



Air Quality Action Plan

February 2004

Air Quality Review and Assessment

Action Plan for Borough of Broxbourne Council

The Council has consulted on the draft air quality action plan and has amended it accordingly to produce this final version.

List of Consultees

Secretary of State (DEFRA)
Highways Agency
Environment Agency
Residents in AQMAs
Borough of Broxbourne Council: Land-use planning, Waste Management,
Agenda 21
Hertfordshire County Council: Transport Department and Environment Unit
Mayor of London
London Borough of Enfield
Welwyn Hatfield Council
East Hertfordshire District Council
Epping Forest District Council
Lee Valley Park Authority

Executive Summary

The Borough of Broxbourne has declared three Air Quality Management Areas (AQMAs) adjacent to the M25, encompassing a number of properties in Arlington Crescent, High Street Waltham Cross, Parkside, Teresa Gardens and Tyle Kiln Cottage. These were declared on the basis that exceedences of the annual mean objective for nitrogen dioxide would persist in future years. Exceedences of the twenty-four hour mean objective for particulates (PM10) have also been predicted in Arlington Crescent.

This action plan considers options for improving air quality, and makes a distinction between direct options for solving the problem in the AQMA and wider measures to improve air quality in the area. The options have been assessed in terms of air quality benefits, and costs.

The Council can do little to improve air quality in the AQMA. Elevated levels of nitrogen dioxide exist as a result of traffic on the M25, in particular emissions from heavy goods vehicles. The Highways Agency regulates the M25. Elevated levels of particulates exist because of dispersion from continental Europe elevating background concentrations. Further action at the national level is vital in order to reduce background concentrations of pollutants. The government must develop policies to improve air quality for residents living alongside motorways. The Borough of Broxbourne relies heavily on both the government and the Highways Agency in working towards the UK air quality objectives.

None of the measures outside of the AQMA will significantly improve air quality in the Borough. However it is hoped that they will raise the profile of air quality as an issue.

ACTION PLAN APPRAISAL CHECKLIST	Included?	Location in Action Plan
Process Adherence to Guidelines and Consideration of Policies		
Have Statutory Consultees been consulted	Yes	Page 2
Have other local authority departments been consulted	Yes	Page 2
Have other relevant consultees been consulted	Yes	Page 2
Has a statement of the problem causing the AQMA, as identified in the Stage 4, been clearly stated?	Yes	1.2.2
Have the principal sources of the pollutants causing the exceedance been identified?	Yes	1.2.2
Have other local authority plans/policies been considered?	Yes	
Local Plan	Yes	3.1.2
Local Transport Plan	Yes	3.1.1
Travelwise	Yes	3.1.3
Local Agenda 21	Yes	4.6.1
Has an options timescale been included	Yes	Chapter 5
Have costs of options/plan been set out	Yes	Chapter 5
Have impacts been assessed	Yes	Throughout and Chapter 5

Process – Checklist of Measures		
Have options been considered?	Yes	Throughout
How many options have been considered?	21	Throughout and chapter 5
Have transport impacts been assessed?	Yes	Chapter 3
Have air quality impacts been assessed?	Yes	Throughout and Chapter 5
Have socio-economic impacts been assessed?	Yes	Chapter 5
Have other environmental impacts been assessed?	Yes	Chapter 5
Have costs been considered	Yes	Chapter 5

Appropriateness and Proportionality		
Do measures seem appropriate to the problem?	Yes	Discussed throughout
Have measures been assessed?	Yes	Chapter 5
Are the measures likely to achieve the stated goal?	NO	Explained in chapter 2
Was the method of assessing costs appropriate?	Yes	Chapter 5 (as NSCA guidance)
Is it likely that the LAQM objectives will be met?	No	Explained in Chapters 1 and 2
Have the wider impacts been appraised appropriately?	Yes	Chapter 5
Do the chosen measures comply with wider government policies?	Yes	

Implementation		
Are measures realistic in light of objective deadlines?	Yes	Chapter 5
Have responsibilities been assigned to relevant parties?	Yes	Chapter 5
Does the assigned party have the necessary powers?	Yes	
Has financing been secured and who will pay?	Yes	Chapter 5

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List of Abbreviations

AQMA	Air Quality Management Area
$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre
ppb	Parts per billion
ppm	Parts per million
PM ₁₀	Particulates
NO ₂	Nitrogen Dioxide
LA21	Local Agenda 21
AQMS	Air Quality Management Station

1.0 Introduction

The air quality action plan for Broxbourne is the culmination of a review and assessment of air quality within the Borough. It is a practical opportunity for improving local air quality. Technical justification for the action plan can be found in the stage four review and assessment report. The action plan draws on the conclusions of the stage four report to effectively target air quality improvement measures. Consequently the stage four report should be read in conjunction with this action plan. This chapter will put the action plan into its policy context and summarise the results of the review and assessment process.

1.1 Legislation

The Environment Act 1995 provides the framework for local air quality management. The Air Quality Regulations 2000 and Air Quality Regulations (Amendment) Regulations 2002 provide objectives for seven key pollutants. These give concentration limits for each pollutant and the date by which this limit must be achieved (Table 1.1). These air quality standards are based on the effect of the pollutant on health. A more detailed discussion of the legislation can be found in the stage four report, chapter two.

Table 1.1 UK Objectives for Air Quality

Pollutant	Objective	Date to be achieved
Benzene	16.25µg/m ³ (5ppb) running annual mean	31 Dec 2003
	5µg/m ³ (1.5ppb) annual mean	31 Dec 2010
1,3- Butadiene	2.25µg/m ³ (1ppb) running annual mean	31 Dec 2003
Carbon Monoxide	10mg/m ³ (8.6ppm) maximum daily running eight hour mean	31 Dec 2003
Lead	0.5µg/m ³ annual mean	31 Dec 2004
	0.25µg/m ³ annual mean	31 Dec 2008
Nitrogen Dioxide	200µg/m ³ (105ppb) 1 hour mean, 18 exceedences	31 Dec 2005
	40µg/m ³ (21ppb) annual mean	31 Dec 2005
Particles, PM ₁₀	50µg/m ³ 24hr mean, 35 exceedences	31 Dec 2004
	40µg/m ³ annual mean	31 Dec 2004
Sulphur Dioxide	350µg/m ³ (132ppb) 1hr, 24 exceedences	31 Dec 2004
	125µg/m ³ (47ppb) 24hr mean, 3 exceedences	31 Dec 2004
	266µg/m ³ (100ppb) 15min mean, 35 exceedences	31 Dec 2005

1.2 Summary of Review and Assessment Process

The first round of review and assessment of air quality consisted of four stages. The first three stages aimed to identify whether the air quality objectives were likely to be achieved by the relevant deadline. Where the objectives were not likely to be achieved and there would be relevant exposure to the public, the authority had to designate such a location an Air Quality Management Area (AQMA).

As a result of this process, the Borough of Broxbourne Council designated an AQMA for PM₁₀ (particulates) and NO₂ (nitrogen dioxide) in an area adjacent to the M25 (Figure 1.1).

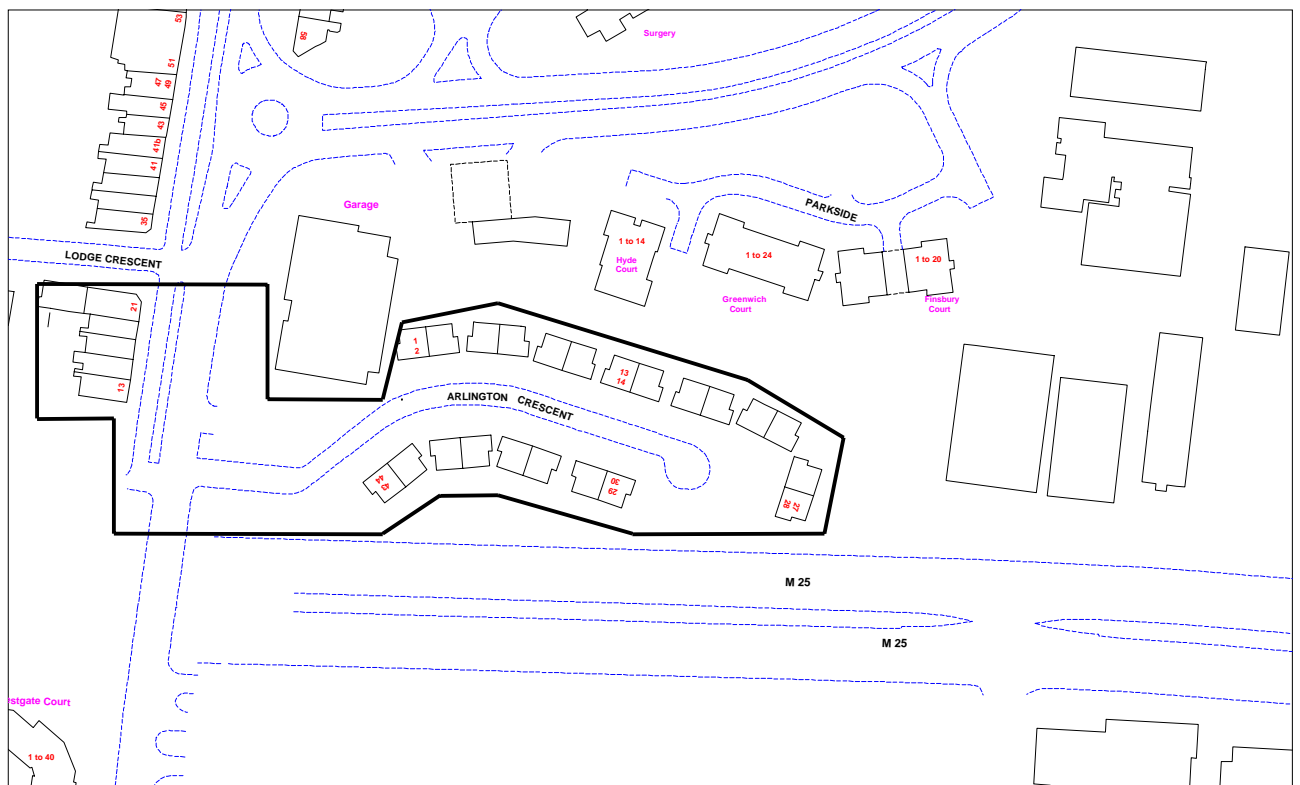


Figure 1.1 The Air Quality Management Area

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Scale 1cm = 17.5m

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The fourth stage of review and assessment was a more detailed study of air quality in the AQMA. The recommendations from this report are summarised below.

1.2.1. Amendment of Air Quality Management Area

Netcen predicted what the air quality in the Borough would be like in 2005 using a computer model. It used updated emission factors, traffic and monitoring data and resulted in a different assessment to that determined in the stage 3 report. (Stage four; 7.8 and 7.9)

These recommendations were taken into consideration as part of the consultation process for stage four and the action plan. As a result, the existing AQMA was amended and two new Air Quality Management Areas were declared. The following maps detail the revisions to the Air Quality Management Area.

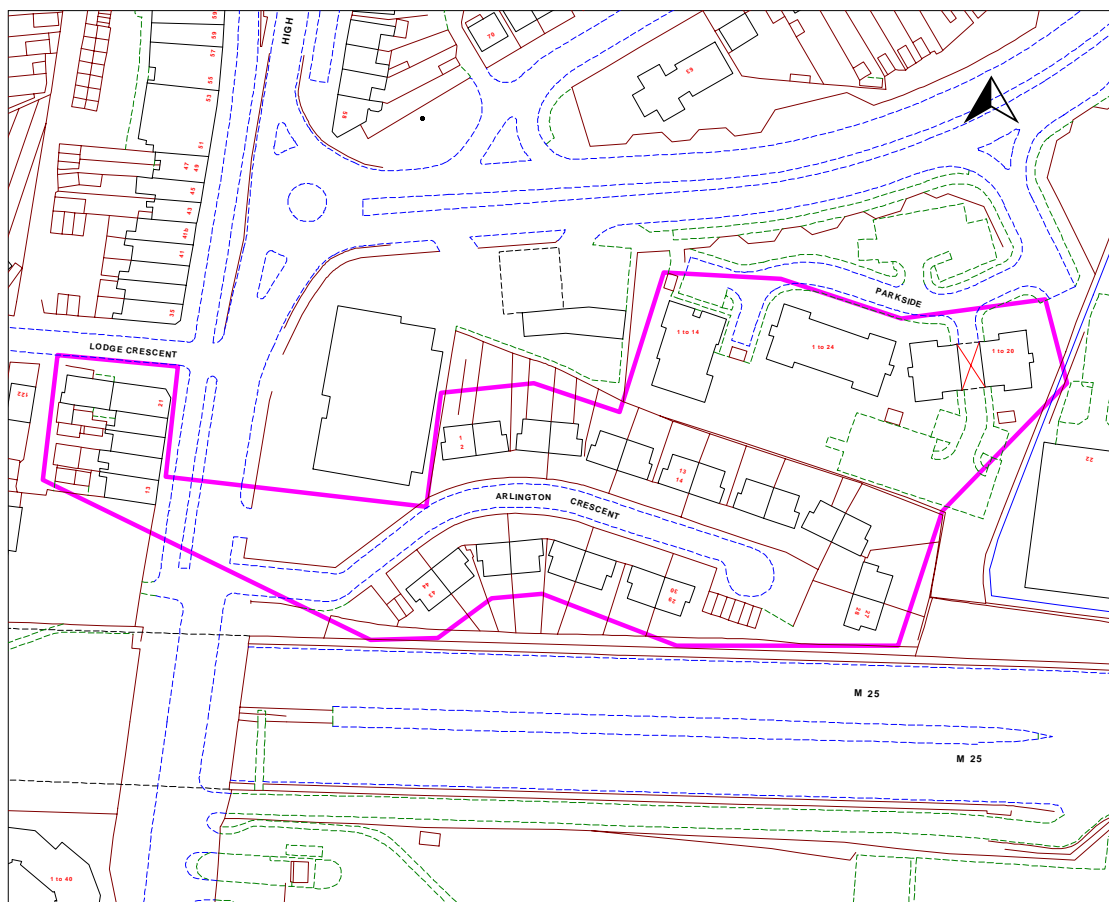


Figure 1.2. Proposed AQMA 1: Arlington Crescent, High Street Waltham Cross and Parkside Court

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Scale 1cm = 17.5m

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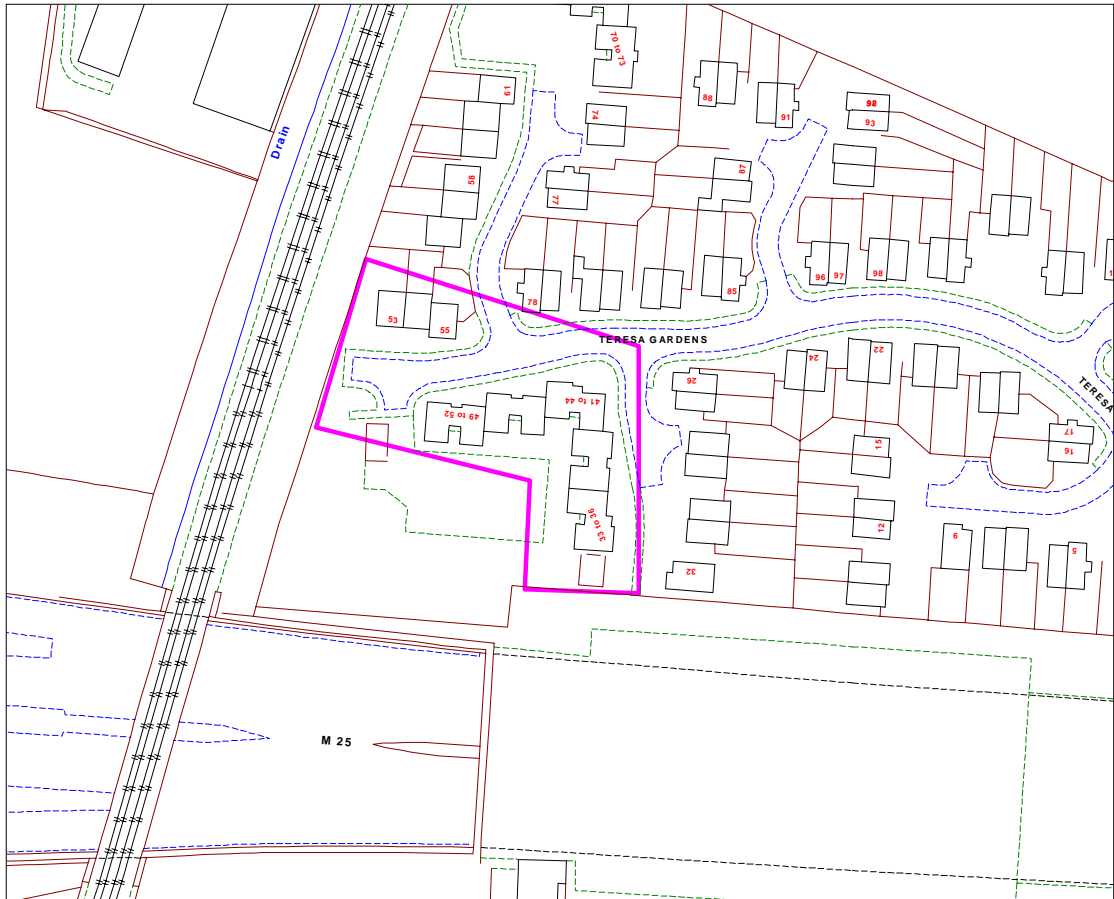


Figure 1.3 Proposed AQMA 2: Teresa Gardens

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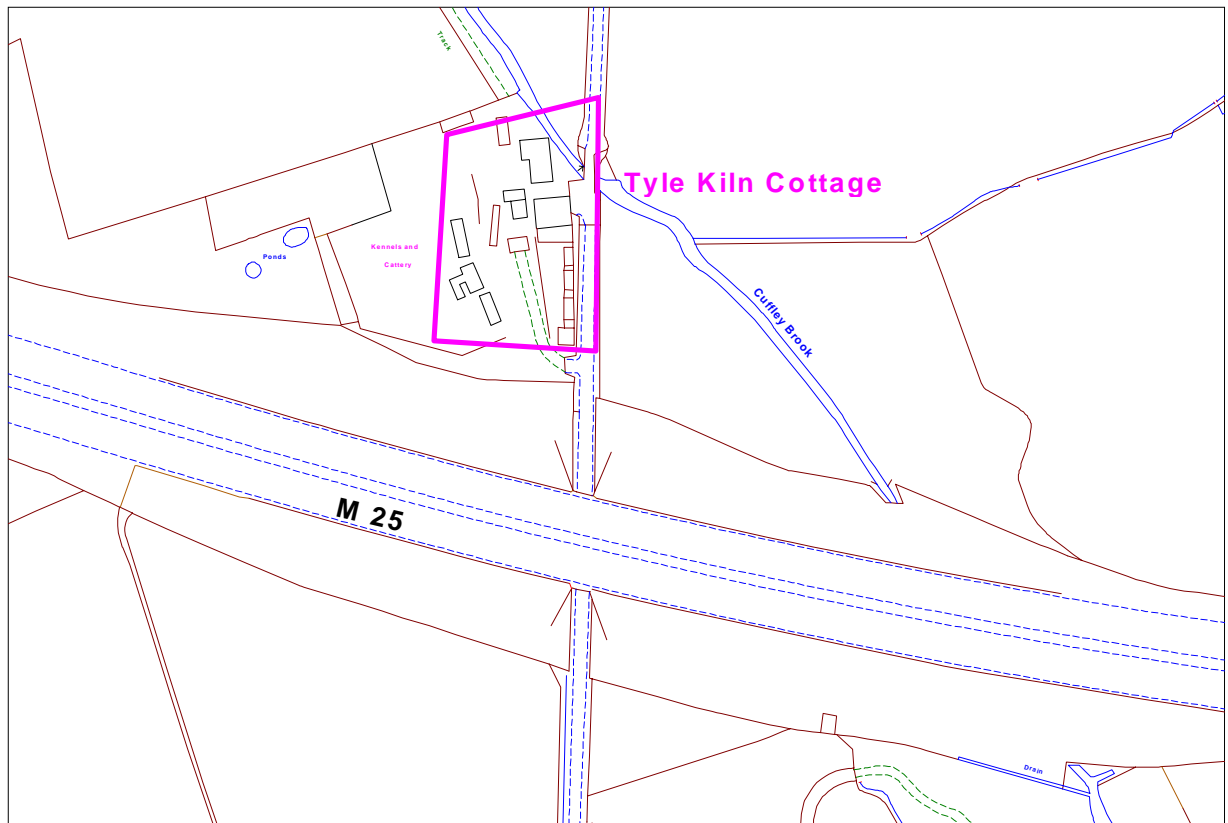


Figure 1.4. Proposed AQMA 3: Tyle Kiln Cottage
(Grid Reference TL315009)

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Scale 1cm = 17.5m

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1.2.2 Source Apportionment

The stage four report confirmed that exceedence of the objective for nitrogen dioxide is primarily due to traffic on the M25. However, exceedence of the particulates objective is due to background sources.

Nitrogen Dioxide

Up to three-quarters of the total nitrogen dioxide concentrations in both the existing and proposed AQMAs comes from traffic on the M25. In particular, the contribution to nitrogen dioxide levels from heavy duty vehicles (HDVs) is disproportionate compared to the percentage of HDVs in the vehicle mix. (Stage four, 7.11).

At the worst affected location, a reduction of $13\mu\text{g}/\text{m}^3$ in nitrogen dioxide concentrations would be required in order to comply with the objective (Stage four, table 7.10.2A).

Particulates, PM10

By contrast, under one third of the total particulate concentrations comes from traffic. The majority is attributable to particulates from continental Europe elevating background concentrations. The stage four report states that there is little that the authority can do to reduce PM₁₀ concentrations in the borough.

At the worst affected location, a reduction of 0.25µg/m³ in particulate concentrations would be required in order to comply with the objective (Stage four, table 7.10.2B).

The Air Quality Management Area for nitrogen dioxide was declared because of the traffic on the M25 motorway. For particulates, the primary source is background concentrations. Levels of nitrogen dioxide and particulates are unlikely to meet the government's objectives by the required deadline.

1.2.3 Abatement Scenarios

Netcen were required to model three scenarios with the potential to improve air quality in the existing and proposed AQMAs (stage four, 7.12). These concentrate on the main source of the nitrogen dioxide pollution; traffic on the M25. The following table summarises the scenarios modelled.

	Nitrogen Dioxide	Particulates
Reduce proportion of HGVs on M25 to 10% from 18.8%	Would reduce size of AQMA	AQMA could be revoked
Reduce total number of vehicles using M25 by 25%	Would reduce size of AQMA	AQMA could be revoked
Increase speed of traffic entering Holmsdale tunnel on M25 to 70mph from 50mph	Negligible impact on concentrations	Negligible impact on concentrations

It was found that none of these scenarios would bring sufficient improvement in air quality to revoke all of the AQMAs for nitrogen dioxide completely. However, the vehicle reduction measures would improve particulate concentrations.

The next chapter will elaborate on these options to improve air quality in the air quality management area.

2.0 Actions to Improve Air Quality in the Air Quality Management Area

The objective of the action plan is to improve air quality in the air quality management area. This area was designated primarily because of pollution caused by traffic on the M25. The stage four report considered three options to improve air quality in the AQMA, based on this source apportionment. These are known as abatement scenarios. A full discussion of the options chosen and why can be found in the stage four report, 7.12.

2.1 Abatement Scenarios

The Highways Agency (HA) is committed to working in partnership with local authorities towards the delivery of the air quality strategy. When an AQMA has been declared because of a strategic road, the local authority should invite the route manager to discuss how the HA can assist with improving air quality. The Council consulted with the route manager for this section of the M25, who suggested the following abatement options:

Calculate the reduction in traffic required to meet the objectives in terms of:

- Total flows
- HDV flows
- LDV flows

It was also suggested that the year the objectives are likely to be achieved without any abatement measures be calculated.

These options were then discussed with netcen for incorporation into the stage four report (section 7.12). The model that netcen uses is not able to determine the reductions in traffic required. It was therefore proposed to choose a figure in terms of percentage reduction and see if this brought concentrations in line with the objectives. As the source apportionment study showed a disproportionate contribution to pollution concentrations by HGVs, it was decided to model the effect of reducing HGV flows rather than LDV flows. The Highways Agency proposes works to decrease congestion at Junction 25 and the Holmsdale Tunnel. In light of this, netcen suggested the scenario to increase speeds along the stretch of the motorway to 70mph.

The scenarios to reduce pollution became:

1. Increasing the average speed along the M25 from the currently assumed 80 kph (50 mph) to 112 kph (70 mph) near the Holmsdale tunnel.
2. Reducing the proportion of HGVs using the M25 from 18.8% to 10%.
3. Reducing the number of vehicles using the M25 by 25%.

2.1.1 Results of modelling the Abatement Scenarios

Would the scenarios improve air quality in the air quality management areas? Both reducing the amount of HGVs and the number of total vehicles would improve air quality but not by enough to attain the UK air quality objectives in all of the AQMA. A discussion of the modelling results is in the stage four report, section 7.12. Figures showing the effects of the scenarios as air pollution contour maps are in the stage four report, figures 7.12.2A and 7.12.2B.

1. The scenario with an increase in speed at the entrances to the Holmsdale Tunnel does not improve air quality according to the modelling. In fact, it could make the particulate concentrations a little worse.
2. It would take a reduction in HGVs of more than 50%
3. or a reduction in total vehicles of more than 25% to achieve the air quality objective for nitrogen dioxide in the AQMA by 2005.

2.1.2 Feasibility of Abatement Scenarios

It is unrealistic to expect the required scale of traffic reduction on the M25. Nation-wide, traffic is predicted to increase at a rate of 1.69% per annum, applied to all road types and all vehicle classes. These scenarios, therefore, have not been used as action plan measures.

There is little that the Council can do to improve air quality in the AQMA. The elevated level of nitrogen dioxide exists as a result of the M25, which is regulated by the Highways Agency. Elevated levels of particulates exist because of dispersion from continental Europe elevating background concentrations. Further action at the national level is vital in order to reduce background concentrations of pollutants. Furthermore, the government must consider measures in addition to a reduction in vehicle volumes to improve air quality for residents living alongside motorways. We therefore rely heavily on both the government and the Highways Agency in working towards the UK air quality objectives.

2.2 Highways Agency Liaison

Traffic on the M25 is the cause of poor air quality in the AQMA. Standing traffic leads to increased pollution from the road, as vehicles that are travelling slowly or at a standstill are less efficient and therefore emit higher levels of pollutants. In August 2000, the Highways Agency completed a congestion study on M25 Junction 25 (J25). This section of the motorway carries some 125000 vehicles per day.

The study recommended the widening of the carriageway to create additional lanes through junction 25 in both directions. It was also proposed to increase the lanes through the Holmsdale tunnel. Westbound widening (between the tunnel and J25) was implemented in early 2002. Eastbound improvements were deferred due to necessary refurbishment works in the tunnel.

An environmental impact assessment (EIA) of the works is currently under development. Several measures are being considered to take on board air quality. The Council has liaised with Mouchel, who are the consultants doing the EIA, in respect of the AQMA and air quality. A consultation meeting on the project has been attended.

During the works, diversion routes will be necessary. This is likely to increase congestion in the Waltham Cross area and worsen air quality in the short term. In the long term the work should ease congestion. However there will be a greater flow of traffic. The work will improve driving conditions on this stretch of the M25, which could lead to less traffic jams and accidents. Measures could worsen particulate concentrations.

2.3 Orbit Multi-modal study

'Orbit: Transport solutions around London' was a study commissioned by the Government to look at the existing and future problems of orbital travel around London, and to recommend what could be done to address them. The study assessed the impact of congestion on the M25 motorway and looked at the problems of using other types of transport for getting round London

It has been recommended that a combination of road widening and area-wide road user charging be put in place, along with improvements to the public transport system. The secretary of state for transport is due to consider these recommendations.

Action 1

The Council has no control over the M25, but will liaise with the Highways Agency to ensure that air quality in the Borough is a consideration in the Environmental Impact Assessment for all relevant M25 projects.

The Council already implements measures that can improve the general air quality in the Borough. The rest of the action plan will highlight these measures.

3.0 Improving the general air quality in Broxbourne: Road Transport Measures

The Council recognises that there are no quick fixes to improve the air quality in the Borough. However, there are plans already in existence at both county and borough levels that include the improvement of air quality as an objective. This action plan will highlight these existing plans. It will also discuss the other options available that could contribute to the long-term improvement of air quality in Broxbourne and the AQMAs.

European directives and UK government legislation have contributed to a significant improvement in air quality since the 1950s. However, the problem pollutants today stem mainly from road traffic. Improved emission control technologies have been effective in reducing air pollution, but the increasing number of road vehicles could offset these advances. Furthermore, adverse health effects continue, with research indicating that 24 000 vulnerable people a year may have their deaths brought forward by air pollution.

3.1 Actions to Reduce Traffic Volumes

Hertfordshire has one million residents and the fourth highest car ownership in Britain. The vast majority of journeys in Hertfordshire are made by car. Traffic flows are 35% higher than the national average. The problems facing Hertfordshire with regard to encouraging people to use their cars less and switch to alternative modes of transport are outlined in the local transport plan.

3.1.1 Local Transport Plan

The local transport plan for Hertfordshire (2001/2 – 2005/06) is a five-year programme for maintaining and improving transport in Hertfordshire. It recognises the impact of road transport on air quality and health and one of its targets is to achieve the 2005 national air quality strategy targets. Air quality related objectives detailed by the local transport plan are to:

- Encourage alternative modes of transport by investment in walking, cycling and passenger transport facilities
- Restrict the growth in car traffic
- Promote cleaner fuels and technologies by bus operators and local authorities' fleets
- Investigate low emission zones and home zones
- Pilot safer routes to school initiative

The results of this first round of review and assessment of air quality will be fed into the local transport plan.

3.1.2 Local Plan

When a planning application is determined, it is done in accordance with policies in the Local Plan. The Local Plan sets out how land in the borough will be used and developed until 2011. It highlights the importance of sustainable development, where environmental, social and economic factors must be taken into account in the decision making process. Air quality is an integral part of the sustainable development of the Borough. There are two planning policies specific to air quality in the Local Plan:

SUS7, Air Quality:

“In considering proposals for development, the borough council will have regard to its impact on air quality, including both the operational characteristics of the development and the traffic and other activities generated by it.

SUS8, Air Quality Management Areas:

“The Council, in determining planning applications for development within air quality management areas, will have regard to the air quality action plan.”

The local plan also includes transport policies that are relevant to air quality. These support, wherever practicable, alternatives to the private car. These include:

- **Sustainable Travel Plans**

Applicants for major developments will be expected to submit and operate a Sustainable Travel Plan (formerly known as a Green Travel Plan) to minimise the number of private car trips generated by staff and visitors. Travel plans aim to reduce unnecessary single occupancy car journeys to workplaces, schools, hospitals and other organisations generating a large number of trips, by advising employees of alternative travel options, or arranging car sharing. A recent study by Transport 2000 found that business travel plans improved staff travel choice, enhanced the organisation’s image, reduced commuter stress, aided staff retention and saved money (Department for Transport website: www.local-transport.dft.gov.uk/travelplans/index.htm).

3.1.3 TravelWise

The national TravelWise association aims to change people’s attitude to the use of their cars. The campaign seeks to make other methods of transport, such as cycling, walking and using public transport a real alternative to the car. TravelWise promotes a number of events including walk to school week, business TravelWise, publicity campaigns, and events in national bike week. It also works with schools with initiatives such as school travel plans and safer routes to schools. Any initiatives that reduce the use of cars will have a positive impact on air quality.

Action 2

The Council will liaise with Hertfordshire County Council to ensure that local objectives are considered in the next local transport plan in 2005.

Action 3

The Council will continue to take into account a development's impact on air quality when considering planning applications, especially when it could impact upon the AQMA.

Action 4

The Council will investigate the development of a sustainable travel plan for its staff.

3.2 Actions to reduce emissions from vehicles

3.2.1 Cleaner Vehicles

Road vehicles are the main source of emissions of air pollutants in the Borough. As well as reducing the amount of vehicles, another way of reducing emissions is to increase the proportion of cleaner vehicles on the streets of the borough. The most polluting vehicles tend to be buses, coaches, goods vehicles, waste vehicles and older cars, so reducing emissions from these vehicles is likely to bring the greatest gains in improving air quality in the short term.

European legislation has been responsible for advances in engine technology and improved fuel quality. This has led to decreased emissions from vehicles and increased fuel efficiency. Furthermore, alternatively fuelled vehicles exist, as do hybrid vehicles. It will take time for these cleaner vehicles to penetrate the UK vehicle fleet. However, older vehicles can be fitted with retrofit technologies to clean their emissions. Cleaner vehicles are associated with financial benefits including lower fuel costs and more efficient fuel use, as well as improved air quality. Cleaner vehicles are entitled to a reduction in the congestion charge to enter central London.

The Council can promote and encourage cleaner vehicles in several ways:

3.2.1.1 Powershift and Cleanup Grants

Grants are available from the Department for Transport towards the cost of purchasing alternatively fuelled vehicles, converting to cleaner fuels or retrofitting diesel engines.

Action 5

The Council will provide information to residents about the costs and benefits of cleaner vehicle emissions via its website. It will also raise awareness of Powershift and Cleanup grants, or alternative grants.

3.2.1.2 Cleaner vehicle fleets

There are several businesses operating in the Borough that have substantial vehicle fleets. These fleets could be made greener and less polluting to the air by using alternative fuels, fitting retrofit technology and improved vehicle maintenance and driving. As an employer of subcontractors, the Council has power to use green procurement to ensure that its suppliers and subcontractors have clean vehicles. The Council also has an opportunity to improve air quality by greening its own fleet of vehicles. Broxbourne Services has a fleet of 50 vehicles, including refuse freighters and recycling vehicles, which run on Greenenergy GlobalDiesel. This is a low emission fuel made from ultra low sulphur diesel and a five percent blend of biodiesel.

Action 6

The Council will provide information to local businesses to encourage the greening of their vehicle fleets.

3.2.2 Low Emission Zones

Low emission zones (LEZs) prohibit the most polluting vehicles from entering a certain area. A Low Emission Zone is being considered for London. This could have a negative effect on the air quality in Broxbourne, as it would be just outside the zone. The Association of London Government's Transport and Environment and Leaders' Committees recently agreed to support in principle the introduction of a London-wide LEZ targeted at lorries, buses and coaches.

Action 7

The Council will look at the results of the London-wide LEZ feasibility study. It will make sure the implications for air quality in Broxbourne are considered and will make representations as appropriate

3.2.3 Vehicle Maintenance and Emissions Testing

Regular maintenance of vehicles and improving driving style can lead to moderate emissions reductions at low cost. The Council has powers to test the emissions of vehicles in its AQMA. This is impractical in the designated residential roads. However, the Council can work with the Vehicles Inspectorate to carry out occasional roadside emissions testing in the rest of the Borough. This requires a police resource so is not feasible to do it often. Drivers could also volunteer to have their vehicle's emissions tested during an awareness-raising event.

Action 8

The council will research the potential of forming partnerships with local garages to carry out emissions testing in the Borough. This would be through an annual voluntary testing day.

4.0 Actions to reduce emissions from non-traffic sources

4.1 Industrial Emissions

4.1.1 Regulation of process emissions

The Council controls emissions from certain industrial processes under the local air pollution control regime introduced under Part 1 of the Environmental Protection Act 1990. They are known as Part B processes. These processes, of which there are currently 29, are authorised to operate subject to certain conditions laid down by the Council. The conditions ensure pollution is minimised. An authorised officer in the environmental health team inspects the processes twice a year to ensure compliance with the operating conditions. The authorisation for any process is reviewed every four years in order to ensure the conditions are still appropriate for that process.

Should any process breach its conditions of operation the Council will visit the process concerned to establish why the problem had occurred and to discover if it was remedied. If breaches of conditions continue and the process concerned appears to do nothing to correct the problem the Council has the option to prosecute any of its authorised processes for breach of conditions.

The Environment Agency regulates other industrial processes (Part A Processes). There are two such processes in the Borough:

- 1) Rye House Power Station: Power generation.
- 2) Merck Sharp & Dohme: Manufacture of organic chemicals.

If the Council receives complaints in regard to the part A processes listed above, they are referred to the Environment Agency, as it is the appropriate body to deal with such matters.

Action 9

The Council will continue to inspect all of its authorised processes to ensure compliance. Authorisations will be updated as and when appropriate so that operation conditions are up to date.

4.1.2 Grit and Dust

Grit and dust are frequently emitted from demolition and building sites. They can be a source of great annoyance as well as an air quality issue. Under the Environmental Protection Act 1990 the Council investigates all complaints of nuisance arising from grit and dust, and if a nuisance is substantiated the Council serves notice upon the persons responsible to abate the nuisance by suppressing the dust in an appropriate manner.

All sites that are developed in the borough are encouraged to use good management practices, when looking after the sites which includes taking steps to prevent fugitive dust emissions from the site boundary.

Action 10

The Council will continue to encourage all developers to employ good management practices in suppressing dust emissions from their sites. The Council will continue to take action to abate nuisance from fugitive dust emissions.

4.2 Domestic Measures

4.2.1 Smoke Control Areas

Smoke emissions from both commercial and domestic chimneys can give rise to large levels of particulates and sulphur dioxide. This problem resulted in the smogs of the 1950s, which were caused by the large volume of domestic and commercial properties burning low-grade coal. This gave rise to high levels of sulphur dioxide, and ultimately lead to the premature deaths in London, of several thousand people.

The result of these incidents was the Clean Air Act, the latest version of which was issued in 1993. This act gives local authorities the power to make smoke control orders for all or certain parts of their area. These orders make the burning of anything other than smokeless fuel an offence within the smoke control area. There are certain appliances upon which burning of wood and other substances is permitted, these are known as exempted fire places as they are able to achieve smokeless combustion, and therefore allow the house holder to comply with the smoke control legislation.

Like many other local authorities, the Borough of Broxbourne has several smoke control orders in place, which cover all inhabited areas of the borough, with only a few green belt areas not covered. The orders mean that any resident in the borough who has an open fire must burn smokeless fuel, or use an approved exempted appliance capable of achieving smokeless combustion.

Action 11

The Council will continue to educate residents and businesses to use smokeless fuel or an approved appliance for smokeless combustion.

4.2.2 Bonfires

Bonfires are a source of pollution that can give rise to large levels of particulates. There are no bylaws in the Borough preventing the public having domestic bonfires, however nuisance legislation does allow the Council to take action when fires cause a nuisance to surrounding premises. The environmental services department is currently trialling a garden waste collection service. Biodegradable sacks are used, available from the Council offices and one-stop-shops. The waste is collected every other week and sent to a central composting site. Domestic composting is also promoted. Where these options are not possible, residents are encouraged to take their waste to a local amenity site.

Any trade or industrial premise that creates dark smoke from a bonfire automatically commits an offence under the 1993 Clean Air Act. For this reason any such premises in the Borough found to be having a fire are warned about the possible consequences and are advised to dispose of waste in an appropriate manner.

Action 12

The Council will continue to promote alternatives to domestic bonfires. We will encourage residents to recycle or compost as much waste as possible or dispose of it responsibly at a civic amenity site.

Action 13

The Council will continue to enforce the Clean Air Act 1993 and encourage local businesses to dispose of waste in a responsible manner, so as to prevent dark smoke bonfires.

4.2.3 Energy Conservation and Heating

Energy generation creates pollutant emissions as a result of combustion, both from power stations and building heating systems. Any measures that reduce energy consumption or use a cleaner fuel to produce energy will improve the background air quality.

4.2.3.1 Warmer Homes, Greener Herts

Fifty percent of heat from homes can be lost through external walls and loft spaces. Warmer Homes, Greener Herts is an initiative spearheaded by the Hertfordshire Environmental Forum. It provides grants for cavity wall and loft insulation. Proper insulation saves money and the earth's resources. For more information call the helpline on 0800 783 2503.

4.2.3.2 Warm Front

Warm Front is a government initiative that provides grants for insulation and heating. For further information contact the Grants Helpline on 0800 952 1555.

Action 14

The Council will continue to play an active part in promoting and supporting the Warmer Homes, Greener Herts and Warm Front schemes for heating and insulation grants.

4.2.3.3 Low Energy Lamps

The council provides low energy lamps to people in receipt of income or disability related benefits. This is done in partnership with London Electricity. It contributes to energy efficiency as well as helping to alleviate fuel poverty for people on low incomes.

Action 15

The Council will continue to work in partnership with London Electricity to provide low energy lamps to low income households.

4.2.3 Building Control

Good building design can decrease energy use and reduce emissions from heating. The council's building control team hands out an energy advice leaflet to every applicant with a building proposal. This suggests energy efficiency measures that could be done at the same time as the applicant's proposal. Measures include loft and cavity wall insulation, double-glazing, installation of new condenser boilers for heating, and heating controls such as thermostats.

The team has also produced a leaflet on sustainable construction, in line with the Building Regulations. This gives advice on environmentally friendly and sustainable materials and products.

Action 16

The council will continue to encourage energy efficiency by providing advice and information to applicants for both new build and refurbishment schemes.

4.3 Air Quality monitoring

The Borough of Broxbourne Council monitors for two air pollutants: nitrogen dioxide, NO₂, and particulates, PM₁₀. An automated air quality monitoring station collects continuous nitrogen dioxide and particulate data from the M25. Nitrogen dioxide levels are also measured in eight representative locations around the borough using diffusion tubes. Monitoring data from tubes is used to identify potential pollution hot spots as part of the local air quality management process.

The air quality monitoring station was installed in September 2001. The machine allows pollution trends to be examined. It will also be used to see if the air quality improves or deteriorates.

Action 17

The Council will expand its nitrogen dioxide tube network to incorporate the expanded AQMA. It will continue to monitor and analyse the concentrations of nitrogen dioxide and particulates in the borough.

4.4 Liaison with neighbouring authorities

Air quality is influenced by factors beyond local authority boundaries. Broxbourne belongs to the Hertfordshire and Bedfordshire Air Quality Network, maintained by the Environmental Research Group at Kings College, London. Current air quality information can be accessed via the website, as can periodic reports about air quality in Herts and Beds. Officers in the Hertfordshire and Bedfordshire local authorities meet regularly to discuss the latest air quality issues. The aim is to ensure a consistent approach in the area.

Broxbourne Council also belongs to the north London cluster group. This involves regular meetings with representatives from Waltham Forest, Barnet, Haringey, Enfield, Hertsmere and Epping Forest Councils. Information about air quality in the London Boroughs can be accessed via a website.

Action 18

The Council will continue to play an active role in the Hertfordshire and Bedfordshire Air Quality Monitoring Network and the North London cluster group.

4.5 General Policies

4.5.1 Green Electricity

Two thirds of the UK's electricity is generated by burning coal and gas in power stations. This releases carbon dioxide, a greenhouse gas, as well as other air pollutants. The other third of electricity comes mainly from nuclear power.

Businesses can sign up to get a proportion of their electricity supplied from renewable resources such as wind, solar, tidal and wave energy. This has a number of advantages, such as publicly demonstrating their commitment to sustainability. Cost savings can also be made, as renewable energy is exempt from the climate change levy.

There are two types of tariffs that can be signed up for:

A Green Power Supply – where the electricity company ensures that for every unit of electricity you use, the same amount of green electricity is generated.

A Green Fund – where the electricity company takes the extra that you pay on your bill and invests the money into renewable energy schemes.

4.5.2 Green Procurement

A green procurement policy using energy efficient products and recycled products would be a good way for the Council to lead by example. An employee awareness survey or energy audit would highlight where there is room for improvement. This type of policy would complement the Council's Local Agenda 21 measures.

Action 19

The Council will continue to look for opportunities for improving energy efficiency and green procurement in the Council offices.

4.6 Involving the Public

Air quality is an issue that effects all of us. It is also something that everyone can do his or her bit to improve. This part of the Action Plan will highlight the resources available to the public to find out about air quality issues.

4.6.1 Local Agenda 21

Local Agenda 21 (LA21) details the approach the local community can take to ensure that the area in which we live is maintained for future generations. As such, air quality is an important issue within the Broxbourne LA21 Action Plan. One of the actions in the LA21 strategy is to carry out the review and assessment of air quality. Transport issues are also considered and link with the Local Plan and Local Transport Plan.

Action 20

The Council will work to keep air quality an integral part of its LA21 strategy.

4.6.2 Website

The Council's website is used for providing information about air quality. It is our intention to develop the air quality web pages to provide information about current air quality in the borough. Also available will be air quality reports from the review and assessment process, links to other Council departments and external agencies whose functions impact on air quality.

Action 21

The air quality pages on the Council's website will be improved to provide information about air quality, and advice on what actions residents can take to improve air quality themselves.

4.6.3 Quarterly Environmental Monitor

The quarterly monitor is a publication by the Council, available to all residents of the borough. The air quality section describes and explains the air quality monitoring results.

Action 22

The Council will continue to disseminate information about air quality via the Quarterly Environmental Monitor.

5.0 Actions

The following is a list of actions to improve air quality. Action 1 is the action to improve air quality within the AQMAs. The other actions are wider measures that aim to improve air quality in the Borough in general.

Impact on Air Quality

An action plan should indicate, where possible, what the anticipated air quality improvements are likely to be for each measure. It should be noted that none of the measures would have a significant impact on air quality. Therefore no in depth quantification was undertaken and a guideline rating of Low, Medium or High impact has been given. The Council is unlikely to achieve the UK Air Quality Objectives in the AQMAs by the relevant dates.

Other Impacts

Some of the measures will have other social/economic/environmental impacts. These are stated in the summary table.

Cost Effectiveness and Feasibility

The council is not required to undertake a full cost and benefit analysis of the measures. However costs must be considered. Most of the measures are already existing, and so the cost is covered within existing strategies. As such, these actions have been costed as “none”. The other measures have been ranked from “low “ to “high” to give an indication of relevant cost. Low costing measures are those which primarily require more officer time (less than £5000). Medium cost measures may require the employment of more specialist equipment or a consultant (£5000 to £10000). There are currently no high cost measures (greater than £10000). All measures are considered to be feasible.

Time to implement

Time-scales for implementation must be included in order for future benchmarking purposes.

Responsibility/Partners

Many of the measures will require the co-operation of two or more partners. In particular, the Highways Agency is the key implementer and the Council will need to continue regular liaison with the agency to ensure that progress is being made.

5.1 List of Actions

Action	Impact on air quality	Other impacts	Cost - Effectiveness and feasibility	Time to implement	Responsibility/ Partners	
Actions to improve air quality in the AQMA						
1	The Council has no control over the M25, but will liaise with the Highways Agency to ensure that air quality in the borough is a consideration in the Environmental Impact Assessment for all relevant M25 projects.	LOW	Improved relationship with HA.	None (within existing funding); easy to build on current relationship	Already exists	Environmental Health, Transport Planners, Highways Agency
Actions to improve the general air quality in Broxbourne						
Actions to reduce traffic volumes						
2	The Council will liaise with Hertfordshire County Council to ensure that local objectives are considered in the next local transport plan in 2005.	MEDIUM (Has potential for real air quality improvements)	Improved overall environment, health and public transport	None (Cost covered within existing HCC strategies).	Already exists	Transport planners, Environmental Health, Highways Engineers, Education Services

Action		Impact on air quality	Other Impacts	Cost Effectiveness and Feasibility	Time to implement	Responsibility/ Partners
3	The Council will continue to take into account a development's impact on air quality when considering planning applications, especially when it could impact upon the AQMA.	LOW	More innovation in development	None (Within existing funding).	Already exists	Planning, Environmental Health
4	The Council will investigate the development of a sustainable travel plan for its staff.	LOW	Healthier Staff; better staff morale	Low cost (Perhaps hard to change behaviour?)	April 2005 for investigation ; April 2006 if implement	Environmental Health, all Council staff
Actions to reduce emissions from vehicles						
5	The Council will provide information to residents about the costs and benefits of cleaner vehicle emissions via its website. It will also raise awareness of Powershift and Cleanup grants.	LOW	Improved website	Low Cost	Oct 2004	Environmental Health, Transportation
6	The Council will provide information to local businesses to encourage the greening of their vehicle fleets.	LOW (depends how many businesses green their fleets)	Improved relations with local business	Low Cost	Oct 2004 for initial information	Environmental Health, Transportation

Action		Impact on air quality	Other Impacts	Cost Effectiveness and Feasibility	Time needed to implement	Responsibility
7	The Council will look at the results of the London-wide LEZ feasibility study. It will make sure the implications for air quality in Broxbourne are considered and will make representations as appropriate	HIGH	Detrimental to some businesses? Demonstrates sustainability commitments.	Low cost to Borough of Broxbourne Council	Dec 2006?	London Boroughs, Transportation, Local Plans
8	The council will research the potential of forming partnerships with local garages to carry out emissions testing in the Borough. This would be through an annual voluntary testing day.	LOW	Safer vehicles on roads. Good publicity.	Medium cost. Partnership sponsored by businesses	April 2005	Vehicle Inspectorate, Police, Environmental Health, Transport Planners
Actions to reduce emissions from non-traffic sources						
Industrial Emissions						
9	The Council will continue to inspect all of its authorised processes to ensure compliance. Authorisations will be updated as and when appropriate so that operation conditions are up to date.	MEDIUM	Prevent nuisance	None (within existing resources)	Already exists	Environmental Health, Environment Agency, Industries

Action		Impact on air quality	Other Impacts	Cost Effectiveness and Feasibility	Time needed to implement	Responsibility/ Partners
10	The Council will continue to encourage all developers to employ good management practices in suppressing dust emissions from their sites. The Council will continue to take action to abate nuisance from fugitive dust emissions.	LOW	Prevent nuisance	None. (within existing resources)	Already Exists	Planning, Building Control, Environmental Health
Domestic Emissions						
11	The Council will continue to educate residents and businesses to use smokeless fuel or an approved appliance for smokeless combustion.	LOW	Financial burden on residents	None (within existing funding)	Already Exists	Environmental Health
12	The Council will continue to promote alternatives to domestic bonfires. We will encourage residents to recycle or compost as much waste as possible or dispose of it responsibly at a civic amenity site.	LOW	Meet recycling targets easier, reduced nuisance	None (within existing funding)	Already Exists	Waste, Environmental Health
13	The Council will continue to enforce the Clean Air Act 1993 and encourage local businesses to dispose of waste in a responsible manner, so as to prevent dark smoke bonfires.	LOW	Reduced nuisance	None (within existing funding)	Already Exists	Environmental Health

Action		Impact on air quality	Other Impacts	Cost Effectiveness and Feasibility	Time needed to implement	Responsibility/ Partners
14	The Council will continue to play an active part in promoting and supporting the Warmer Homes, Greener Herts and Warm Front schemes for heating and insulation grants.	LOW	Lower fuel costs, reduce fuel poverty	None	Already Exists	Environmental Health, LA21, Building Control
15	The council will continue to work in partnership with London Electricity to provide low energy lamps to low income households.	LOW	Reduce fuel poverty, lower fuel costs	None. (within existing funding)	Already Exists	London Electricity,
16	The council will continue to encourage energy efficiency by providing advice and information to applicants for both new build and refurbishment schemes.	LOW	Reduce fuel poverty, lower fuel costs	None. (within existing funding)	Already Exists	Environmental Health, Building Control
Air Quality Monitoring						
17	The Council will expand its nitrogen dioxide tube network to incorporate the expanded AQMA. It will continue to monitor and analyse the concentrations of nitrogen dioxide and particulates in the Borough.	LOW	Easier to comply with new legislative requirements	Low cost.	April 2004	Environmental Health

Action		Impact on air quality	Other Impacts	Cost Effectiveness and Feasibility	Time needed to implement	Responsibility/ Partners
18	The Council will continue play an active role in the Hertfordshire and Bedfordshire Air Quality Monitoring Network and the north London cluster group.	LOW	Uniformity of approach	None. (within existing funding)	Already Exists	Environmental Health
General Policies						
19	The Council will continue to look for opportunities for improving energy efficiency and green procurement in the Council offices.	LOW	Positive image of council	Low cost. May save money if implemented.	April 2005	Environmental Health, Procurement
20	The Council will work to keep air quality an integral part of its LA21 strategy.	LOW		None. (within existing funding)	Already Exists	Environmental Health
21	The Council will continue to disseminate information about air quality via the Quarterly Environment Monitor.	LOW	Improved promotion of environmental issues	None. (within existing funding)	Already Exists	Environmental Services

6.0 References

Department for Transport. www.local-transport.dft.gov.uk/travelplans/index.htm).

Green Electricity. www.greenelectricitynetwork.org.

Herts and Beds Air Quality Monitoring Network.
<http://www.seiph.umds.ac.uk/envhealth/HBNet>

Herts Direct. <http://www.hertsdirect.co.uk/hcc/environment/planning/transplan/travelwise>

Kings College London, Environment Research Group.
<http://www.erg.kcl.ac.uk/london/asp/home.asp>

Local Transport Plan. <http://enquire.hertsc.gov.uk/ltp/full/issues/environ.htm>

Travelwise. <http://www.hertsdirect.co.uk/hcc/environment/planning/transplan/travelwise>