of fitting them with emissions reduction equipment or converting them to run on alternative fuels. Projects underway include fitting regenerating particulate traps to London buses and the conversion of a pilot fleet of London taxis to run on gas. The programme is focussing, in particular, on areas with poor air quality such as central and inner London.

The Council is in the process of developing its own Green Transport Plan and it is hoped that this will be adopted within the next year. This will include actions to increase the number of green/alternatively fuelled vehicles used by the Council, and a commitment to obtain quotes for cleaner fuelled vehicles when replacing vehicles. Measures will be put in place to ensure that departments will lease only green/alternatively-fuelled vehicles when renewing the fleet. It is hoped that this Plan will ensure that Council vehicles are used sensibly, are well maintained and that routes and tasks are worked out to be as efficient as possible. The concept of driver training to improve fuel economy and reduce emissions will also be investigated.

The London Clean Fuel Vehicle Working Group, which involves the ALG, TransportEnergy, GLA, TfL and London boroughs, are in the process of developing a strategy for electric charging infrastructure, involving the design, access and location of charging stations. Ealing Council supports this group and eagerly awaits any recommendations that are proposed.

Vehicles can be significantly cleaner if well maintained, as well as using less fuel (so also reducing fuel costs) and producing less of the greenhouse gas carbon dioxide. Good maintenance can improve the emissions of many vehicles relatively simply.

The Council will work with companies in order to increase the number of retail outlets for clean alternative fuels in Ealing, and also work with the GLA and fleet operators in order to further promote the take-up of cleaner vehicles and fuels within Ealing

Proposal 5. Council will work with companies in order to increase the number of retail outlets for clean alternative fuels in Ealing.

Proposal 6. The Council will work with the Greater London Authority and fleet operators in order to further promote the take-up of cleaner vehicles and fuels with LB Ealing.

Proposal 7. The Council will review its Waste Minimisation and Recycling Strategy and introduce measures to ensure contractors vehicles meet specified emission standards and encourage the use of alternative fuels.

9.2 Improving environmentally friendly forms of transport

9.2.1 Public Transport

Buses provide an essential service for residents, visitors and workers wishing to make local journeys and are a viable alternative to the car. They take up significantly less road space than equivalent numbers of passengers travelling by car and have a key role in reducing congestion. The Mayor's Air Quality Strategy recognises the significant emissions of NO2 and PM10s, arising from the older bus fleet and has addressed this with an extensive programme of retrofitting particulate traps to the bus fleet. Improvements in bus provision across London are accommodated by the London Bus Priority Network and the London Bus Initiative.

Ealing Council will work closely in partnership with other stakeholders to ensure delivery of the London Bus Initiative (LBI). This aims to make significant improvements for existing and potential bus users. Measures in Ealing will include bus stop improvements and new bus lanes, the upgrade and introduction of technologies such as Selected Vehicle Detection and Advanced Vehicle Location' and road infrastructure improvements.

Ealing council is also developing a new dedicated enforcement system for London Bus Initiative routes. This builds on the camera enforcement pilot Ealing has taken part in for the 207/607 bus route on the Uxbridge road, which demonstrated how 3 cameras were effective in improving compliance with the existing bus lanes. An additional 12 sites are planned as improvements to Ealing's central control room increase capacity. As well as camera enforcement, it is anticipated that a dedicated enforcement team of parking control officers will be formed to work sorely on LBI routes. As part of this work a series of compliance monitoring schemes will be developed to ensure the new regime is effective in improving compliance and thus giving more efficient bus operations.

Similarly, the Council will work in association with TfL, London boroughs and other partners as part of the London Bus Priority Network, to implement bus priority improvements and to help make buses a more attractive alternative to the car. The object of which being to improve safety and to free bus operations from the impact of traffic congestion to achieve improved reliability and a reduction in overall bus journey times. Measures will include bus access improvements, the introduction of bus gates and bus stop clearways.

Proposal 8. The Council will work closely with other stakeholders to develop and extend the London Bus Initiative (LBI).

Proposal 9. The Council will continue to work closely with its partners to bring about improvements to bus movements under the 'London Bus Priority Network'.

Ealing Council will work in close harmony with its West London Alliance partners to secure improved transport conditions across West London under the guise of the West London Integrated Transport Strategy. The strategy will deal with improvements to bus routes, corridors and interchanges. There are 15 Underground stations located in Ealing and the Council will continue to support TfL in increasing the frequency of services and improving access to all London Underground stations in the borough. The WLTS vision is for a series of major projects over a 15 year period to provide progressive improvements and to deliver a high-quality public transport network. One proposal is for a West London Transit scheme to run along the Uxbridge Road and local treatments are been designed in advance of this. The Council also supports the development of

Crossrail, which seeks to relieve congestion and overcrowding on the existing National Rail and Underground networks and support the development of a network of strategic interchanges.
Integration of bus service provision with other public transport systems is essential, as is a greater need for buses to be more accessible. It is also to be encouraged for those developments that attract large-scale movements of people to locate in town centres or major employment locations, and that travel by modes other than the car be better facilitated. Consistent with these aims and the Mayor's and West London transport strategies, a number of policy measures have been introduced into Ealing's UDP, to bring about improvements in Public Transport infrastructure.

Proposal 10. **The Council will continue to work with the other West London Alliance councils to develop the West London Integrated Transport Strategy.**

Proposal 11. **The Council will continue to investigate the feasibility of a West London Transit scheme along the Uxbridge Road and other major transport projects such as Crossrail.**

Proposal 12. **The Council encourage improvements to all railway stations and public transport interchanges.**

Proposal 13. **The Council, as the local planning authority, will facilitate the development of major transport projects consistent with the objectives of the UDP.**

Proposal 14. **The Council will require the provision for bus service improvements with appropriate new developments to ensure a reasonably walking distance between it and a bus stop.**

9.2.2 Promote alternative modes of transport

Whilst it is vital that we try to reduce unnecessary traffic, encourage a switch to cleaner fuels and promote the use of public transport, it is equally important that we encourage healthier modes of transport such as walking and cycling. One in four of all car journeys is less than 2 miles long. Such a distance is ideal for walking or cycling.

The health effects can not be emphasised too strongly. Walking and cycling are the simplest forms of regular aerobic exercise that we can take, and have the added bonus of getting us somewhere. 60 per cent of men and 70 per cent of women are so physically inactive that they risk coronary heart disease, diabetes, stroke or obesity. Regular physical exercise reduces the risk of all these. Current recommendations for exercise are to take 30 minutes of moderate exercise, five times a week. This can be split into, for example two 15 minute brisk walks in one day. Walking or cycling to school or work can produce the same health benefits as an exercise programme and can fulfil these recommendations. There are other, less measurable effects: regular exercise helps regulate weight, and the psychological effects of exercising and feeling fit help to relieve anxiety and tension, thus tackling problems which are all too prevalent in our society.

In heavy traffic, such as is experienced during peak times in Ealing, the air quality can be poorer inside the car than out. Car users can suffer up to three times as much pollution as pedestrians.

9.2.2.1 Cycling

The Council's cycling policy aims to not just get people to cycle more but to persuade more people to cycle instead of using their cars. In the UK, only around 2 per cent of journeys are made by bike, compared with Sweden (10%), Germany (11%) and Denmark (18%), all of which have similar topography and weather conditions. In cycle-friendly Holland the figure is 27 per cent. Although over 80 per cent of schoolchildren in the UK own a bike, only 25 per cent cycle on local roads. Less than 1 per cent of all distance travelled per year is by bike, down from 10 per cent forty years ago. The National Cycle Strategy was launched in 1996. It had a central target to double the number of trips by bicycle (on 1996 figures) by 2002, and to double them again by the end of 2012. The last target has been rephrased in the Governments Ten Year Strategy to trebling the 1996 figure by 2010.

The principal areas of change identified in the National Cycling Strategy are:

Safety – Danger to cyclists is to be reduced by adapting traffic management practices, including engineering of the highway network. It is intended to reduce the cyclist casualty rate and to recognise that potential cyclists are often deterred by an often hostile environment.

Security – Cycle theft is another deterrent to cycling. Secure parking facilities are required at destinations, as well as appropriate methods of registering bicycles and assisting their recovery.

Promotion – It is recognised that a culture where cycling is not seen as a “proper” form of transport is a major obstacle to the take up of cycling. Changing attitudes through communicating to key target groups is required.

Local decisions – Local authorities are required to submit their own strategies and targets to contribute to the national objectives.

The Council will continue to support the implementation of the London Cycle Network (LCN), the aim of which is to provide a network of safe convenient and conspicuous cycle routes across the capital. Proposals include the development of cycle routes and links, and the introduction of secure parking at various sites.

Ealing has made a commitment to supporting cycle training as crucial element of promoting cycling as well as reducing cyclist casualty rates. This includes funding on-road cycle training for primary and secondary school children as well as adult and family groups and individuals. A pool of cycle trainers has been set up and this will be further promoted.

The Council has developed a series of new infrastructure projects with the Ealing Cycling Campaign:

Upgrading existing facilities – alterations to cycle lanes in Church Rd/Crown St, Acton to ensure motor vehicles either can not or are unlikely to be parked obstructing the lane.
New Contra Flow cycle lanes and new cycle links – the creation of new lanes throughout the borough
Traffic calming - methods installed at certain areas to reduce traffic speeds where hazards to cyclists have been identified
Cycling Parking – target of 100 new cycle stands to be install for each year of the ILIP across the borough, as well as the installation of a new cycle parking facility outside Gurnell Pool. The Council will survey locations where cycle parking is absent, damaged or otherwise inappropriate for use. It will also investigate the possibility of providing parking at other locations, including the provision of locker or more secure facilities than the normal cycle stands. This will be in liaison with health authorities, educational institutions and organisations with green or company travel plans.

The Council has introduced policies into its UDP and will use agreements under section 106 of the Town and Country Planning Act 1990 to encourage appropriate developments to have in place facilities for safe and secure cycle parking.

Proposal 15. The Council will continue it's support for the London Cycle Network (LCN).

Proposal 16. The Council will continue to support cycle training, including on-road cycle training for primary and secondary school children.

Proposal 17. The Council will implement new traffic management measures to aid cyclists and improve safety, and upgrade existing cycle facilities.

Proposal 18. The Council will, subject to successful bids for funding, install 100 new cycle stands across the borough every year for the next five years.

Proposal 19. The Council will introduce policies in its UDP to ensure appropriate developments to have in place facilities for safe and secure cycle parking.

Proposal 20. The Council will ensure that development proposals meet standards for adequate provision for cyclists.

Proposal 21. The Council will work to improve the network of cycle paths and footpaths in Major Open Areas and along the canal network within the borough.

9.2.2.2 Walking Initiatives

Walking is the most important mode of transport, accounting for approximately 25% of all journeys and 80% of journeys under one mile in length. Busy roads form a barrier to pedestrians and hence serve to discourage people from walking. If such barriers to walking are allowed to remain then car owners are more likely to use their cars and those without cars may be forced to make fewer trips than they would otherwise wish to make, thereby reducing their accessibility to local facilities. Ealing is keen to enhance the environment for pedestrians and have given high priority to pedestrian movement and safety in shopping centres, employment areas, schools and other centre of pedestrian activity.

To improve pedestrian facilities, the Council is seeking to provide appropriate pedestrian crossings at regular intervals along all busy roads in the borough. Also, to provide crossings to serve every pair of bus stops on busy roads and outside local railway stations.

The Council intends to initiate a rolling programme of high quality (Safe and attractive) pedestrian routes into town centres. This results from the success of the demonstration project (as part of the 1999/2000 'Green Areas' package) which implemented a pedestrian route linking South Acton Estate with Acton Town Centre. The Council also plans to carry out improvements to street lighting in order to enhance walking environments and increase personal safety for pedestrians.

Ealing's UDP policy on walking is that with new development, good footpath access is required so that local connections can be made. The intention being that people can have a real choice to stay local rather than travel further because walking in the neighbourhood will be an efficient, attractive and safe option.

Proposal 22. The Council will provide more pedestrian crossings along busy roads, at bus stops and outside local railway stations.

Proposal 23. The Council will initiate a rolling programme of high quality pedestrian routes into town centres.

Proposal 24. The Council will carry out street lighting improvements to enhance walking environments and increase personal safety for pedestrians.

Proposal 25. The Council will improve the network of cycle paths and footpaths in Major Open Areas within the borough.

Proposal 26. The Council will ensure that development proposals include footpaths that are safe, attractive, well-lit and comfortable for all.

9.3 Traffic reduction

9.3.1 CPZs

Parking control policies form a major part of the available traffic restraint measures currently open to local authorities. Within Ealing parking restrictions in the form of controlled parking zones (CPZs) are implemented to achieve a number of objectives:

- To give priority to residents for access to parking space;
- To preserve existing carriageway capacity on major roads throughout the day, to reduce hazards and accident risks to pedestrians, cyclists and moving traffic;
- To cater for the parking demand of vehicles used by businesses and other organisations with a genuine operational need to use a vehicle;
- To ensure the provision of adequate facilities for servicing of premises fronting the highway and without off-street parking;
- To restrain the non-essential use of vehicles so that more essential vehicles (e.g. emergency services, commercial vehicles and buses) can operate effectively and without due delay;
- To reduce the adverse effects of large volumes of traffic on the environment, reducing traffic levels and thereby emissions, and to enable pedestrian and environmental improvements.

The borough of Ealing contains seven recognised town centres and over thirty underground and train stations within or on the borough boundary. Such areas suffer greatly from the problems of commuter parking and parking congestion.

In 2001, the Council developed a formal parking plan for Ealing. This introduced a programme of consultation and introduction of eleven new CPZs for that year within Ealing. This Plan also includes a commitment to consult on new CPZ proposals in ten areas per annum. The Parking Plan also includes a commitment to review all new CPZs within the first year of operation and to conduct reviews of all existing CPZs over a three year period.

Proposal 27. The Council will consult on ten new Controlled Parking Zones (CPZs) per year for the next five years.

9.3.2 Home Zones

The Council is participating in one of the government's nine national pilot Home Zone projects. The bid was initiated with Council support by residents of five roads in West Ealing under the name of the 'Five Roads Forum'. The Home Zone is a group of residential streets where the road space is shared between the motor vehicle and other road users, with the need of pedestrians and cyclists coming first. Experience from abroad shows that such schemes lead to real road safety improvements and improvements in the local environment. This includes making the area healthier to live in and the revival and extension of community spirit.

Ealing Council proposes, subject to funding, to develop new Home Zones within the borough every two years for the next six years, each on a two-year programme. The first year will look into the feasibility of such a zone in an area, consultation with local residents and detailed design. The second year will consist of the implementation of the Home Zone, in stages if necessary. The sites for these Home Zones have not been identified at present, although the Council has already received

requests from established resident groups in Central Ealing and North Greenford asking for their areas to be considered for the next Home Zone.

Proposal 28. The Council, subject to winning the necessary funding, will develop new Home Zones every two years for the next six years.

9.3.3 Green Travel Plans

A Green Travel Plan is a package of initiatives to reduce car use within an organisation. They can incorporate a range of measures to address different transport needs, including commuter journeys, customer access, business travel and fleet management.

The Council intends to develop and adopt its own Green Transport Plan within the next year. Guidance is already being developed for developers and businesses and it is intended that such schemes will be encouraged and promoted widely. The planning system is able to provide further encouragement by making the development of a Green Transport Plan a condition attached to the granting of planning permission in relevant circumstances. As part of Ealing's 'Safer Routes to Schools' initiative, schools will be encouraged to prepare and adopt their own travel plans.

Proposal 29. The Council will develop and adopt a Green Travel Plan and Green Fleet Management Plan.

Proposal 30. The Council will ensure appropriate developments have in place Green Travel Plans covering all aspects of vehicle movements.

Proposal 31. The Council will produce guidance for developers and business on Green Travel Plans.

Proposal 32. The Council will promote the concept of Green Travel Plans and Fleet Management Plans to organisations and businesses within the borough.

9.3.4 Safer Routes to School.

At the peak school travel time of 8.50am, it is reported that nearly one in five cars on urban roads is taking children to school. This is repeated at the end of the school day. One in four children now get taken to school by car, twice as many as 20 years ago. Encouraging these journeys to be made by more sustainable modes could have a significant impact on emissions in some areas at peak times. To address this issue, the Council has adopted a multi-layered journey to school policy, which will lead to an integrated programme of measures to deal with the safety and environmental problems of children's travel. This policy covers:

- Waiting restrictions outside schools and school warning signs
- On-road cycle training and provision of cycle parking
- Setting up 'walking bus' projects
- Assisting with preparation of school travel plans
- Liaison with London Transport to improve minibus projects (with LA21 Transport Group)
- Travel awareness programmes targeted at parents, teachers, governors and pupils.

The Council has implemented safer routes to school at ten schools involving a wide range of measures to improve pedestrian and cycle routes together with associated road safety training for pupils. A dedicated school officer post has now been created with a view to developing a prioritised programme for further schemes as well as encouraging schools to prepare and adopt their own travel plans.

Proposal 33. The Council will encourage schools to prepare and adopt their own travel plans.

Proposal 34. The Council will continue and extend its 'Safer Routes to School' projects.

9.3.5 City Car Clubs

City car clubs are about shared ownership and use of vehicles. They provide neighbourhood-based short-term car hire for periods as short as one hour. They can also be workplace-based. Unlike conventional car hire, a key feature of car clubs that offer short-term car hire is that cars are based within 10-15 minutes walk of where the members live, or they can be collected at their place of employment. Car clubs are already successful in several countries, particularly in mainland Europe, and are growing every year. The largest car club in Britain at the moment is in Edinburgh, which currently has 13 cars and over 100 active members.

The benefits to City Car Club members as well as the indirect benefits to the community can be summarised as follows;

- use of a range of cars and vans at reasonable rates without needing to own one
- access to vehicles, for as little as one hour at a time, from convenient neighbourhood or workplace locations
- servicing, repairs and maintenance are taken care of
- none of the hassle that goes with buying and selling cars privately
- none of the overheads - tax, insurance, paying for the car - of car ownership

Members of car clubs have incentives to walk and cycle more often and they often lead a healthier lifestyle than comparable car-owning households. They also tend to increase their use of public transport by two thirds after joining a scheme.

Benefits to the community are less direct and some only become evident as the proportion of car users in a neighbourhood or city reach 'critical mass'. Research from mainland Europe shows that each car club car put into operation leads to five fewer cars on the road. These benefits have real potential if 'low-car' households and 'no-car' lifestyles become recognised in future planning of cities;

- Less space taken up by parked cars
- Reduced noise and air pollution in local streets
- Less traffic congestion
- Increased viability of public transport as more people use it
- Environmental benefits (e.g. reduced energy consumption, improved air quality) from reduced dependency on the car
- Club cars are generally newer and therefore generate less pollution than privately owned vehicles

- There is a potential to use alternatively fuelled vehicles with less environmentally harmful emissions

Ealing currently works in partnership with six other London boroughs (Kensington and Chelsea, Brent, Camden, Islington, Lambeth and Merton) to form the London City Car Club. This partnership intends to initially provide a pilot city car club, with an overall objective of achieving 4000 members of car clubs in London by 2006. It is proposed that the London City Car Club will be made up of a network of branches, with car-stations located in all boroughs.

Proposal 35. The Council will encourage developers to undertake to form or contribute to a City Car Club for particular developments.

Proposal 36. The council will work with its London City Car Club partners to develop a pilot scheme in the coming year 2002/03.

9.3.7 Planning Policy to encourage traffic reduction

Ealing's UDP includes policies that encourages development which make a positive contribution to traffic reduction and local congestion. Policies are in place that focus on parking requirements for residential development, public and private (non-residential) parking areas, and new roads or the redevelopment of existing roads.

Proposal 37. The Council, in considering new road schemes or alterations to the existing network, will support schemes that help to reduce local congestion and improve environmental conditions and safety for all road users.

Proposal 38. Residential development which provides less than the maximum parking requirement will be encouraged where there is evidence that car ownership and use by visitors will be low enough to justify the proposal.

9.3.8 Freight Transport

In 1998, 175 million tonnes of road freight had its origin or destination in Greater London. With these figures rising, The Mayor's Transport Strategy underlines the importance of developing a sustainable freight and distribution strategy for London and fostering partnerships between industry and government to balance the needs of businesses, local residents and the environment. Transport *for* London will play an active role in encouraging the development of freight quality partnerships, particularly at the sub-regional level. TfL has set up the London Sustainable Distribution Partnership, bringing together many organisations concerned with road, rail and water freight. The aim is to ensure that distribution, freight and servicing are carried out in the most appropriate way. Ealing Council will consider and if appropriate, implement any recommendations arising from this partnership.

A HGV emits 20 times the NO_x and 10 times the PM10 of an average sized car. HGVs account for only 4 % of the distance travelled by road in Greater London, but contribute 26 % of NOx and 23% of PM10 of total traffic emissions. Reducing the distance travelled by HGVs or improving the efficiency of delivery and service vehicles in Ealing could therefore have a significant impact on reducing air pollution. At any one time, around 30% of lorries on the road are running empty. Improving the efficiency of vehicle use can lead to cost savings for the businesses involved as well

as air quality improvements. The creation of freight partnerships involving the Council, businesses, residents, industry etc could lead to solutions to distribution problems, improve efficiency, reduce costs and distances travelled. The Council also wishes to encourage freight being moved onto the rail and canal network as a sustainable mode of transport. Both are potentially more fuel efficient than road transport, and can carry larger loads with the same engine power. The Council is introducing new policy measures into it's UDP to promote such measures.

Proposal 39. The Council will encourage the development of freight partnerships for new developments in Major Employment Locations.

Proposal 40. The Council will encourage the use of non-road freight transport such as rail and canal in industrial and warehousing development.

Proposal 41. The Council will investigate the potential of developing Freight Partnerships for the Park Royal and Ealing Town Centre areas.

9.3.8 TfL Roads

The Stage 4 Report demonstrates that the roads within the borough that are of most concern in relation to high air pollution levels, are the A40 Western Avenue and A406 North Circular roads. These roads are outside the direct control of the Council and come under the responsibility of Transport for London (TfL). Reducing emissions from these roads will require a regional and London wide approach and the Council will continue to negotiate with TfL to ensure that action is taken to reduce the amount of through traffic on these roads.

Proposal 42. The Council will encourage TfL to take action to reduce emissions from A40 Western Avenue and A406 North Circular roads.

9.4 Reducing the need to travel

Around 6% of our waking hours is spent travelling, accounting for much of the time out of the house, workplace or school. The average distances between home and work in Britain increased by a third between the mid-80s and the mid-90s from 6.1 miles to 8.1 miles. In an ideal world the amount of time spent travelling to work, the shops and leisure facilities would be as minimal as possible, or short enough to allow walking or cycling to become the preferred option. The Council will try to encourage development that reduces the need to travel.

Proposal 43. The Council will promote mixed-use development, particularly in town centres and other areas with good public transport accessibility.

9.5 Non-traffic measures

9.5.1 Part A and B processes

In 1990 the Environmental Protection Act introduced new controls over industries with significant air pollution potential. The Environment Agency was given the responsibility of regulating larger industries (known as Part A processes) such as power stations.

Local authorities were given responsibility for smaller industries (known as Part B processes) who have to take into account any exceedences of NAQS objectives when setting authorisations. Where the NAQS standards based on European Directives are breached as a result of emissions from a process, the Council may impose more restrictive conditions than otherwise.

From 1 January 1998 all petrol stations have been required to fit vapour recovery equipment to reduce emissions of volatile organic compounds, including benzene, when underground tanks are being filled by road tankers. Smaller vehicle resprayers and dry cleaners are likely to be brought under this control in the near future

The Council will continue to regulate Part B processes within the borough in line with DEFRA guidance and ensure they do not lead to exceedances of the National Air Quality Standards. The Council will also continue to liaise with the Environment Agency over the regulation of Part A processes within the borough.

Proposal 44. The Council will continue to regulate Part B processes within the borough ensure inspections are carried out in line with DEFRA guidance and do not lead to exceedances of the National Air Quality Standards. Liaison will also continue with the Environment Agency over the regulation of Part A processes within the borough.

9.5.2 Planning

Ealing's new UDP promotes sustainable development and sustainable communities. The UDP is strategic in that it contributes to global as well as local environmental improvements through local town planning. The air quality elements within the new plan have been strengthened as a direct response to the issues raised in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Supplementary planning guidance is also in the process of being produced.

When considering proposals for development, the Council will take into account air quality objectives and the acceptability of increased risks of air pollution. The cumulative effect of individual developments will be taken into account, both in terms of impact and remedial measures.

Proposal 45. The Council will require an Air Quality Assessment for all new developments where there is potential for a significant increase in air pollution.

Proposal 46. The Council will refuse planning permission where a development hinders the achievement of air quality objectives or results in significantly increased air pollution.

Domestic and commercial premises produce air pollution as a waste product from their use of energy. Most buildings in Ealing employ gas or electric heating systems. From the Stage 4 source apportionment, it appears that approximately 15% of the background levels of NO_x emissions can be attributed to these domestic and commercial heating systems. As this proportion is likely to increase as emissions from other sources reduce, it is relevant to seek energy efficiency as part of the AQAP. The design of buildings has a large impact on energy usage. Good building design can decrease energy use and this is best tackled at the planning stage. Ealing's UDP has been updated to ensure developers are suitably aware of the Council's requirements in relation to air quality improvements.

All proposals for land use, transport, development, renovation and the Council's own activities will need to demonstrate that energy efficiency is a major consideration. This relates to aspects of building design, construction, layout and maintenance, as well as efficiency in the execution of the project (e.g. the transportation of materials and the co-ordination of building work).

As a general overall policy, the Council will:

- Encourage effective and appropriate insulation in residential properties owned by private as well as public sector landlords.
- Encourage the use of the Building Research Establishment's Environmental Assessment Method (BREEAM), or an equivalent standard of energy efficiency and management, for commercial and large blocks of residential buildings. The Mayor will seek to promote the incorporation of this requirement into London borough Unitary Development Plans, in order to encourage the construction of more highly energy efficient buildings across London.
- Promote the cost savings and benefits of more energy efficient appliances.
- Encourage the use of renewable energy, including passive solar, design, photovoltaics, solar water heating, energy from biomass and wind turbines.

Proposal 47. The Council will attempt to minimise emissions from buildings by encouraging developers to install energy efficient schemes.

Proposal 48. The Council will attempt to minimise emissions from buildings by seeking the application of energy efficiency principles for new developments.

Ealing Council's Stage 4 report clearly demonstrates the contribution that traffic using the A40 makes to poor air quality within the borough. It is Ealing's policy to enhance this important gateway to London by the creation of a Green Corridor. The objectives of this project are to provide:

- a green and attractive approach to London for people travelling to and from the capital and living and working in this part of London Borough of Ealing
- a continuous landscaped buffer with moulding and tree planting to protect the areas adjoining the highway from noise and air pollution
- a route for cyclists and walkers separated by landscaping from the motor traffic using the highway, and designed for community safety
- an area of nature conservation value, with arrangements to allow movement by small animals in the wild, and a comprehensive planting and landscaping strategy

The width of the corridor is dependent on the consideration of the above objectives. Liaison with Transport for London is ongoing to establish the corridor.

The A406 Green Corridor promotes footpaths and cycleways together with planting, landscaping and nature conservation. It relates to land that has been taken out of the government's trunk road programme. The land is held by Transport for London. It is important that adequate provision is made for sustainable forms of transport including pedestrian and cycle routes along the lines of land formerly held for road purposes

Proposal 49. The Council will facilitate the development of Green Corridors along the A40 and A406.

Fugitive dust emissions from construction and demolition activities can contribute significantly to local particulate exceedances. The Council aims to reduce such emissions at the earliest opportunity. At the planning stage of a commercial development, conditions are imposed requiring good construction practices to prevent dust from the proposed premises becoming a Statutory Nuisance to nearby residents. Where such preventative measures fail, and the Council receives complaints about excessive dust from these activities, then Pollution Control officers will investigate and can take legal action requiring contractors to take immediate steps to reduce the dust.

Proposal 50. The Council will ensure that fugitive dust emissions from construction sites are kept to a minimum.

9.5.3 Composting and Bonfires

Smoke from bonfires causes severe distress to sufferers from respiratory and certain other diseases, and may give rise to serious nuisance to those who wish to rest or to dry laundry in their gardens. It also tends to nullify the beneficial effects obtained by the reduction of domestic smoke resulting from the operation of Smoke Control Orders. Bonfires are not specifically prohibited by the Environmental Protection Act, even in Smoke Control areas, but the Council will discourage bonfires, and encourage domestic composting to reduce waste.

Proposal 51. The Council will encourage domestic composting to reduce waste and discourage bonfires.

9.6 Awareness raising

It is important to get the message across that individual choice can have a huge impact on the environment. Increasing the general level of awareness of air pollution, its causes, its effects and possible solutions to the problem, will encourage people to think more about the choices they make and hopefully steer them towards more environmentally friendly/sustainable options.

In order to promote the transport policies and the strategic packages as comprehensive and integrated solutions to local transport problems, the Council intends to undertake a local travel awareness campaign. The aim being to raise the understanding and acceptance of sustainable transport policies, and the environmental, economic and social reasoning behind them.
This is in addition to the London-wide 'Travelwise' campaign and the national 'Don't Choke Ealing' campaign which the Council will continue to participate in.

Other initiatives to be considered, and which are subject to successful bids for finance, are a publicity campaign (in partnership with retailers and local businesses) to encourage people to travel to shopping centres by public transport. Also the publication of a Sustainable Transport Guide to the Borough providing a meaningful information on the range of sustainable transport choices available to people.

Proposal 52. The Council will undertake local travel awareness campaigns to raise the level of understanding of the consequences of an individuals choice of transport mode and how people can make a difference themselves, also the reasoning behind the Council's sustainable transport policies.

Proposal 53. The Council proposes to work with retailers and other businesses to produce a publicity campaign to encourage people to travel to shopping centres by public transport.

Proposal 54. The Council proposes to publish a Sustainable Transport Guide to the Borough to give people information on the range of sustainable transport choices available to them.

Ealing also proposes to continue to play an active role in the European Car Free Day programme. This is held each year on the 22nd September, the aim of which is to help the community to rediscover its town centres and urban space and to demonstrate the positive benefits of traffic reduction and encourage people to think about the way they travel.
Key measures taken on Car Free Day include:

- Closing roads in certain areas;
- Allowing access only to pedestrians, bicycles and public transport;
- Enabling local businesses and residents to use the street for other activities such as trading, markets, leisure and community development activities such as games, theatre and music etc.

Ealing took part in Car Free Day for the first time in September 2001 with a successful event in Churchfield Road in Acton. The Council intends to continue its participation in this event and is looking into a more extensive series of road closures.

Proposal 55. The Council will continue to participate in European Car Free day.

Proposal 56. The Council will continue it's 'Don't Choke Ealing' campaign and will work with its partners on ways to improve its effectiveness.

The Council runs and operates two automated air quality monitoring stations at Ealing and Acton Town Halls. These are continually taking samples of air which are then analysed immediately. The data is stored within the analyser, until downloaded remotely by the Environmental Research Group, Kings College London, who run the London Air Quality Network. They can then analyse the data in detail and relate pollution episodes to traffic flows, meteorology and other variables. By frequently downloading data from our automatic monitoring stations, the information can be relayed to the general public while it is still relevant. The data is available from the Environmental Research Group web site and is updated hourly (http://www.erg.kcl.ac.uk/london/asp).

The Council also has an extensive nitrogen dioxide monitoring survey underway. The 5-year survey comprises of 100 nitrogen dioxide diffusion tubes, located at 83 sites throughout the borough. The diffusion tube consists of a small plastic tube open at one end, with an absorbent packed at the other. They are a simple and inexpensive method of screening air quality in the borough, giving a general indication of average pollution concentrations over a period of months. They will give us information regarding the change in nitrogen dioxide levels with time, giving us an idea whether they are getting better or worse. This will inform the Council as to the effectiveness of its Action Plan in meeting the air quality objectives. It is hoped that this information will be available on the Councils web site when available and will be published in the Council's Borough Air Quality Bulletin. The Council will investigate other ways in which air quality information can be disseminated to the wider public.

The Council currently produces a quarterly Borough Air Quality Bulletin, which is distributed to schools, libraries and doctor's surgeries. It is also available from the Pollution Control web site. It is the intention to continue this and look for ways to improve both content and distribution.

Proposal 57. The Council will continue to monitor air quality within the borough and disseminate the results widely.

Proposal 58. The Council will conduct further review and assessment of air quality in line with its statutory duties.

Ealing Council's Pollution Control web site contains a large amount of information regarding air quality in Ealing and the other activities that pollution control is involved in. During the past two years the web site has been rated among the top seven local authority air quality web sites by the leading environmental magazine, Air Quality Management. They visited local authority web sites that displayed air quality information and ranked them according to the quality of the site and the ease of finding it. Ealing's web site is currently undergoing a period of restructuring and upgrading and it is hoped that the new Pollution Control site will be even better than before. (www.ealing.gov.uk/pollcon)

Proposal 59. The Council will review and improve the amount and quality of air quality information on its Pollution Control web site.

Proposal 60. The Council will continue to publish a quarterly Air Quality Bulletin and review and improve the provision of air quality information to the public.

10. Cost effectiveness of proposals

Government guidance requires local authorities to include within their Action Plans "an estimate of the costs and feasibility of different abatement options to allow for the development of proportionate and effective action plans". Local authorities are not expected to undertake a full cost and benefit analysis, nor are they expected to undertake a detailed analysis of the cost-effectiveness of every conceivable policy option. For some options, such an approach would be practically impossible, such as providing better air quality information or encouraging the adoption of green transport plans. However, what is required is an indication that the local authority has considered a range of options and attempted some quantification of their relative cost effectiveness. The main purpose being to ensure that an authority is pursuing a balanced and realistic approach.

The major new policy that this action plan introduces is the introduction of a Low Emission Zone. The Low Emission Zone (LEZ) Steering Group, set up by the GLA and London boroughs, is undertaking a feasibility study of LEZs in London, including the implementation, operation, air quality impact, viability, costs, benefits and public acceptability of various schemes. The results of this study will be included within future revised editions of this document when available.

Another option put forward is that of roadside vehicle emission testing. The proposal at present is that of a London wide testing project, consisting of three teams (each comprising two testing officers and one police officer), carrying out 180 days of testing a year, most probably during the seven months of April to October. This works out at approximately 19 test days per participating borough. The project was successful in securing a grant award of £586,000 from the DfT to support a one-year pilot London-wide programme. It is anticipated that the scheme will not be self-financing and that further DfT support will be needed for the testing programme to continue. By its very nature, success will lead to a significant reduction in income over time, although the same level of enforcement will be required to maintain that compliance. Previous pilot schemes demonstrated that through the use of roadside vehicle emissions testing powers, motorists become more environmentally aware and take more care to ensure that their vehicles are consistently performing as per manufacturer's recommendations. These pilot authorities all witnessed increasing levels of compliance. It is very difficult to ascertain the cost-effectiveness of such a programme, success can only be measured by increased compliance of emission standards over time.

Many of the measures outlined within this action plan are measures that the Council are pursuing as part of their Local Implementation Plan or Unitary Development plan. Others are statutory requirements such as industrial air pollution control. It is questionable as to the usefulness of assessing the cost effectiveness of measures that the Council will be pursuing anyway or which the Council are obliged to undertake legally. Table 1 attempts to quantify the relative impacts of various measures against a range of environmental, economic and social factors. It should be noted that this can only really be a subjective account of the possible impacts of such measures due to the reasons outline earlier.

Table 1. Quantification of the possible impacts of potential Action Plan measures.

	Air Quality Improvements				Non Air Quality Impacts								Perceptions		Practicability	
Impact / **Measure**	Short Term	Medium Term	Long Term	Main Area of Impact	Noise	Congestion	Traffic Reduction	Road safety Issues	Public Transport Accessibility	Effect on Local Residents	Effect on Local Business	Economic Development	Public acceptability	Business Acceptability	Technical Feasibility	Financial Feasibility
Major Infrastructure Alterations																
Industrial re-location		*		Local	++	+	-	+	0	+-	--	--	+-	--	---	--
Traffic re-routing	*			Local	+-	+	0	+-	0	+-	+-	+-	--	-	--	-
Road Closures		*		Local	+-	-	0	+-	+-	+	-	+-	--	--	--	+-
Traffic free residential areas		*		Local	++	+-	+	+	+-	+	+-	+-	+-	-	-	--
Bypass			*	Borough	+-	-	+	+	+	--	+	+	--	+-	--	--
Pedestrianisation		*		Local	++	+-	+	++	+-	++	+-	+-	++	+-	+	+-
Traffic reduction																
Congestion Charging		*		London-wide	+	+	+	+	+	+-	-	+-	--	--	--	--
Tolled Roads		*		Borough	++	+	+	+	+	-	-	-	--	--	-	--
Controlled Parking Zones (CPZs)		*		Borough	+	+	+	+	+	+	+-	+-	+-	-	++	-
Home Zones		*		Local	++	++	++	++	+	++	+		+	+	+	+
Green Travel Plan and Green Fleet Management Plan.			*	Borough	+	+	++	+	++	++	++	+	++	++	++	+
'Safer routes to school' projects		*		Borough	+	+	+	++	+	++	+	+	++	++	++	+
City Car Clubs			*	Local	++	++	++	++	++	++	+	+	++	+	++	-
Introduction of measures into UDP to encourage appropriate development			*	Borough	+	+	+	++	++	++	+	+	++	+	++	+
Freight Quality Partnerships		*		London-wide	++	+	++	+	0	++	+	+	++	+	++	+
Reducing need to travel																
Promote mixed-use development, particularly in town centres and other areas with good public transport accessibility.			*	Borough	++	++	++	++	++	++	+	+	++	++	++	+
Promotion of cleaner technologies and alternative fuels																
Low Emission Zone (LEZ)			*	London-wide	+	+	+	0	+	++	+	+	++	+	-	-
roadside vehicle exhaust emission testing		*		London-wide	+	0	0	0	0	+	+	+	++	+	++	-
penalty notices on the drivers of stationary vehicles who leave their engines running unnecessary.		*		Borough	++	0	0	0	0	++	++	+	++	+	++	++
Car Scrappage Schemes		*		Borough	+	0	0	+	0	+	+	+	+	+	--	--

Increase the number of retail outlets for clean alternative fuels in Ealing.			*	London-wide	+	0	0	0	0	+	+	+	++	++	++	+-
Promote the take-up of cleaner vehicles and fuels within LB Ealing.			*	Borough	+	0	0	0	0	+	+	+	++	++	++	+-
Ensure contractors vehicles meet specified emission standards and encourage the use of alternative fuels.		*		Borough	++	0	0	0	0	++	+	+	++	+-	++	+-
Improve environmentally friendly transport																
Improvement in quality of bus services through the London Bus Initiative (LBI).			*	London-wide	+	+	+	+	++	++	++	++	++	++	++	+-
improvements to bus movements under the 'London Bus Priority Network'			*	London-wide	+-	+-	+	+	++	++	+-	+-	++	+-	++	+-
West London Transit scheme along the Uxbridge Road			*	London-wide	+-	++	++	+	++	++	+-	+-	++	+-	+-	--
improvements to railway stations and public transport interchanges			*	Borough	+	+	+	+	++	++	++	++	++	++	++	-
Public Transport Subsidies	*			Borough	+	+	+	+	++	++	++	++	++	+-	+-	--
Park and Ride		*		Borough	+	+-	+-	+-	+	+-	+-	+-	-	+-	--	-
On-road cycle training for primary and secondary school children.		*		Borough	+	+	+	++	+	++	++	++	++	++	++	++
Improve cycling provision		*		Borough	+	+	+	++	++	+	++	++	+	++	++	+-
Improve pedestrian access and walking provision		*		Borough	++	+	++	++	++	++	+	++	++	+	++	+
Non-traffic measures																
Regulate Part B processes within the borough and assess the authorisation of such processes in light of air quality objectives.			*	Local												
Re-location of certain processes			*	Local	0	0	0	0	0	-	--	-	-	--	--	--
Air Quality Assessment for new developments where air pollution an issue			*	Borough	++	+	++	+	++	++	+	+	++	+	++	+
Planning permission refusal on air quality grounds.			*	Local	+-	+	+	+	+	+-	+-	++	+-	+-	++	-
Installation of energy efficient schemes		*		Borough	0	0	0	0	0	++	++	++	++	++	++	++
Bonfire Ban		*		Borough	0	0	0	0	0	+-	0	0	--	+-	++	++
Bonfire information and encourage domestic composting		*		Borough	0	0	0	0	0	++	+	0	++	++	++	+
Awareness raising																
Undertake local travel awareness and publicity campaigns.			*	Borough	+	++	++	++	++	++	++	++	++	++	++	-
Monitor air quality within the borough and disseminate the results widely.			*	Borough	0	+	+	0	0	+	+	0	++	++	++	-

KEY

++	strong positive impact
+	positive impact
0	No significant impact
-	Negative impact
+-	both positive and negative impacts

Note: Measures in Bold are those taken forward in the Air Quality Action Plan.

APPENDICES

Legislative Background

Ever since air pollution was recognised as a problem, legislators, regulators and governments have tried to control it. As early as 1273 the use of coal was prohibited in London as being "prejudicial to health". Since the Industrial Revolution, there have been numerous Acts passed in an attempt to reduce air pollution. These have included the Railway Clauses Consolidated Act of 1845 (requiring railway engines to consume their own smoke). The Improvement Clauses Act of 1847 (to reduce factory smoke), the Sanitary Act of 1866 (empowering sanitary authorities to take action in cases of smoke nuisances). Also the Public Health Act of 1875 (containing smoke abatement legislation that has been used to the present day), and the Smoke Abatement Act of 1926.

As a consequence of the Great London Smog of 1952, the Clean Air Acts of 1956 and 1968 were introduced. These aimed to control domestic sources of smoke pollution by introducing smokeless zones, and to control industrial sources of pollution by the use of tall chimneys for waste gas dispersal. With the introduction of these smoke control areas, urban air quality was greatly improved and the 'pea soup' smogs of the 1950s became a thing of the past.

Since the 1970's, the European Union has driven much of the legislation introduced. Over the last 30 years the European Commission has passed a number of EC directives to limit the emissions from industry and more increasingly those created by transport.

The introduction of the Environmental Protection Act 1990 and the Environment Act 1995 marked the biggest steps forward in controlling air pollution since the Clean Air Acts. Prior to this, the control of air pollution was developed on a reactive basis, with regulations to address specific problems as they became evident. As with the Clean Air Acts, policies and tools were developed to combat visible air pollution such as black smoke, and to a lesser extent, sulphur dioxide. Recent legislation is a recognition that the UK is confronted by quite different air pollution problems than those witnessed in past decades. Contemporary problems are associated with the emissions of a variety of primary pollutants, with numerous and varied sources, many of which undergo subsequent chemical transformations into secondary pollutants.

Part 1 of the Environmental Protection Act 1990 strengthened the controls over industrial air pollution by providing a framework for regulating emissions for industrial sources through local air pollution control (LAPC) and integrated pollution control (IPC). It brought many smaller emission sources under air pollution control by local authorities for the first time and provided a new statutory framework for local air quality management. It also gave the Government powers to:

- Set emission limits and environmental quality standards for individual pollutants; and
- Make plans setting limits on total amounts of pollutants that could be emitted.

The Environment Act 1995 (Part IV) built on this foundation. It established the Environment Agency for England and Wales and the Scottish Environment Protection Agency. It required the Secretary of State to prepare and publish a strategic framework for the management of national air quality. The Pollution and Prevention Control Act 1999 enables a new pollution prevention and control (PPC) regime replacing IPC and LAPC to be implemented.

Guidance Available

Under section 88(2) of the Environment Act 1995, local authorities are required to take account of the guidance issued by the Department of the Environment, Transport and the Regions (DETR) when carrying out their duties, under or by virtue of Part IV of the Act.

LAQM.G1(00) gives a general introduction to the system of local air quality management(LAQM). LAQM.G2(00) advises on the main points that local authorities should take into account when developing air quality management area (AQMA) action plans and/or local air quality strategies. Local authorities are advised to read this guidance together with the other notes in the series;

LAQM.G1(00) – Framework for review and assessment of air quality
LAQM.G2(00) – Developing local air quality action plans and strategies – the main considerations
LAQM.G3(00) – Air quality and transport
LAQM.G4(00) – Air quality and land use planning
LAQM.TG1(00) – Review and Assessment: Monitoring air quality
LAQM.TG2(00) – Review and Assessment: Estimating Emissions
LAQM.TG3(00) – Review and Assessment: Selection and use of dispersion models
LAQM.TG4(00) – Review and Assessment: Pollutant specific guidance

The National Society for Clean Air has also published a series of guidance notes for local authorities, which have been consulted extensively during the production of this document.

Air Quality Action Plans: Interim Guidance for Local Authorities. (NSCA, 2000a)
Consultation for Local Air Quality Management: the how to guide. (NSCA, 2000b)
Air Quality: Planning for Action. (NSCA, 2001)

Limitations of Local Authority Power

Transport for London

Transport *for* London (T*f*L) is responsible, on behalf of the Mayor of London, for maintaining, managing and improving conditions for all road users on 550km of London's most important roads, the Transport *for* London Road Network (TLRN), which, although comprising only 5 per cent of the Capital's roads, carries approximately 33 per cent of its traffic. It has the task of implementing the Mayor's commitments on improving the movement of people and goods on London's streets by helping pedestrians, cyclists, bus passengers and people with disabilities.

T*f*L inherited the resources, staff and responsibilities of the Traffic Director for London, the Traffic Control Systems Units, the London area of the Highways Agency, the London Transport Bus Priority Unit and part of the London Research Centre. It includes the London Bus Initiative, which in its first phase, is managing major improvements to 27 bus routes for completion in 2003. There are a further 43 bus routes due for improvement in the second phase of the initiative which is due for completion in 2005.

Within Ealing, TfL is responsible for the A40 Western Road and A406 North Circular, which just so happens to be the two worst roads within the borough for emissions of PM10 and NO2.

The Environment Agency

The Environment Agency has an important role to play in the process of air quality management, through the provision of information and the regulation of emissions to atmosphere from major industrial processes. As part of its commitment to working with local authorities to deliver improvements in air quality, each Region in the Agency has identified one or more Zones of Industrial Pollution Sources (ZIPS) in which co-located industrial processes may be having a cumulative effect on local air quality.

In those AQMAs designated by a local authority, in which Agency-regulated operations make a significant contribution to the exceedance of an objective, the Agency will review and where appropriate amend operating conditions and BATNEEC (Best Available Techniques Not Entailing Excessive Cost) for processes making a significant contribution to the AQMA.

The review will comprise of four elements;

Identification of installation(s) that may significantly contribute to the pollution burden in the Air Quality Management Area;
Evaluation of the contribution of installations to the exceedance of the objective;
Review of current and possible abatement techniques;
Determination of future abatement controls.

The Agency in collaboration with the Local Authority will be responsible for the identification of relevant processes. The results of the ZIPS assessments may well provide useful information on the source and relative contribution of industrial processes to the AQMA. More detailed information on the relative contribution of individual processes and possible control and abatement techniques will be sought from industrial operators. The Agency will then determine the requirement for further controls on releases in line with the requirements of IPC or IPPC, as appropriate

Stage 3 Review and Assessment Consultation Process

Ealing Council consulted on the findings of its Stage Three Review and Assessment in 1990. The objective of this process was to give everyone who has an interest in local air quality the opportunity to have their views heard and fully considered. It was also to ensure that the work done in the Stage 3 Review and Assessment was agreed and accepted widely, and to assess the degree of support for a range of possible measures from residents and businesses alike. Copies of the Stage 3 report were sent to statutory consultees and other interested parties, as well as being made available on the pollution control's web site. Public consultation was conducted primarily by two methods: [i] public meetings and [ii] questionnaires distributed to Borough residents and businesses and also available online via the Pollution Control Team's web site. These initiatives were supported by media coverage and by links and additional information on the web site.

Results of Consultation

A total of 661 residents and 319 businesses responded to the consultation. The responses from businesses are representative of the Borough's business community. The evidence is that those from residents, while not statistically representative, represent widely held views.

The responses showed that there is a considerable amount of concern about local air pollution, but at the same time a widespread ignorance and many residents and businesses felt they are not well informed about the air quality where they live or work. Most would like more information about local air quality.

The majority of those who returned completed questionnaires were positive in their views concerning AQMAs and believed it would be beneficial to public health and improve air quality. Many were unsure as to what an AQMA was and what it would entail, and others were sceptical, believing the concept to be just more council bureaucracy or a money making exercise.

The response from those attending the public meetings were of a similar vein, most being positive once the concept was explained. The general perception was that the air quality in the borough was far from ideal, with some commenting they were surprised the borough was not already an AQMA. There was a fear that the council was attempting to slip through another money making scheme along the lines of Controlled Parking Zones, or that the Council was "anti-car".

The issue of how much residents and businesses would like to see certain measures introduced to reduce traffic-related air pollution, prompted varying degrees of positive and negative responses:-

- Residents and businesses both support "carrots", i.e. measures which will make shifting from car to alternative modes more attractive. Thus there is strong support for segregated cycle lanes along the full length of local main roads, and a considerable amount for continuous bus lanes.
- Penalties for transgressors are also strongly supported: on the spot fines for parking in bus lanes, for failing emissions tests and for unnecessary engine running while stationary.
- The Home Zone and Low Emission Zone concepts both achieved widespread support.
- Businesses also support financial incentives: discounted fares on public transport, and tax breaks for operating cleaner vehicles and for implementing Green Transport Plans.

- Restrictions on individual freedoms such as parking restrictions, road closures and reducing access to roads would not gain much support [with the possible exceptions of controlled parking zones and high occupancy vehicle lanes].
- Equally, "stick" measures which incur costs, such as congestion charging and workplace parking charges, gain little support from residents or businesses.

Council priorities for measures to reduce pollution from traffic should therefore concentrate on "carrots" which will make alternative modes more attractive, together with enforcement of penalties.

The entire concept of Air Quality Management Areas [AQMAs] was not fully understood, and demonstrated that it requires careful positioning to avoid being seen as just another piece of unenforceable bureaucracy. There is genuine concern that restrictions on car use will cause hardship to both businesses and individuals. The over-riding message is that there must be viable, realistic and attractive alternatives to switch to.

Friends of the Earth response

Ealing Friends of the Earth (EFoE) responded by favouring the declaration of AQMAs in those areas only that are predicted to exceed the air quality objectives. They stated that, in their view, declaring a wider area would "dilute" the impact of any measures outlined in any action plan. Also, having a borough wide declaration could be used as an "excuse" for inaction by councillors, since much of the AQMA would be predicted to meet air quality objectives and deemed "good enough". EFoE also anticipate that AQMAs larger than exceedance areas will be "weaker from the planning control point of view". They conclude that declaring AQMAs based on exceedance areas alone is "the most likely to generate real results and hence to generate health improvements for those people of the Borough who are most in need of them".

Traffic related pollution

Individually, a vehicle engine is not a particularly important source of pollution. Collectively however, they represent a major source of air pollutants in Ealing. Road transport accounts for around two-thirds of all national emissions of four of the eight pollutants for which strategy objectives have been set, namely; benzene, 1,3-butadiene, carbon monoxide and lead. However, there have been, and will continue to be, significant reductions in these emissions, and measures already in place are expected to ensure that these objectives will be easily met in all areas. Of more concern is that road transport is also responsible for a significant proportion of the pollutants for which objectives will be most difficult to meet - nitrogen dioxide and particulate matter - even though there will be significant reductions in these emissions too. From the table below it can be seen that road traffic accounts for over three-quarters of emissions in London.

Proportion of emissions within Greater London from road traffic and industry in 1999

Pollutant	% of emissions in Greater London	
	Road transport	Industrial sources
Nitrogen oxides (NO_x)	58%	9%
Fine particles (PM_{10})	68%	22%
Sulphur dioxide (SO_2)	38%	39%
Carbon monoxide (CO)	94%	1%
Benzene	74%	7%
1,3-Butadiene	93%	0%

Note: Pollution sources outside the region can effect atmospheric concentrations, particularly for PM_{10} and SO_2. Emissions of pollutants at different heights have different effects on ground level air quality. This is particularly relevant to industrial and aircraft emissions. (Source: The Mayor's Air Quality Strategy. 2002)

Road traffic is growing. The government's new ten year plan 'Transport 2010' predicts that for London:

- Car ownership will rise by 12%
- Traffic volumes will rise by 14%
- Traffic congestion will rise by 13%

This is on top of the fact that London already has over three times the national average traffic congestion.

Air pollution is predominantly a local phenomenon, albeit often with major international implications. Accordingly, the extent to which road transport is a significant source of specific pollutants at any place and time varies depending on the level of traffic and proximity of other sources of that pollutant, as well as the prevailing meteorological conditions. This often means pollution levels are higher in areas with major traffic flows, especially when measured at the kerbside.

Air quality, traffic congestion and noise are all closely linked and have a large impact on the quality of life. Road traffic affects health in terms of air pollution, disrupted sleep and stress, increases

community severance and traffic accidents. As road traffic is now the major contributor to air pollution, efforts to tackle pollution should focus on reducing emissions from road traffic.

The main thrust of measures to cut down on pollution from vehicles has been directed towards improving the exhaust emission performance of new vehicles, since the scope for improvements to existing vehicles is limited by their original design capabilities. The setting of mandatory vehicle emission and fuel quality standards, rather than the specification of particular technologies, gives manufacturers the flexibility to develop a solution which best suits their requirements.

The introduction of a series of more stringent European standards, commonly referred to as Euro standards, in the 1990's, has had a particularly significant effect on vehicle emissions. Table 2 outlines the Euro standards which have been introduced since 1993, together with future standards now agreed as a result of the European Commission's Auto-Oil programme.

Table 2.

Mandatory vehicle emission Euro standards			
Standard	**Directive**	**Type of Vehicle**	**Date of introduction**
Euro I	91/444/EEC 93/59/EEC 91/542/EEC	passenger cars light commercial vehicles heavy diesels	31 December 1992 1 October 1994 1 October 1993
Euro II	94/12/EC 96/69/EC 91/5442/EEC	passenger cars light commercial vehicles heavy diesels	1 January 1997 1 October 1997 1 October 1996
Euro III	98/69/EC	passenger cars & light commercial vehicles heavy diesels	1 January 2001 1 October 2001
Euro IV	98/69/EC	passenger cars & light commercial vehicles heavy diesels	1 January 2006 1 October 2006

EUROPEAN STANDARDS AND THE AUTO-OIL PROGRAMME

In 1995 the European Commission set up a research and consultation programme, in conjunction with the oil and motor industries, known as the Auto-Oil programme. Its objective is better air quality across Europe through improvements in vehicles technology and fuel specifications. The project has resulted in significant developments, which will make higher standards possible. These are:

- requirements to reduce emissions of particulates, nitrogen oxides, carbon monoxide and hydrocarbons from passenger cars and light vans in two stages from 2000 and 2005;
- requirements to improve fuel quality for petrol and diesel in similar stages. The general sale of leaded petrol will also be prohibited from 2000. From 2005, the use of ultra-low sulphur petrol and diesel will be mandatory, and
- a proposal on reducing emissions from heavy diesel engined vehicles in two stages from 1 October 2000 and 2005. The Council of Ministers agreed a common position on the proposal in December 1998.

These standards are proving a major influence on the design of future vehicles. The industry is responding with significant investment in research and development. They are predicted to achieve major improvements in emissions from road vehicles.

As traffic has grown over the past twenty years, so emissions have increased, but due to progressively tighter vehicle standards, emissions of all local air pollutants are significantly lower than they were ten years ago. Between 1995 and 2010, the increasing proportion of vehicles meeting Euro I and II standards is expected to lead to reductions in NO_x emissions of around 55% and of PM_{10} of about 33%.

The new Euro III and IV standards will have a further significant impact, introducing even cleaner vehicle technologies as standard for new vehicles. Better catalytic converters will be required for petrol cars manufactured to Euro III standards, and diesel cars are likely to be fitted with exhaust after-treatments. Heavy diesel buses and lorries will almost certainly be required to be fitted with particulate traps, to achieve Euro IV standards. The adoption of these standards will further reduce NO_x emissions by around 35% and emissions of PM_{10} by about 40%.

However, even these significant improvements in emissions will not be sufficient to meet the Strategy's objectives in London for PM_{10} and NO_2 by 2005 without the introduction of other significant local measures.

Other Sources of air pollution

The level of local emissions of air pollutants from road transport is not always indicative of the level of pollution in the atmosphere. Transboundary emissions can be a major source of pollution levels, depending on prevailing meteorological conditions. In the case of PM_{10}, as well as emissions from combustion sources such as road traffic, secondary sources of particulates arising from atmospheric chemical reactions and long range sources, can be equally important in determining pollution levels. The Government is responsible for tackling these transboundary sources of pollution at a European level.

Other local non-transport sources of emissions can be equally as important. Industry, which until recently was the dominant source of air pollution in many towns and cities, remains a producer of substantial quantities of most of the pollutants for which objectives are set in the Strategy. Industrial emissions are controlled primarily either by the Environment Agency through the integrated pollution control system or by local authorities through the local air pollution control system. Industrial processes prescribed for control must be operated in accordance with an authorisation from the appropriate regulatory authority. The authorisation contains emission limits and other conditions regarding the operation of the process. Authorisation conditions should be in line with the principle of BATNEEC - best available techniques not entailing excessive cost.

Emissions from domestic sources, particularly heating appliances, have also diminished in significance over the last forty years. Nevertheless, they still contribute to air pollution, especially in terms of sulphur dioxide and particulates. Domestic emissions of solid fuels have been tackled progressively since the late 1950s, principally through the widespread introduction of Smoke Control Areas.

Health Effects and Sources of Air Pollution

Benzene
Occurs naturally in crude oil and forms during the upgrading of fuel oil. In the UK the main atmospheric source of benzene is the combustion and distribution of petrol, of which it is a minor constituent (2% by volume). Motor vehicles are the most important single source on a national basis, although it is not found in diesel. It is also present in cigarette smoke and some glues and cleaning products.

Benzene is a known human carcinogen. Occupational exposure to benzene at 1-10 ppm is strongly linked with the risk of developing leukaemia (also less strongly with liver, lung and stomach cancer).

1,3-Butadiene
1,3-Butadiene in the atmosphere is mainly derived from the combustion of petrol and other materials. The dominant source is the motor vehicle. Although neither petrol or diesel fuel contains 1,3-butadiene it is formed in the combustion process from olefins in the fuel. It is also an important industrial chemical and is handled in bulk by certain industries, such as for use in rubber processes.

1,3-Butadiene is an accepted genotoxic carcinogen and therefore no absolutely safe concentration can be defined. Laboratory studies have shown that 1,3-butadiene causes a variety of cancers in rodents and damages the genetic structures of the cell.

Carbon monoxide
Carbon monoxide is produced by the incomplete combustion of carbon containing materials like wood, coal and oil. The main source of carbon monoxide in the UK is road transport, which accounted for 71% of the total emission in 1996. Other sources include smoking and unflued heating or cooking appliances.

Carbon monoxide diminishes the oxygen carrying capacity of the blood by binding to haemoglobin. As oxygen is displaced by carbon monoxide it can progressively lead to oxygen starvation. In low concentrations it causes headaches, vomiting, impaired concentration and reflexes. Higher concentrations can lead to heart problems in individuals with cardiovascular disease, and in extreme cases collapse and death. The effects of brief exposure are reversible.

Lead
Lead is the most widely used non-ferrous metal and has a large number of industrial applications. The single largest use globally is in the manufacture of batteries. Other uses of lead are in paints, glazes, alloys, radiation shielding, tank lining and piping. The compound tetraethyl lead has been used as a petrol additive to enhance the octane rating, but its use has been phased out across Europe. Lead levels have fallen dramatically as a result.

Lead exhibits toxic biochemical effects in humans, which lead to a decrease in the synthesis of haemoglobin, acute or chronic damage to the nervous system and effects on the kidneys, gastrointestinal tract, joints and reproductive system.

Nitrogen dioxide
Nitrogen dioxide (NO_2) and nitric oxide (NO) are both oxides of nitrogen and together are referred to as NO_x. All combustion processes produce some NO_x, but the main sources of NO_x in the UK are road transport, power generation and domestic sources. Indoor sources are unvented gas cookers and

other unflued gas appliances, paraffin stoves and cigarette smoke. NO_2 is produced by the oxidation of NO in the atmosphere and there is a complex relationship between emissions of NO_x and the resulting concentrations of NO_2, dependent on the proportion of NO_2 in the primary emission and the availability of atmospheric oxidant, especially ozone, to oxidise NO to NO_2.

Nitrogen dioxide is highly toxic at elevated concentrations. It can affect lung function. Repetitive exposure in animals can produce changes in lung structure, lung metabolism, and lung defences against bacterial infection. Animal toxicological studies suggest that peak concentrations contribute more to the toxicity than does the duration of the exposure, although the latter is still important. This is the reason for the two objectives, both hourly means and an annual mean. There is also some evidence that exposure to nitrogen dioxide may put children at an increased risk of respiratory infection and may lead to impaired lung function later in life. It is also involved in photochemical smog formation.

Particulates (PM_{10})

Particulate matter with a diameter of less than 10 µm is known as PM_{10}. It is this size range of particulate matter suspended in air that has been found to have human health effects. It is implicated in increasing obstruction of the airways and worsening underlying lung disease. There is also a possibility that some particulates penetrate deep into the lung tissue and may be carcinogenic (for example, hydrocarbons). Although many of the obvious effects of air pollution disappeared with the earlier smogs, research over the last few years has suggested that, even at the much lower levels now found in the UK, particulate air pollution seems to be associated with a range of measures of ill health, including effects on cardiovascular and lung function and asthma.

Unlike the gaseous pollutants mentioned, which are single, well-defined substances, particulate matter in the atmosphere is composed of a wide range of materials arising from a variety of sources. In general, emission estimates for PM_{10} are less accurate than for the other pollutants described, particularly for sources other than road transport.

Over the last two years, a growing body of evidence has suggested that remote pollution sources play a major role in determining PM_{10} concentrations, even in urban areas. A report by the Airborne Particles Expert Group in 1998 confirmed that long-range transport of secondary particles from Europe and elsewhere in the UK can dominate the exceedences of the standard for PM_{10}. Secondary pollutants are formed in the atmosphere from emissions of SO_2 and NOx.

Sulphur dioxide

Sulphur dioxide is a colourless gas emitted through the combustion of coal and oil. The main sources are power generation, other industry, commercial and domestic heating and road transport. It is also a constituent of winter smog

Sulphur dioxide is a potent bronchorestricting agent. The degree of effect depends on a number of factors but asthmatics and others suffering from respiratory disorders may be affected, particularly if exercising out of doors.

Draft West London Alliance (WLA) Air Quality Strategic Plan, 2002 to 2005

Introduction

The West London Alliance is a grouping of London boroughs with common aims including working together on a number of environmental matters. In 2001 the WLA issued its environment strategy within which was a commitment to work together on the issue of local air quality. This paper follows from that commitment and provides a strategic overview of actions the WLA will take as a group to act positively, in a measurable way to achieve improvements in air quality across the region.

Air pollution does not respect borough boundaries and London boroughs by their nature are small in area therefore the effective options related to individual borough activity are relatively limited. Consideration must also be given to the effect of individual boroughs policies on their neighbours, as pollution emitted in one borough effectively becomes the background concentration of those which adjoin. Many of the actions to improve air quality relate to the transport functions, many of which work on a cross borough basis exemplified by the West London Transport Strategy therefore, the most logical strategic approach to west London's air pollution problems is to work on a cross borough partnership basis.

Finally, whilst recognising that some of the larger scale transport projects take time to develop this document is aimed towards the end point of the current air quality review period, that being 2005.

Air Quality In West London – The Challenge

Air pollution across west London is significantly affected by emissions from traffic in the area along with Heathrow airport. This problem can only be solved by change, be it in the way journeys are made or by the types of vehicles they used. There is also an appreciable contribution made by the background concentration especially in relation to fine particles (PM).

Of particular concern are the levels of nitrogen dioxide and fine particles . This plan is focused on reducing the levels of these pollutants.

Aims of the Joint Strategic Plan

All boroughs within the West London alliance are obliged to develop air quality action plans. This joint strategic plan is designed to provide a framework for boroughs own action plans highlighting synergies and resolving potential conflicts as the plan reaches the implementation phase. There may be particular concerns in relation to action taken in relation to air quality and the social, economic and other environmental (the noise environment, climate change etc) consequences.

In addition the Strategic Air Quality Plan will

- interface directly with the boroughs own work on air quality action planing
- link directly with Ilip / BSP transport objectives particularly on a west London basis

- be used to inform / integrate with, UDPs, sustainable regeneration policies, Mayors spatial development, transport, energy and air quality strategies
- help to attract funding for joint West London Alliance Projects for example a travel website (see below)
- foster links with community (LA21) and boroughs community plans
- link to health strategies and key health indicators
- integrate with boroughs climate change / greenhouse gas protocols
- help individual boroughs progress towards their environmental management systems such as ISO 14001
- help in building relationships with the other stakeholders whose aim is also the improvement in air quality such as business groupings, the Greater London Authority, Transport for London, the Highways Agency, the Department for Transport and the Department of Environment Food and Rural Affairs.

Methodology

These actions have been developed via a joint meeting between the boroughs transport policy officers and air quality officers. The initial output (previously reported) was the seven key areas, these have now been turned into a set actions designed to be

Positive
and
"SMART"

Previous versions of this document was circulated for comment to the air quality officers and in some cases their transport policy counterparts.

Joint Actions To Improve Air Quality in West London

Headline Objective	Action	Measurable Output	Comment
KA1 Transport and Air Quality Action Assessment	a) determination of the scale of air quality improvement needed across West London. b) maintain air quality monitoring in west London	% NO2 Vs Objective % PM Vs Objective	Needs to be undertaken on the basis of air quality concentrations but emissions will also provide a useful metric.
	b) the magnitude and type of deliverable transport actions appropriate to effecting substantial air quality improvement in West London	To be developed as part of source apportionment process.	
	c) the likely impact of a range of transport actions upon air quality and their contribution towards meeting statutory air quality improvement targets.	Determined by modelling proposed schemes	Measure of assessment needs to be developed but likely to be done in emission terms.

Headline Objective	Action	Measurable Output	Comment
KA2 Low Emission Zones (LEZs) – Examination and Support	a) investigate the potential, efficacy and impact of LEZ implementation for west London	Progress and reporting of LEZ WG	Will test own scenarios within the framework of the LEZ scheme if necessary
	b) support ongoing LEZ study being undertaken by the boroughs, the GLA and ALG		
KA3 Transit Schemes – Support and Development	a) continue to support the development of the 'West London Transit' scheme	Number of schemes under consideration Number of Schemes implemented across west London	
	b) examine and actively develop, further transit routes and services for West London. Agree and promote the West London Transport network with West London Partnerships.	As above	

Headline Objective	Action	Measurable Output	Comment
KA4 Land Use Planning Integration	a) Provide supporting statement in response to the draft London Plan with the West London Partnership	Draft and agree joint statement, submit by September 2002.	Link with West London Partnership draft workplan
	b) work to further integrate land use planning policies and mechanisms with transport and air quality objectives to reduce the need for travel.	Meet with planning colleagues and report to WLA	Look at issues such as traffic counts, 106 funding etc.

Headline Objective	Action	Measurable Output	Comment
	c) use of Planning process to improve air quality	West London SPG for west London Report considering parking standards across WLA Numbers of LPG filling stations, electric charging points. Numbers of travel plans (high quality, feasible) submitted Improved accessibly to public transport	Outputs need to be discussed with planning teams (see a above) Also need to look at the use of s106 WLA boroughs have appointed or are in the process of recruiting travel plan officers
KA5 Bus Corridor improvements	Concerted action to develop efficient and high quality bus corridors throughout West London, considering substantial infrastructure changes where appropriate to achieve improvements.	Number of cameras on bus lane / busses Number of reported infringements. Bus reliability (surveys) Euro category of busses in WLA	Currently bidding through London Bus Priority Network, London Bus Initiative and West London Transport Strategy.

Headline Objective	Action	Measurable Output	Comment
KA6 Sustainable and Integrated Transport Action	a) continue to support and develop all actions to promote sustainable and integrated transport across West London.	Numbers of high occupancy vehicle lanes introduced. combined use lanes Numbers of cycle parking and hire facilities at stations	Transport interchange hubs (inc. motorcycle cycle electric vehicles) Schemes identified in the West London Transport Strategy.
	b) promotion of High quality interchanges	Promote via travel website (monitor number of hits	
	c) improve access to travel information	Nos. of 'Countdown" boards Production or link to travel website, (train / bus timetables)	
	d) increase the number of Safe Routes to Schools schemes targeting AQMAs	Number of schemes in WLA	

Headline Objective	Action	Measurable Output	Comment
	e) rail improvements	Train frequencies and variations. Improvement in frequency Improvement of cycle storage facilities at stations	
KA7 Freight Movements – Quality Partnership	Develop comprehensive Freight Quality Partnerships across London to improve environmental performance whilst supporting commercial imperatives of operators.	Introduction of Partnership. Number of signatories Euro category of fleet	
KA8 Heathrow Terminal 5	Consider application of all Key Actions 1-7 in accommodating Terminal 5. Promote alternative methods of getting to Heathrow	Congestion charge / LEZ for Heathrow area. Modal split	

Consultation Responses

Responses to consultation comments received on the draft Air Quality Action Plan (approved 8th April 2003).

Statutory Consultee responses.

London Borough of Hammersmith & Fulham	1	Welcomes plan and hopes it helps reduce emissions in Ealing and therefore background levels in H&F. Fully supports the plan and policies contained within.	Support noted	No change required to AQAP
Environment Agency	2	Notes there is no immediate specific action required on its part but will continue to work closely with Ealing.	Support noted	No change required to AQAP
GLA and TfL joint response	2.1	Broad support for the draft Action Plan and pleased to see a wide range of actions aimed at reducing emissions from both transport and non-transport sources. Welcomes the actions outlined. Action Plan clear and detailed, with many sensible measures aimed at improving air quality.	Support noted	No change required to AQAP
	2.2	Delighted to see that draft air quality action plan and related work have prominence on the Council's web site.	Support noted	No change required to AQAP
	2.3	Update final document to incorporate the Mayor's final Air Quality Strategy rather than 'draft'	Comment accepted	AQAP updated
	2.4	Action Plan should encourage the use of the underground stations in the borough at a greater level.	Comment accepted	AQAP amended
	2.5	Action Plan should make some reference to the Crossrail project.	Comment accepted	AQAP amended to include reference to Crossrail.
	2.6	TfL would rather the use of the term 'working with TfL' instead of 'persuading TfL'	Comment accepted	AQAP amended accordingly
	2.7	TfL would like to see the text strengthened by identifying work with TfL to implement bus priority improvements to help make bus an attractive alternative to the car.	Comment accepted	AQAP amended accordingly
	2.8	Pages 10-13 (2.2 London Context). Section needs updating to reflect progress with Mayoral Strategies	Comment accepted	AQAP updated
	2.9	Use microgrammes per cubic metre rather than parts per billion for consistency with air quality objectives.	Comment accepted	AQAP amended to be consistent with AQ objectives
	2.10	Page 31 (Scenario Testing). It should be emphasised that the scenarios are example scenarios.	Comment accepted	AQAP amended
	2.11	Page 37 (Policy Proposal Checklist). Checklist table would be clearer if accompanied with a key. Should provide an indication as to what the cost bandings mean and quantify the broad likely extent of any air quality benefit.	Comment accepted	Key added to checklist table. Cost bandings and AQ benefits quantification has been attempted.
	2.12	Useful to include any wider environmental, economic or social consequences of particular actions.	Comment accepted	Will be added to the checklist or as an additional table.
	2.13	Update regarding LEZ and Vehicle Emission testing progress.	Comment accepted	AQAP amended to include updates of LEZ and Vehicle Emission testing progress.
	2.14	Page 45 (9.1.4 Cleaner Vehicles and Fuels). Consider extending the section to include supporting electric refuelling through the work of The London Clean Fuel Vehicle Working Group.	Comment accepted	AQAP amended to include the Council's support in principal.
	2.15	Page 52 (proposal 47). Consider extending proposal to include assessing combined heat and power (CHP) proposals using the Customs and Excise 'Good Quality CHP' index and ensuring developers demonstrate that opportunities for utilising heat have been fully assessed.	UDP does not currently support CHP as it is not considered to be a source of renewable energy. It diverts waste which could be re-used or recycled, and makes it more difficult to achieve agreed recycling targets.	AQAP not amended but this proposal will be considered in future revisions in line with UDP development.
	2.16	Page 56 (proposal 29). Extend proposal to include establishing a fleet register of borough vehicles, including emissions information and measures to implement emissions improvements.	Comment noted	A fleet register of borough vehicles has been complied. Emissions information and improvements will form part of the Council's GTP
	2.17	Page 63 (9.5.1 Part A and B Processes). Consider extending this section and proposal 44 to include ensuring inspections of borough regulated industrial processes are carried out in line with DEFRA guidance and do not lead to exceedances of the national air quality objectives	Comment accepted	AQAP amended accordingly

	2.18	Page 65 (Proposal 49, Green Corridors). Although supported by TfL, there are concerns about the UDP second deposit and TfL will be maintaining objections made after the first deposit regarding land use issues and general descriptions of the A40 Green Corridor.	Comment noted	No change required to AQAP at this time.
	2.19	Page 69 (10. Cost-effectiveness). Costs of Londonwide vehicle emissions testing have now been quantified more fully by the ALG Vehicle Emissions Testing Working Group.	Comment noted	AQAP updated to reflect this information
	2.20	Page 73 (Limitations of Power – Transport for London). Plan states that the London Bus Initiative, in its first phase, has 27 routes for completion in 2003. May be worthwhile adding that there are a further 43 London Bus Initiative routes in phase 2 due for completion in 2005.	Comment accepted	AQAP amended accordingly
	2.21	Page 77 (Traffic related Pollution). Include source of information in Table A1. It appears that this data may be out of date.	Comment accepted	Table A1 updated and source added.
		As a result of extensive consultation, many changes were made between the Mayor's draft and final AQ Strategy. Please consider including the proposals below in the final action plan or extending actions currently present: I) Use and encouraging the use of water-diesel emulsion. ii) Considering and implementing recommendations from the London Sustainable Distribution Partnership. iii) Implementing Clear Zones where practicable. iv) Encouraging the conversion of those large boilers that still use heavy fuel oil in Ealing to lighter oils or gas. v) Producing supplementary planning guidance on air quality, if this becomes appropriate. vi) Encouraging businesses to clean their fleets; to make maximum use of schemes to switch to alternative fuels; to adopt purchasing choices so that energy use and emissions are reduced; to seek to improve the indoor air quality of workplace environments, where feasible; and to participate in environmental management schemes. vii) Obtaining quotations for cleaner-fuelled models when replacing vehicles. viii) Ensuring that Council vehicles are used sensibly, are well maintained and that routes and tasks are worked out to be as efficient as possible. ix) Instituting Council driver training to improve fuel economy and reduce emissions. x) Co-ordinating deliveries of Council goods and services. xi) Encouraging cleaner vehicles through 'O' licences.	Comments accepted. Some of these actions are already under consideration and some will be tackled under the Council's forthcoming Green Travel Plan.	Additional information will be included within the AQAP regarding the issues raised in these comments.
Department for Environment, Food & Rural Affairs. (DEFRA)	3.1	Action Plan generally well presented, setting out a large number of suggested measures that are both practical and achievable.	Support noted	No change required to AQAP
	3.2	AP highlights that fully inclusive consultation with internal and external stakeholders has been undertaken since the Stage 3 review and assessment was completed, which is to be commended.	Support noted	No change required to AQAP
	3.3	An integrated approach to the formulation of the action plan has included good references to a wide variety of policies and strategies both within Ealing's UDP and wider London partnerships, including the West London Alliance and the Mayor's air quality strategy.	Support noted	No change required to AQAP
	3.4	There is no obvious link between the problems identified in the Stage 4 source apportionment work, and the proposals that are identified.	In Chapter 6 the source apportionment work shows that between 50% to 80% of NO_2 concentrations relate to road transport, and that 15-40% of primary PM10 emissions also comes from road transport, mostly HGVs. As Chapter 7 states, most of the measures in the AQAP relate to tackling road transport emissions.	No change required to AQAP
	3.5	Look forward to a more detailed account of organisations responsible for implementation of measures, timescales, funding and cost-effectiveness in the final report.	Comment noted	Cost bandings and AQ benefits quantification has been attempted. Responsible organisations and more detailed timescales have also been included.

	3.6	**Source Apportionment** Concern has been raised over the lack of monitoring data to support the PM10 modelling in the Stage 4 report. Any subsequent changes to the Stage 4 report should be reflected in the plan.	Comment noted	The AP will updated to reflect any such changes.
	3.7	Units used in the plan should be changed in line with the regulations.	Comment accepted	AQAP amended to be consistent with AQ objectives.
	3.8	Modelling of the LEZ and traffic reduction scenarios has provided quantitative pollutant reduction targets at building facades at the identified locations. Reference to how the implementation of appropriate proposals in these areas should be made to tie in to the section with other elements of the plan.	Need further clarification as to the interpretation of this comment.	Will amend AQAP if required once clarification is obtained.
	3.9	Lowering of emissions and uptake of cleaner fuels It is unclear whether the authority itself intends to switch to using cleaner fuels and technology within it's own fleet, which would be an effective step in leading by example.	Comment accepted. The Council is in the process of developing its own Green Travel Plan. This will include actions to increase the number of green/alternatively fuelled vehicles used by the Council.	AQAP amended
	3.10	Improving public transport and alternative modes of transport Action Plan presents a good number of promising and achievable measures that together will encourage a modal shift to alternative forms of transport. It is expected to result in a cumulative benefit, which is understandably difficult to calculate at this stage.	Support noted	No change required to AQAP
	3.11	**Traffic reduction** Plan's overall approach is both appropriate and comprehensive.	Support noted	No change required to AQAP
	3.12	**Non-traffic measures** Generally it is not clear how non-traffic sources contribute to the exceedences of the objectives, and a clearer statement surrounding the relative contribution of non-road emission sources will enable appropriately targeted measures to be employed. Look forward to further evidence with respect to the relative contributions from non-road sources and the effectiveness of the measures that may be put in place.	Comment noted.	Chapter 6 will be updated to provide further information as the contribution from non-road sources.
	3.13	The section would benefit from consideration of measures that could result in the general decrease in background concentrations. It is recommended that any existing incentives that encourage energy conservation in the home or by local businesses be included. Alternatively, the Authority may wish to consider developing schemes that promote domestic energy conservation.	Comment noted. All the measures in the AQAP will potentially reduce background concentrations.	Further information will be included relating to the encouragement of energy conservation.
	3.14	It is also unclear which measures are being carried forward into action, which are still being considered further, or if any may be rejected.	The measures set out in the AP are either all being put into action or are being considered further. None are to be rejected.	Update AP to clarify this position. Possibly include table setting out all measures considered and those rejected.
Non-Statutory Consultee responses.				
Ealing Area Committee	4.1	Members felt that the plan included possibly false assumptions or suffered from significant omissions. It was argued that traffic control measures could increase vehicle emissions as a car constantly stopping and starting would generate more emissions of noxious pollutants than a car travelling at a constant speed. If the effect of traffic calming was to displace traffic onto adjacent streets it could possibly lead to increased congestion and consequently greater vehicle emissions and a decrease in air quality. Traffic control measures would only be successful if they reduced vehicular traffic and this was not guaranteed	The possible adverse impact of particular traffic calming measures on air quality is recognised as well as the very tangible benefits that such measures can bring. Air Quality matters need to be weighed against over transport concerns such as road safety.	No change required to AQAP
	4.2	Concern was expressed about the possible implications for the local environment of initiatives such as the West London Tram Scheme and the congestion charge because of the displacement of road traffic generated	Whole borough was declared an AQMA to reduce risk of pollution increasing in areas outside of the immediate hotspots. West London Tram scheme is yet to undergo an Environmental Impact Assessment.	No change required to AQAP

	4.3	Members felt that the action plan should have paid greater regard to the effect that air traffic to and from Heathrow Airport had on air quality, both in terms of current air traffic movements and volumes and the likely impact of a possible third runway which would generate even greater and more widespread air pollution than was currently experienced.	Emissions from aircraft over Ealing are treated as background emissions due to the atmospheric conditions prevalent at the heights at which they operate. As such they are taken account of within the modelling process.	No change required to AQAP
	4.4	A local resident suggested that in view of the particular pollution problems associated with traffic flows in the central Ealing area officers should consider specific measures to address local poor air quality in consultation with local Ward Councillors and residents' groups.	This is something take could be tackled as part of Local Area Treatments.	No change required to AQAP at this time, but will investigate such focused action.
Perivale Area Committee	5.1	Many members of the public expressed strong opinions about the apparent failure of planning legislation and Ealing's own planning department to take into account such strategies and action plans.	Comment noted. The application of planning legislation is a quasi-judicial function performed by the Council as a planning authority, and as such is largely outside the control of the Council	No change required to AQAP
	5.2	Pointed out that if action was taken to reduce traffic on the A40 and A406, it was likely to result in an increase in traffic in Perivale.	Whole borough was declared an AQMA to reduce risk of pollution increasing in areas outside of the immediate hotspots.	No change required to AQAP
		Cllr commented that unless fear of crime was addressed, people were unlikely to give up their cars for public transport.	Improved public lighting is a crucial factor in encouraging people to cycle or walk instead of using cars.	No change required to AQAP
		The Chair welcomed the strategy to improve air quality, which he hoped would influence corporate policy and planning in the future and improve the environment for residents.	Support welcomed	No change required to AQAP
The Park Community Group	**6.1**	**Para 9.1.3 Stationary Vehicles** The AP should clarify precisely how the Council intends to enforce the proposed fixed penalty notices. Parking Attendants should be empowered to ticket those vehicles that are parked with their engines idling. The installation of traffic lights on Ealing Green has created far more pollution than previously. It is by getting rid of these individual causes of needless traffic queues that better air quality can be improved. There is no doubt that these traffic lights must have caused an unnecessary deterioration in air quality on Ealing Green when compared to one year ago.	Comment noted. Need Cabinet approval prior to formal adoption of powers. Until then not possible to specify how they will be enforced.	Report to Cabinet on 8th April 2003. Can then proceed with amending Parking Attendants responsibilities if appropriate.
	6.2	**Para 9.2.1 Public Transport** Any improvement to public transport is to be welcomed provided it does not cause more problems than it solves. The proposal (no.11) to support the West London Tram scheme should take account of the traffic diversion which the scheme, as currently contemplated, will cause.	Support noted. West London Tram scheme is yet to undergo an Environmental Impact Assessment.	No change required to AQAP
	6.3	**Para 9.3.7 Planning Policy** The proposal (no. 38) to encourage development, which provides less than the maximum parking requirements, is much too weak. The Council should prepare briefs for locations well served by public transport for car free (or severely curtailed parking allowance) residential development.	Comment noted. The UDP is currently undergoing its second deposit at present.	Will investigate the feasibility of this suggestion and include in future updates of the AQAP
	6.4	Figure 1 etc. The plans should be in colour.	Comment accepted	AQAP amended to include colour maps and graphs.
South Acton Residents Action Group	7.1	Ealing is over flown by aircraft to and from Heathrow and Northolt airports. Where are the figures for that pollution?	Emissions from aircraft over Ealing are treated as background emissions due to the atmospheric conditions prevalent at the heights at which they operate.	AP will be updated to stress that pollution from aircraft is accounted for within the background element of the modelling.

	7.2	Main railway line runs the full length of the borough from Acton to the west of Southall. All passenger trains except the Heathrow express, and all freight trains on the line are powered by diesel engines that are far bigger than any diesel engines fitted to road vehicles. Where are the pollution figures for these? There are mandatory Euro standards for vehicle emissions. Are there similar standards for diesel engined trains?	Pollution figures for rail transport is included within the London Atmospheric Emissions Inventory, which in turn was incorporated into the modelling. There are no similar Euro Standards for trains.	Actions to reduce emissions from diesel locomotives are included in the Mayor's AQ Strategy. No change required to AQAP
	7.3	**Page 19. Carbon Dioxide Reduction Strategy** Refer to reducing emissions resulting from transport use in the borough, but exclude Council business travel. What is so special about Council business travel as against any other residents business travel?	The CO_2 Reduction Strategy focuses on five areas to reduce CO_2 emissions in Ealing. One of these is that of CO_2 emissions resulting from the Council's own activities.	No change required to AQAP
	7.4	No reference to horse drawn traffic, which produces CO_2 and may come back into fashion.	Comment noted. CO_2 not a pollutant covered by this AP although measures within will lead to reductions.	No change required to AQAP
	7.5	No reference to the use of electrically propelled vehicles.	Comment noted	AQAP amended to include supporting electric refuelling through the work of The London Clean Fuel Vehicle Working Group.
	7.6	There are no figures of deaths or disabilities currently attributable to pollution in the borough and projections as to how these might be reduced. Why?	There are figures referring to national and regional mortality attributable to air pollution but it is extremely difficult to find causal links at a borough level.	No change required to AQAP
	7.7	Page 52 Para 9.2.2.2 Walking Initiatives Waiting times at some pedestrian crossings need shortening if we are to encourage pedestrians.	Comment noted	Comment forwarded to Transport Services department.
Central Ealing Resident's Association	8.1	Support the main thrust of the AP but would like to see more emphasise on positive means to reduce air pollution. Would like to see hotspots tackled in depth rather than measures spread over the whole borough. The first objective of the AP should be to ensure that there is no further pollution in existing streets.	Support noted. Whole borough declared to reduce risk of pollution increases in existing streets. Difficult to focus on hotspots as most incorporate TfL roads that are outside the Council's responsibility. Exception is the Southall area which may be identified as an exemplary scheme and specific actions targeted to improve air quality in that area.	Update AQAP to specify central Southall as a potential exemplary scheme, which could benefit from targeted actions to improve air quality.
	8.2	**Actions 2 to 4** Worthy of attention	Support noted	No change required to AQAP

	8.3	**Actions 5 to 7. Alternative fuels** Seems to be still problems with the conversion of the Council's own vehicles and those of its contractors to alternative fuels. Is the idea too expensive to implement?	Proposal 7 states that the Council will introduce measures to ensure contractors vehicles meet specified emission standards and encourage the use of alternative fuels. The Council is in the process of developing its own Green Transport Plan which will include actions to increase the number of alternatively fuelled vehicles used by the Council.	AQAP amended regarding increasing the number of alternatively fuelled vehicles used by the Council
	8.4	**Action 11. WLTS** Tremendous local opposition to the scheme proposed and detailed plans are required to cover the displacement of traffic to residential roads. Air quality should be improved by electric traction but otherwise the huge capital costs involved will have few cost benefits.	Comment noted. West London Tram scheme is yet to undergo an Environmental Impact Assessment.	No change required to AQAP
	8.5	**Action 15 to 21. Cycling** Work needs to be done to improve the public perception of cyclists, which at present are mostly negative.	Comment noted. This will hopefully be addressed as part of the Council's awareness raising campaigns.	No change required to AQAP
	8.6	**Action 22 to 26. Pedestrians** We are all pedestrians at times and such measures proposed should be of universal benefit. Street lighting is the key factor – many people feel threatened by dark corners etc.	Support noted	No change required to AQAP
	8.7	**Action 27 to 28. CPZs and Home Zones** CPZs have undoubted benefits especially in removing street clutter and improving traffic flow.	Support noted	No change required to AQAP
	8.8	Benefits of Home Zones not so clear – they are expensive to set up and further experiments should be deferred until the viability of those in existence has been tested.	Comment noted.	
	8.9	**Action 35 to 36. City Car Clubs** Expensive and probably unworkable.	May be relatively high start up costs, but are then self-financing. There are many examples of such schemes being very successful.	No change required to AQAP
	8.10	**Action 39 to 41. Traffic reduction** Needs some great incentive to get business to vary its existing tried and tested form of moving goods.	Comment noted. The cost savings of improving efficiency maybe incentive enough.	The creation of Freight Quality Partnerships will facilitate improvements. No change required to AQAP
	8.11	**Action 45 to 48. Planning and energy efficiency** Some of these measures are already in force. Remains to be seen whether the public at large will readily take to the idea of not having off road space for their vehicles.	Comment noted.	No change required to AQAP
	8.12	**Action 51. Composting** Presents problems with increased vermin encouragement.	Comment noted. Composting bins are available at a Council discount. See Ealing's web site for further information.	No change required to AQAP.
	8.13	**Actions 52 to 60. Awareness raising** These embrace lofty ambitions but they really boiling down to making life difficult for motorists – they do not garner many political votes.	Comment noted.	No change required to AQAP
Ealing Friends of the Earth	9.1	Appreciate the time and effort that has gone into the Action Plan, but are unconvinced as to the usefulness and relevance of this exercise. Community needs action rather than yet more study, debate and consultation.	Comment noted. The Council has followed Government guidance in its Action Plan development and in the review and assessment process. The measures set out will make a significant contribution to improving air quality in the borough.	No change required to AQAP

	9.2	Called an Action Plan, but no actual plan stating what measures should be taken to achieve the NAQS objectives. Instead there are a series of proposals which are 'not prioritised according to their potential effectiveness or the timeframe within which they will be implemented'. A plan which does not clearly set out the measures that should be taken and their effectiveness in achieving the objectives, together with timescales and targets, is of little value, cannot be the subject of any meaningful consultation and in effect sets out to fail to resolve the Borough's severe air quality problems.	The AQAP sets out a number of measures that the Council will take in pursuit of the NAQS objectives. Timescales and benefits are also included.	A ranking table will be added setting out in more detail the potential effectiveness of measures.
	9.3	A Low Emissions Zone [LEZ] appears to offer the only way of achieving the 2000 NAQS objectives. Therefore propose that Policy Proposal 1 [page 44] should be revised to read: **Ealing Council will work towards a Low Emission Zone [LEZ] for London to achieve the 2000 NAQS objectives, and in the absence of a timely London-wide scheme, will use its existing powers under the Environment Act 1995 to establish an LEZ either within the London Borough of Ealing or in conjunction with neighbouring boroughs.**	The Council is awaiting the outcome of the LEZ feasibility Study. Early conclusions suggest that only through a London Wide LEZ would Ealing see an appreciable improvement in air quality. The technical and financial difficulties of implementing an LEZ at a borough level would also prevent such a measure in the foreseeable future. GLA and ALG would also not support such a move.	No change required to AQAP
	9.4	The plan should not be confined to the achievement of the 2000 NAQS objectives, as these have been watered down for political expediency. They are not adequate to protect human health [e.g. seriously weakened particulate objective, despite the accumulating medical evidence, and no objective for ozone, despite increasing levels] and do not address damage to man-made structures and natural and semi-natural ecosystems [e.g. NO_2 levels exceed those needed to protect vegetation]. The aim should instead be to radically improve air quality across the Borough. The ethos of the Action Plan – to do the minimum required by statute rather than do what is necessary to overcome the problem of air pollution - is wrong.	The Council has retained the whole borough as an AQMA as a precautionary approach. This is despite the fact that PM10 exceedences account for a tiny percentage of the Borough's area. This confirms our commitment to reducing emissions across the Borough.	No change required to AQAP
	9.5	Para 2.1. The original 1997 objectives should also be stated so that the extent to which they have been changed since then is clear.	Comment accepted.	AQAP amended accordingly.
	9.6	The results of scenario testing are shown only as % reductions. While this is useful, how far each scenario gets towards achieving the NAQS objectives for the various pollutants should also be shown graphically.	Comment noted. This would be a useful guide and is something that will be incorporated into future updates.	No change required to AQAP at this time but will incorporate in future updates.
	9.7	The provisions of the Mayor's Air Quality Strategy [published in September 2002] should be included in the Action Plan.	Comments accepted.	AQAP updated accordingly.
	9.8	A policy to reduce road traffic, by specified amounts and within a specified timescale, should be a key part of the Action Plan. An interim target to stabilise traffic levels instead of allowing them to increase would also be appropriate.	The policies set out in the Mayor's Transport Strategy and TfL's Business Plan are expected to reduce traffic growth in outer London by a third over the next ten years. It is anticipated that the actions set out within Ealing's AQAP will lead to further traffic reductions.	No change required to AQAP
	9.9	The potential impact of each of the five main measures in achieving the NAQS objectives should be clearly stated, and each should be the subject of a specific policy statement, including targets.	Comment noted but as discussed within the AQAP, it is a very difficult task to assess the actual impact such measures will have on future air quality	A ranking table will be added setting out in more detail the potential effectiveness of measures.
	9.8	The likely or possible effect of the policy options in contributing towards achieving the NAQS objectives are not discussed.	This is briefly discussed in Section 7.	A ranking table will be added setting out in more detail the potential effectiveness of measures.

Comments via email	10.1	Enforce pollution controls as well as parking controls and you will see the smoky stinky cars that REALLY ruin the environment will not be used.	The AQAP sets out measures to carry out roadside vehicle emission testing which will encourage drivers to maintain their vehicles properly. The AQAP also sets out support for a London-wide Low Emission Zone.	No change required to AQAP
	10.2	The drivers of commercial vehicles (including buses at depots etc), seem to feel it is better to leave their engines running instead of switching them off when waiting.	The AQAP sets out measures to enforce stationary vehicle legislation, which is aimed at commercial and private vehicles.	No change required to AQAP
	10.3	It may be an idea to have a hotline where the public can report vehicles which are producing lots of exhaust fumes.	There is already a smoky vehicle hotline operated by the Vehicle Inspectorate. They can be contacted on 0870 60 60 440.	No change required to AQAP
	10.4	Would it be possible to extend the hours that the Network SouthEast Paddington - Greenford line runs on a Friday and Saturday to a later time, say midnight ?	Comment will be forwarded to Transport Services department.	No change required to AQAP
	10.5	By improving stations, there is an open invitation for graffiti and other vandals to destroy the improvements and also, as a result knock public confidence in how safe it would be to use that transport.	Graffiti is always an issue but not one that should prevent improvements.	No change required to AQAP
	10.6	Disappointed with the lack of rigour that both the Stage 4 report and draft AP demonstrate. Specifically there is barely a mention of fuels apart from references in the appendices to the Auto Oil programme.	Comment noted. Alternative fuels are mentioned within Section 9.	No change required to AQAP
	10.7	Thank you for the opportunity to comment on the draft strategy. Welcome some of the measures proposed but I urge caution when using these models to justify schemes such as the A4020 tram. It is important to remember that although these models are complex and based on scientific principles they do not include all the necessary factors.	Support welcomed and comment noted. Like all modelling exercises, the Council is aware that a level of uncertainty is associated with the results obtained. The Council errs on the side of caution and this is one of the reasons that the whole of the Borough was declared an Air Quality Management Area. The modelling used during the Stage 4 process has not been used in connection with the WLTS.	No change required to AQAP

Glossary of Terms

Air Quality Objectives	The concentrations, averaging periods and dates for restricting their levels, for seven air pollutants. The Objectives are set out in The National Air Quality Strategy for England, Scotland and Northern Ireland and the Air Quality Regulations 2000.
Air Quality Standard	Pollutant specific concentration levels and averaging times, derived from the Expert Panel on Air Quality Standards (EPAQS), and recommended to DETR to use as benchmarks for setting Air Quality Objectives
ALG	Association of London Government
AQMA	Air Quality Management Area
BAT	Best Available Techniques
CO	Carbon Monoxide
COMEAP	Committee on the Medical Effects of Air Pollution
Concentration	The amount of a substance in a volume (of air) such as parts per million (ppm) or microgrammes per cubic metre (mg/m3)
CNG	Compressed Natural Gas
CPZ	Controlled Parking Zone
CRT	Continuously Regenerating Trap
Daughter Directive	European Union legislation that implements a European Union Directive
DEFRA	Department of the Environment, Food and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DOH	Department of Health
DTLR	Department of Transport and Local Government Regions
EA	Environment Agency
EC	European Commission
EHHHA	Ealing, Hounslow, Hammersmith and Fulham Health Authority
EPAQS	Expert Panel on Air Quality Standards
EST	Energy Savings Trust
EU	European Union
EU Directive	Europe-wide legislation which is incorporated into British law by Acts of Parliament or statutory instruments
Euro I	Europe-wide vehicle standard that required vehicles manufactured after 1992 to achieve set emissions limits.
Euro II, III and IV	Europe-wide vehicle standards that are progressively stricter, for years 1996, 2000 and 2006 respectively.
Exceedence	When an Air Quality Objective is not achieved.
Fine particulate	Particles in air with a diameter of 10 microns or less (PM_{10})
Fuel Cell	Acts like a constantly recharging battery, electrochemically combining hydrogen and air to generate power. Water and heat are the only by-products. At point of use there are no air pollution or noise emissions. They are suitable to power vehicles and buildings.
GLA	Greater London Authority
GTP	Green Transport Plan
HGV	Heavy Goods Vehicle
ILIP	Interim Local Implementation Plan
IPC	Integrated Pollution Control
IPPC	Integrated Pollution Prevention and Control
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
LPG	Liquid Petroleum Gas
LAEI	London Atmospheric Emissions Inventory
LAQN	London Air Quality Network.
Mean	The average of a set of data
mg/m^3	Milligrams per cubic metre of air.
$\mu g/m^3$	Microgram per cubic metre of air.
NAQS	National Air Quality Strategy
NAEI	National Atmospheric Emissions Inventory
NAQS	National Air Quality Strategy
NHS	National Health Service
NO	Nitrogen monoxide
NO_2	Nitrogen dioxide
NO_X	Oxides of nitrogen,
NSCA	National Society for Clean Air
90^{th} percentile	The value below which 90 per cent of the data fall
PAH	Polycyclic Aromatic Hydrocarbons
PM_{10}	Particulate matter with a mean effective aerodynamic diameter of 10 microns or less.

ppb	Parts per billion.
PPC	Pollution Prevention and Control
PPG	Planning Policy Guidance
ppm	Parts per million
QUARG	DETR's Quality of Urban Air Review Group
Retrofitting	Fitting catalysts, regenerating particulate traps or other equipment to cars or other vehicles which are already in use in order to reduce their emissions of pollutants.
SO2	Sulphur Dioxide
SPG	Supplementary Planning Guidance
SEIPH	South East Institute of Public Health. Now called ERG, King's College, London.
TfL	Transport for London
TRL	Transport Research Laboratory
TRN	Transport for London Road Network
TRO	Traffic Regulation Orders
UDP	Unitary Development Plan
ULSD	Ultra Low Sulphur Diesel
ULSP	Ultra Low Sulphur Petrol
VED	Vehicle Excise Duty
VET	Vehicle Emissions Testing
WHO	World Health Organisation
ZIPs	Zones of Industrial Pollution