

BROMSGROVE DISTRICT COUNCIL
Local Air Quality Management –
Final Action Plan

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1 EXECUTIVE SUMMARY

The Local Air Quality Management Action Plan for Bromsgrove District Council is the culmination of the first round of local air quality review and assessment within the District. The findings of the first round were that exceedences of the 2005 annual mean air quality objective for nitrogen dioxide were predicted at a small number of properties in close proximity to the M42 (Junction 1). This resulted in the declaration of an Air Quality Management Area (AQMA) at Lickey End (Junction 1 of the M42) for pollutant nitrogen dioxide due to road traffic emissions from the M42.

The Action Plan has been prepared to comply with the statutory functions for local air quality management under Part IV of the Environment Act 1995. In compiling the Action Plan, Government guidance LAQM.PG (03) and guidance from the National Society for Clean Air has been referred to, alongside guidance provided by the Department for Environment, Food and Rural Affairs through its Air Quality Action Plan Help Desk.

The aim of the Action Plan is to identify how Bromsgrove District Council (BDC) will use its existing powers and work together with other organisations in pursuit of the annual air quality objective for nitrogen dioxide. Measures have been proposed to improve air quality both within the AQMA and across the District as a whole. The Highways Agency is responsible for the management of the M42 and therefore for any direct actions proposed for this motorway to reduce road traffic emissions within the AQMA. Bromsgrove District Council will work together with Worcestershire County Council (WCC), the local transport authority, and the Highways Agency to improve air quality within the AQMA at Lickey End and throughout the District.

The options proposed for the AQMA are:

Option 1: Speed restriction to 50mph (80kph)

Option 2: Reduction in traffic flows on the M42

Option 3: Reduction in % heavy duty vehicle flows on the M42

Option 4: Reduction in overall background levels

Option 5: Introduction of tolls

Option 6: Improvements to Junction 1 of the M42

Option 7: Removal of M42 slip roads at Junction 1

The measures to improve air quality throughout the District are:

Measure 1: BDC will ensure that the Action Plan measures are co-ordinated with relevant Local Transport Plan (LTP) measures and provide WCC with annual progress reports on air quality.

Measure 2: BDC will work together with WCC to improve public transport facilities within Bromsgrove and develop Quality Partnerships¹ with transport providers to promote greater uptake of public transport.

Measure 3: BDC will work with WCC to develop and implement a Council Travel Plan in accordance with the LTP Objectives

¹ Informal partnership involving dialogue with local authorities, public transport providers and other relevant stakeholders to improve public transport facilities

Measure 4: BDC will continue to work together with WCC to encourage the uptake of Employer and School Travel Plans within Bromsgrove.

Measure 5: BDC will work together with WCC to improve the facilities for cycling and walking within Bromsgrove and encourage greater uptake. For new development, developers will be encouraged to provide secure parking facilities and cycle paths where appropriate.

Measure 6: BDC will work together with WCC to develop Freight Quality Partnerships² and encourage wider uptake of freight by rail.

Measure 7: BDC Environmental Services will continue to work closely with the Planning Department to ensure that air quality is taken into account in the planning process when located in or close to the AQMA or in areas marginally below air quality objectives.

Measure 8: BDC will continue to work together with developers to improve sustainable transport links serving new developments.

Measure 9: BDC will develop supplementary planning guidance to assist with air quality assessments of development proposals

Measure 10: BDC will develop a local air quality strategy to provide a framework for ensuring long-term commitment and support for air quality issues

Measure 11: BDC will continue their commitment to local air quality monitoring within the Bromsgrove District to ensure a high standard of data is achieved to assess against air quality objectives

Measure 12: BDC will make the Action Plan and annual progress reports available on the Website to ensure broad access to the consultation and implementation process.

Measure 13: BDC will continue to work together with WCC on promotional activities to raise the profile of air quality in Bromsgrove

Timescales for the proposed measures and options range from the short term (achievable by 2005) to the longer term (not achievable before 2010). Funding will be achieved through the LTP bids for proposed local transport measures and the Highways Agency and Central Government for proposed direct measures for the M42.

The 2005 NO₂ Objective is unlikely to be met without immediate intervention by the Highways Agency through direct measures within the AQMA. The direct options ranked highest in terms of cost-effectiveness are M42 Junction 1 improvements and speed restrictions. BDC will be lobbying the Highways Agency for progress with these measures. The Objective will not be achieved solely by the implementation of local general measures to improve air quality in the District.

² Informal partnership involving dialogue with local authorities, the freight industry and other relevant stakeholders to improve freight operation in the area and minimise its impact

2 INTRODUCTION AND AIMS OF THE ACTION PLAN

2.1 Project Background

Casella Stanger was commissioned by Bromsgrove District Council (BDC) to draw up a Local Air Quality Management Action Plan for the Air Quality Management Area at Lickey End. The Action Plan is required to be undertaken as part of the local authority's statutory duties as defined within Part IV of the Environment Act, 1995.

Casella Stanger has undertaken previous review and assessment reports for BDC, which includes the Stage 4³ assessment. The results of the Stage 4 supported the continuance of an Air Quality Management Areas (AQMA) for the nitrogen dioxide (NO₂) annual objective at Lickey End, due to road traffic emissions from the M42 (Junction1).

2.2 Legislative Background

Part IV of the Environment Act, 1995, places a statutory duty on local authorities to periodically review and assess the air quality within their area. This involves consideration of present and likely future air quality against air quality standards and objectives. Guidelines for the 'Review and Assessment' of local air quality were published in the 1997 National Air Quality Strategy (NAQS)⁴ and associated guidance and technical guidance. In 2000, Government reviewed the NAQS and set down a revised Air Quality Strategy for England, Scotland, Wales and Northern Ireland⁵ (AQS). This set down a revised framework for air quality standards and objectives for seven pollutants, which were subsequently set in Regulation in 2000 through the Air Quality Regulations 2000⁶. These were subsequently amended in 2002⁷.

Where it appears that the air quality objectives will not be met by the designated target dates local authorities must declare an Air Quality Management Area (AQMA) and develop action plans in pursuit of the air quality objectives. Following the Stage 4 Assessment results for the Lickey End AQMA, BDC are required to develop an Action Plan.

Policy Guidance LAQM.PG(03) was published by the Government in 2003, which included guidance on the development of action plans. The NSCA have published guidance 'Air Quality Action Plans (2000)' and 'Air Quality: Planning for Action (2001)'. These guidance documents have been taken into account in development of the Action Plan for BDC, alongside guidance provided by the Department for Environment, Food and Rural Affairs through its Air Quality Action Plan Help Desk, which provides examples of best practice and an Action Plan appraisal checklist.

2.3 Scope of the Action Plan

The purpose of the Action Plan is to provide the means through which a local authority through joint working with the County Council, national agencies and other relevant organisations delivers viable measures that will work towards achieving the air quality

³ Stage 4 Air Quality Review and Assessment - Bromsgrove District Council, August 2002

⁴ DoE (1997) The United Kingdom National Air Quality Strategy The Stationery Office

⁵ DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working together for Clean Air, The Stationery Office

⁶ DETR (2000) The Air Quality Regulations 2000, The Stationery Office

⁷ Defra (2002) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, The Stationery Office

objectives within an AQMA. The aim is also to encourage active participation in the achievement of action plan measures by consulting the local community and raising awareness of air pollution issues.

Local authorities are required to prepare a written Action Plan for an AQMA, setting out the action plan measures they intend to take forward and the potential costs and benefits of these measures. The Stage 4 Air Quality Review and Assessment provides the technical backup for the measures to be included in the Action Plan. The Action Plan should refer to the findings of the Stage 4 in terms of source apportionment (where emissions are coming from) so that action plan measures are targeted appropriately.

The Action Plan should contain simple estimates of the costs and benefits and timescales for implementing the proposed action plan measures, so that measures can be prioritised for implementation and subsequently monitored.

2.4 Reporting of Action Plan

The AQMA at Lickey End has been declared due to road traffic emissions from the M42. The Highways Agency is the relevant transport authority for this motorway and therefore has the responsibility for any actions proposed for the M42 motorway.

Worcestershire County Council (WCC) is the relevant transport authority for roads on the local network and work jointly with BDC on transport measures within the Bromsgrove District.

The Action Plan reflects these differing organisational responsibilities for actions within the AQMA and proposed measures (Section 7) are reported as:

- Direct actions proposed for the M42 at Lickey End (Highways Agency)
- Indirect actions district-wide to improve air quality throughout the Bromsgrove area, including the AQMA (BDC and WCC)

3 OVERVIEW OF AIR QUALITY IN BROMSGROVE

The main source of air pollution in BDC is road traffic emissions from major roads, including the M42 and M5 motorways and a number of strategic roads (A456, A491 and A38). Other sources include road traffic emissions from the local road network and a small number of industrial and commercial sources. A summary of the review and assessment process is shown in table 1.

The Stage 1 review and assessment (1999) recommended further assessment for 18 locations in the district where there were potential exceedences of pollutants carbon monoxide, NO₂ and PM₁₀ from road traffic emissions, in addition to one point source for sulphur dioxide emissions. Comments from consultation with the Secretary of State, led to additional pollutants 1,3 – Butadiene, NO₂ and PM₁₀ being assessed for two industrial sources. The Stage 2 review and assessment concluded that NO₂ objectives may be exceeded at a number of roadsides and further assessment was required, in addition to further assessment of emissions from the two industrial sources. The Stage 3 review and assessment concluded that there were only likely to be exceedences of the NO₂ annual objective at 3 locations due to road traffic emissions. Air Quality Management Areas were declared at Lydiate Ash, Coopers Hill and Lickey End. The Stage 4 further assessment concluded that there was sufficient evidence through detailed modelling and monitoring to revoke the Lydiate Ash and Coopers Hill AQMAs, but supported continuance of the Lickey End AQMA.

Table 1: Summary of review and assessment process for BDC

Source	Stage 1 (1999)		Stage 2 (1999)		Stage 3 (2001)	Stage 4 (2002)
Industrial	Lead				Exceedence NO ₂ annual mean only.	Further assessment of NO ₂ in AQMAs. Support for revocation of Lydiate Ash and Coopers Hill AQMAs.
	Benzene					
	1,3-Butadiene	→	1,3-Butadiene	→		
	Sulphur dioxide	→	Sulphur dioxide	→		
Road Traffic					Declaration Lydiate Ash, Coopers Hill & Lickey End AQMAs due to road traffic.	Support for continuance of Lickey End AQMA – Action Plan required.
	NO ₂	→	NO ₂	→		
	PM ₁₀	→	PM ₁₀	→		
	Carbon monoxide	→	Carbon monoxide			

Key findings of the Stage 4 review and assessment

The Stage 4 assessment for Lickey End identified the M42 as the dominant local source of NO_x emissions in the AQMA, with some additional contributing emissions from the A38 and B4096 at Junction 1.

Source apportionment concluded that heavy-duty vehicles (HDV) on the M42 are contributing disproportionately to the concentrations of NO_x. HDV account for only approximately 9 - 13% of the daily flow, but contribute approximately 58% of the NO_x emissions from vehicles. Therefore, reductions in the number of HDVs would afford the largest improvement in the NO_x concentrations. It was concluded that 30% of the NO_x emissions from vehicles are from cars.

The reduction of NO_x required at the nearest receptor was calculated as 8.2µg/m³. The maximum predicted concentration at the nearest receptor of the annual NO₂ objective in 2005 was 41.6µg/m³ (4% above the objective). Sixteen receptors were identified as being at risk of exceeding the annual NO₂ objective in 2005.

The Stage 4 identified the Highways Agency as the relevant transport Authority and key contributor to direct action plan measures for the M42 motorway at Lickey End (Junction 1).

However, it is recognised that indirect local measures can make a contribution by reducing background levels and improving air quality throughout the district and BDC are committed to the improvement of local air quality. To this aim, BDC has set up an Air Quality Steering Group to engage all relevant partners, including WCC and the Highways Agency.

A continuous real-time monitoring station has been installed at Lickey End within the AQMA to accurately monitor NO₂ concentrations and verify modelled predictions. The monitoring station will also allow the implementation of action plan measures to be appropriately monitored and assessed.

4 EXISTING POLICIES AND STRATEGIES TO IMPROVE AIR QUALITY

There are a number of related policies and strategies at the local and regional level that can be tied in directly with the aims of the Bromsgrove Air Quality Action Plan, and will help contribute to overall improvements in air quality across the Borough.

4.1 Bromsgrove District Local Plan (April 2003)

It is fundamental to the achievement of the aims of the Air Quality Action Plan to have a Local Plan that recognises the importance of air quality in terms of the environmental impact of development and the need for sustainable transport measures. Bromsgrove District Local Plan incorporates relevant policies of the WCC Structure Plan and addresses air quality issues through the following policies (summarised):

Environmental Assessment

'Policy DS10 Development proposals will not be granted where there is sufficient reason to believe that the development will have an unacceptable impact on the environment.'

Planning Obligations

'Policy DS11 The District Council will where appropriate seek agreement with developers to meet their reasonable costs to the community through planning obligations or unilateral undertakings to provide for: or b) compensatory works to mitigate for the loss of any environmental or community resources resulting from the development..'

This may be achieved through the use of planning conditions or planning obligations under Section 106 of the Town and Country Planning Act (1990).

Sustainable Development

'Policy DS13 The District Council will take full account of the need for future development to be sustainable so that present demands do not compromise the ability of future generations to meet their own demands or enjoy a high quality environment. All development must reflect the need to safeguard and improve the quality of life of residents...including...the quality of air...'

Rail Freight

'Policy TR5A The movement of freight by rail as a sustainable objective will be pursued by the District Council.'

Alternative Modes of Transport

'Policy TR13 In those cases where an application to the District Council is required, and subject to other policies of the Plan, the District Council will view favourably planning applications which directly promote the use of a variety of transport, or which are for related facilities such as secure cycle parking and bus and rail shelters.'

Cycle Routes

'Policy TR16 The District Council will pursue opportunities to improve/provide cycle facilities in the District and to develop a network of cycle routes. For new developments

the Council will expect developers to provide secure parking facilities and cycle paths where appropriate.’

Development near Pollution Sources

‘**Policy ES14** Where development is proposed close to sources of pollution and this would be likely to adversely affect the amenity of those occupying the subsequent scheme; or where a proposal for a new development may itself be a potential source of pollution, the District Council will seek to ensure that the conflict between such land uses can be ameliorated to its satisfaction. The Council will expect measures to be incorporated to overcome the pollution problem on site. Where this is not possible other measures may be required immediately adjacent to the site e.g. bunding. If an appropriate solution cannot be achieved a planning permission will not be forthcoming.’ (N.B. Pollution is used here to encompass effects on air, water and land.)

The Local Plan ‘Environment Statement’ pledges the support of BDC for the following sustainable transport policies:

- The encouragement of the use of public transport including the four rail routes running through the District.
- The reduction in traffic levels as a way to bring about environmental improvement to the District.
- The increased use of rail services to transport freight
- The requirement of travel plans by way of a Section 106 obligations for all major developments as a means of achieving a reduction in car use and the encouraging more sustainable modes of transport.

4.2 Local Agenda 21 Action Plan for the Bromsgrove District (LA21):

LA21 originated from the Earth Summit in Rio de Janeiro in 1992. It incorporates the concept of sustainable development – meeting current needs without compromising the needs of future generations. The LA21 process enables communities to take an active role in conserving their local environment and improving their quality of life. BDC adopted its LA21 Strategy in January 2001 and this set out objectives and actions which can be tied in directly with the Air Quality Action Plan aim to improve local air quality.

These objectives include actions to:

- Increase community participation with BDC
- Reduce adverse impacts of new development
- Reduce dependency on the car and promote low emission methods of transport
- Promote sustainable transport through the safer routes to school initiative
- Improve public transport
- Reduce air pollution to levels which do not damage natural systems
- Reduce household energy demand

The LA21 Strategy objectives will largely be incorporated into the Community Strategy which is being developed.

4.3 Worcestershire Local Transport Plan

The White Paper 'A New Deal for Transport' set out new policy initiatives to create a better, more integrated sustainable transport system. This included greater emphasis on public transport, and cyclist and pedestrian accessibility, with initiatives such as Safer Routes to School, Travel Plans and Quality Partnerships⁸ between the local authority and transport operators. This was to be achieved through Local Transport Plans (LTP) with a five-year strategy for the implementation of local and regional transport measures. LTPs are required to be consistent with County Structure Plans, to ensure consistency and sustainability in transport proposals. WCC in partnership with the local authorities has developed the LTP for Worcestershire. LTP strategies are likely to have a significant impact on local air quality and therefore need to be coordinated with Air Quality Action Plans. Relevant Strategies and initiatives will be considered in Section 7.2.1.

⁸ Informal partnership involving dialogue with local authorities, public transport providers and other relevant stakeholders to improve public transport facilities

5 FINANCING

Direct measures proposed for the AQMA that are the responsibility of the Highways Agency will be required to be assessed in more detail for their cost-effectiveness through feasibility studies.

The Department of Transport has announced Junction 1 of the M42 as a Priority Action Site and a feasibility study is currently being undertaken for a Scheme to improve this Junction with a potential funding of £1 million. The outcome of this study is expected later this year. This Scheme and other options proposed in the Action Plan that are the responsibility of the Highways Agency will be required to pass the Highways Agency Value Management Assessment. This is likely to be the main restraint to achieving the NO₂ air quality objective within the 2005 time-scale.

Indirect general measures to improve air quality in the area will be funded by BDC, such as air quality monitoring and promotional activities, or through LTP and sustainability measures by WCC. The LTP 2001 – 2006 has allocated funding to a number of Schemes in the Bromsgrove District that tie in with Action Plan measures to improve overall air quality in the area. These include £30000 for the Bromsgrove cycle strategy bid per annum and £80000 for Bromsgrove School Travel Plan. The Integrated Public Strategy bid in the LTP is greater than £1 million per annum for the County and includes proposed improvements of interchanges at Bromsgrove Bus Station (improvements to Bromsgrove Railway Station were completed in 2003). Annual funding for Quality Partnerships⁹, Freight Strategy and Walking Strategy has also been made available through LTP bids. BDC will work together with WCC to review current bids for the area in the light of the findings of the review and assessment of air quality. Additional bids will be made as necessary to secure further improvements in air quality.

⁹ Informal partnership involving dialogue with local authorities, public transport providers and other relevant stakeholders to improve public transport facilities

6 CONSULTATION

In considering which measures to propose for improvements in air quality within the AQMA and across the Borough, BDC set up an Air Quality Action Plan working group. Cross-departmental bodies have attended this group (covering Environmental Health, Planning and Transport Departments), along with the Regional Manager of the Highways Agency for Region 9 of the national road network within England. This group has discussed the appropriate measures for consideration within the Action Plan, which are reported in the following section.

For AQMAs declared across the UK in the vicinity of strategic road links and the motorway network, the Highways Agency has additionally provided guidance with respect to its role in Local Air Quality Management. Within this guidance a number of proposed measures are suggested, that local authorities may wish to consider for bringing about improvements in air quality. This document has been used extensively in considering with the Highways Agency the appropriate direct measures to take.

Under Schedule 11 of the Act, Local Authorities are required to consult on their LAQM Action Plan. It is important for the success of the Action Plan to have involvement by all local stakeholders including local residents, community groups and local businesses in the drawing up the Action Plan in addition to their active participation in achieving the action plan measures. The following is a list of statutory and non-statutory consultees to which this draft Plan was sent:

- The Secretary of State
- The Highways Agency
- The Environment Agency
- Worcestershire County Council
- Primary Care Trusts
- BDC Air Quality Steering Group
- BDC Councillors and Officers
- Neighbouring local authorities
- Local businesses
- Local residents
- Relevant community groups and forums
- Other relevant local stakeholders

The comments from both Statutory and non-statutory consultees received on the draft Action Plan have been considered and incorporated where possible into this final Action Plan and have been summarised in Appendix 1.

7 PROPOSED MEASURES

The two sections below outline the proposed direct measures for the AQMA and indirect measures to improve air quality in the District as a whole. Direct measures to influence NO₂ concentrations within the AQMA concentrate on the dominant source of emissions— road traffic on the M42.

7.1 Proposed Direct Measures for the AQMA

The Highways Agency is responsible for the operation of trunk roads and motorways, including the M42. BDC has no direct control over the road network; however, BDC will work in co-operation with the Highways Agency and WCC to try to address air pollution issues from road traffic wherever possible. The Highways Agency has issued guidance titled 'The Role of the Highways Agency in Local Air Quality Management' which sets out the Highways Agency's commitment to Local Air Quality Management (LAQM). Route Management Strategies, Multi-modal studies, junction improvements and encouraging more sustainable transport options, will bring about improvements in air quality. Bromsgrove is within the West Midlands Multi-modal Study and Lickey End, Junction 1 of the M42, is a priority action site for junction improvement. The potential options to try to improve air quality within the AQMA have been identified, and assessed for their feasibility, cost effectiveness and potential impacts.

7.1.1 Option 1: Speed Restriction to 50mph (80kph)

The air quality impact of reducing the speed limit from 105kph to 80kph on the M42 east and west of Junction 1 has been assessed using the 2003 DMRB (Highways Agency v1.01) with regard to predicted concentrations of NO_x in 2005. The traffic flow figures and background have been used from the Stage 4 Review and Assessment. The results (Table 2) show that a predicted reduction of 9.2 – 10.82µg/m³ could be achieved by a blanket speed restriction on this stretch of the M42. The reduction required within the AQMA to meet the NO₂ annual objective is 8.2µg/m³ and therefore this Option could achieve the required reduction.

Table 2 Scenario testing for speed restriction

	AADT (2005)	% HDV	Speed (kph)	NO _x in µg/m ³	Reduction in NO _x in µg/m ³
M42 West of Junction1 (E+W)	93480	9	105	89.85	
M42 West of Junction1 (E+W)	93480	9	80	80.65	9.2
M42 East of Junction1 (E+W)	112392	13	105	105.51	
M42 East of Junction1 (E+W)	112392	13	80	94.69	10.82
Background NO _x (2005) - 37.5 µg/m ³					
Distance from centre-line 20m					

Objective	To reduce emissions through speed restrictions to achieve a more optimal speed (80kph) for reduction in NOx emissions. To be implemented as either a blanket speed limit or a variable limit depending on traffic flow and time of day e.g. peak hours only.
Responsibility	Highways Agency. Enforcement of speed restriction would also need to have input by the West Mercia Police
Air Quality Impacts	Scenario test results are shown above for a blanket speed limit. The reduction in NOx emissions required within the AQMA could be achieved by this option alone by 2005.
Non Air Quality Impacts	Positive: Reduction in noise levels and improvements in safety. Cost savings through reduced fuel consumption. Negative: Potential for increased journey times at non-peak times.
Perception	Likely to be negative by motorway users due to potential for increased journey times.
Cost-effectiveness & Feasibility	Costs of signage and ongoing enforcement issues to be considered in greater detail in the feasibility study. Costs likely to be lower for blanket speed limit than variable with the need for variable message signage, but overall considered high.

7.1.2 Option 2: Reduction in traffic flows on the M42

The air quality impact of reducing the flow on the M42 by 10%, 20% and 30% has been assessed using the 2003 DMRB (Highways Agency v1.01) with regard to predicted concentrations of NOx in 2005. The traffic flow figures (worst case) and background have been used from the Stage 4 Review and Assessment. The results (Table 3) show that a predicted reduction of 2.79 – 9µg/m³ could be achieved. The reduction required within the AQMA to meet the NO₂ annual objective is 8.2µg/m³ and therefore a reduction of 30% would be required if this Option alone was considered. Reductions in traffic flows, such as through Highways Agency multi-modal schemes, are unlikely for the M42 and proposed widening is likely to increase flows.

Table 3 Scenario testing for reduction in traffic flows

	AADT (2005)	% HDV	Speed (kph)	NOx in ug/m ³	Reduction in NOx in ug/m ³
Scenario 1: Traffic flow 2005	112392	13	105	105.51	
Scenario 2: Traffic flow reduction 10%	101153	13	105	102.72	2.79
Scenario 3: Traffic flow reduction 20%	89914	13	105	99.73	5.78
Scenario 4: Traffic flow reduction 30%	78674	13	105	96.51	9.00
Receptor distance 20m					

Objective	To reduce overall emissions of NO _x from vehicles by reducing the total number of vehicles on the M42
Responsibility	Central Government, Highways Agency. National intervention will be required to achieve substantial reductions, notably with road freight.
Air Quality Impacts	Large reductions of total flows are required to achieve the necessary air quality benefits. A 30% reduction in overall traffic flows would be required to reduce emissions sufficiently to meet the air quality objective.
Non Air Quality Impacts	Reductions in overall noise levels at nearby properties. Reduced traffic volume may improve journey times.
Perception	Policies aimed at reducing the number of vehicles on the roads are likely to be seen as restrictive by road users. Local residents in the area are likely to view this Option positively.
Cost-effectiveness & Feasibility	Costs would be dependent on the measures used to reduce traffic flows, but will be long term and not likely to be achievable by the end of 2005.

7.1.3 Option 3: Reduction in %HDV flows on the M42

The Stage 4 source apportionment work identified HDVs as the major source of NO_x emissions. A reduction in volume of these types of vehicles, such as through improved rail freight infrastructure, would therefore have a greater overall impact on air quality than a reduction in total vehicle numbers.

The air quality impact of reducing %HDV on the M42 by 10%, 20% and 30% has been assessed using the 2003 DMRB (Highways Agency v1.01) with regard to predicted concentrations of NO_x in 2005. The traffic flow figures (worst case) and background have been used from the Stage 4 Review and Assessment. The results (Table 4) show that a predicted reduction of 4.46 – 12.4µg/m³ could be achieved. The reduction required within the AQMA to meet the NO₂ annual objective is 8.2µg/m³ and therefore a reduction of approximately 20% would be required if this Option alone was considered.

Table 4 Scenario testing for reduction in %HDV

	AADT (2005)	% HDV	Speed (kph)	NO _x in ug/m ³	Reduction in NO _x in ug/m ³
Scenario 1: %HDV 2005	112392	13	105	67.22	
Scenario 2: %HDV reduced by 10%	112392	11	105	62.75	4.46
Scenario 3: %HDV reduced by 20%	112392	9.75	105	58.62	8.60
Scenario 4: %HDV reduced by 30%	112392	6.5	105	54.82	12.40
Distance from centreline 20m					

Objective	To reduce NOx emissions by reducing the volume of the most polluting source identified in the Stage 4 – HDV traffic
Responsibility	Central Government, Highways Agency. National intervention will be required to achieve substantial reductions in road freight.
Air Quality Impacts	The required improvement in air quality is predicted to be achieved by removing 20% of the HDVs from the M42. The air quality benefits are therefore greater by targeting the most polluting source.
Non Air Quality Impacts	Reductions in overall noise levels at nearby properties. Reduced volume of HDV traffic may improve journey times. Socio-economic – additional costs of distribution.
Perception	Negative: Seen as restrictive for freight distribution. Potential increased costs of other modes of distribution. Positive: Potential benefits to local residents and other road users.
Cost-effectiveness & Feasibility	For large scale shift in freight distribution, investment in the rail network for increased freight and potential fiscal benefits to make rail freight more attractive are likely to be costly. This is a long-term measure -post 2005. WCC is working with the Road Haulage Association and Rail Operators to develop Quality Partnerships ¹⁰ and improve uptake of rail freight locally.

7.1.4 Option 4: Reduction in overall background levels

Objective	To reduce the background levels throughout the District thus reducing the impact of road traffic emissions at Lickey End.
Responsibility	Central Government, WCC and BDC. National policies will be required to achieve significant reductions in background levels, such as through tighter fuel emissions standards and fiscal measures. Measures by WCC and BDC to improve air quality throughout the District are outlined in Section 7.2.
Air Quality Impacts	Improvements throughout the District could be achieved, but the impact on NOx emissions within the AQMA is likely to be small without National Policies.
Non Air Quality Impacts	Socio-economic. Tighter standards and controls could affect industry, businesses and the public
Perception	Dependent of the measures introduced. Tighter controls and fiscal measures are likely to be viewed negatively. Local measures such as through travel plans and partnerships with local transport operators are likely to be viewed more positively.
Cost-effectiveness & Feasibility	Dependent on the measures introduced. Action is already underway on local measures to improve air quality in the area.

¹⁰ Informal partnership involving dialogue with local authorities, the freight industry and other relevant stakeholders to improve freight operation in the area and minimise its impact

7.1.5 Option 5: Introduction of tolls

Objective	To influence driver behaviour and promote modal shift through tolls, either for a particular route e.g. M42 or an area.
Responsibility	Central Government, Highways Agency. Options for tolls within the area are considered as part of the regional West Midlands Multi-modal Study.
Air Quality Impacts	The impact of introducing tolls will be dependant on the type of toll introduced and the modal shift that can be achieved.
Non Air Quality Impacts	Socio-economic impacts of road charging on businesses and the public. Reductions in flows may lead to potential benefits in noise reduction and improved journey times.
Perception	Likely to be viewed negatively by private vehicle users.
Cost-effectiveness & Feasibility	The costs of introducing tolls can be off-set by revenue which is generated. Area wide tolls are likely to be more costly than a designated route. The feasibility of such schemes is being considered in the Multi-modal Studies and it is unlikely that they will be introduced in time to achieve the air quality objective.

7.1.6 Option 6: Improvements to Junction 1 of the M42

The Department for Transport has identified junction 1 of the M42 as one of 92 sites nationally, which require actions to improve traffic flow. The target date for determining the appropriate actions for these priority action sites is 2007. Improvements to this junction are being considered to relieve congestion from queuing traffic on the off-slip road up to the A38. The proposed Scheme being evaluated at present by the Highways Agency and their Consultants AmeyMouchel involves the provision of an additional lane on the exit slip road, changes to the signalling and an additional lane on the circulatory carriage way.

Objective	To reduce congestion at Junction 1 of the M42 and improve flows to reduce vehicle emissions.
Responsibility	Highways Agency
Air Quality Impacts	The proposed scheme is currently being evaluated and surveys of traffic flows and delays are being undertaken later this year. The potential impact of the scheme would be to reduce emissions of NOx at the junction, but the impacts will not be able to be quantified until further work is undertaken.
Non Air Quality Impacts	Improvements in car journey time.
Perception	Will be viewed positively by road users at this junction and local residents (once short term disruption due to improvement works is over).
Cost-effectiveness & Feasibility	The Department for Transport has set the nominal cost of the proposed scheme at £1 million pounds. A feasibility study is being undertaken by the Highways Agency on this Option.

7.1.7 Option 7: Removal of M42 Junction 1 slip roads

Objective	To remove motorway traffic and congestion at Junction 1 of the M42 by removing the motorway slip roads and diverting traffic to other Junctions.
Responsibility	Highways Agency/BDC/WCC
Air Quality Impacts	The proposed scheme would significantly reduce the emissions of NOx at Junction 1 and it is expected that the objective could be achieved by this option if works could be completed by the end of 2005. However, there will be potential adverse effects from diverted traffic, which will not be able to be quantified until further work is undertaken.
Non Air Quality Impacts	Positive: Reduction in noise and improvements in car journey times in the vicinity of this Junction. Negative: The reverse is likely to be true in the areas where traffic would be diverted.
Perception	It is likely to be viewed positively by local road users and local residents, but negatively where traffic is diverted.
Cost-effectiveness & Feasibility	A feasibility study will be required to appropriately assess this Option. It is unlikely that LTP funding for this study can be secured before 2005.

A summary of all Options considered for the Lickey End AQMA is provided in Table 5.

The ranking of options has been based on a number of considerations; including the costs and benefits of all the options, feasibility and acceptability, and whether they will achieve the air quality objective. The costs are provided as 'Low' (up to £1 million), 'Medium' (1 – 5 million) and 'High' (> £5 million).

7.2 Proposed General District-wide Measures to Improve Air Quality

BDC do not have responsibility for motorways and trunk roads. However, there are measures that can be implemented by BDC, or which BDC can feed into, aimed at improving the air quality throughout the District.

7.2.1 Transport measures

BDC works together with WCC on local transport issues including the implementation of LTP measures in the Bromsgrove District. Relevant strategies and initiatives within the LTP, which have potentially beneficial impacts on air pollution from transport sources, are considered below.

Measure 1: BDC will ensure that the Action Plan measures are co-ordinated with relevant LTP measures and provide WCC with annual progress reports on air quality.

Integrated Public Transport Strategy (adopted March 2000)

This Strategy integrates bus, rail, taxi and other community transport initiatives to achieve common aims and objectives, such as improving services, increasing efficiency and uptake of public transport and reducing the dependency on the private car.

Proposed public transport improvements for the Bromsgrove District include:-

Rail services – There are proposals in the LTP to increasing the capacity, frequency and reliability of rail services between Bromsgrove and Birmingham and improving passenger accessibility to Bromsgrove station by all modes of travel. This includes a relatively large-scale upgrade of Bromsgrove Station programmed for 2003 – 2004. The County Council is working in partnership with CENTRO, as well as the rail industry, in developing proposals for Bromsgrove. Bromsgrove falls within the West Midlands Multi Modal Study and therefore the progression of these improvements is also influenced by this Study.

Bus services – There are proposed improvements to Bromsgrove bus station to encourage greater uptake of public transport. The proposal includes improved Cycle facilities and improved information particularly on other modes of transport. There are also proposals to increase provision of bus services linking main routes to the rail station.

Measure 2: BDC will work together with WCC to improve public transport facilities within Bromsgrove and develop Quality Partnerships¹¹ with transport providers to promote greater uptake of public transport.

Travel Plans

A Travel Plan is a general term for a package of measures tailored to the needs of an organisation to introduce greener, cleaner and sustainable travel choices and reduce the reliance on the car. It involves the development of a set of mechanisms, initiatives and targets that together can enable an organisation to reduce the impact of travel and transport on the environment. This will include the consideration of alternative fuels.

¹¹ Informal partnership involving dialogue with local authorities, public transport providers and other relevant stakeholders to improve public transport facilities

Employer Travel Plans – The LTP objective is to achieve a 10% reduction in car journeys for both commuting and business trips where a plan has been implemented.

School Travel Plans – The LTP Objective is to achieve a 15% reduction in car travel to and from schools where schemes have been implemented. An LTP bid was made for the Bromsgrove School Travel Plan (pilot) and District Safer Routes to School Scheme. The first ‘walking bus’ (parental escort rotas for children walking and cycling) in the District is being undertaken at Lickey End School.

Measure 3: BDC will work with WCC to develop and implement a Council Travel Plan in accordance with the LTP Objectives

Measure 4: BDC will continue to work together with WCC to encourage the uptake of Employer and School Travel Plans within Bromsgrove.

Cycle and Walking Strategies

Regional strategies are in place to improve cycling and walking facilities throughout Worcestershire and increase uptake. The LTP objective for cycling is to double cycling between 2002 and 2012. The LTP Objective for walking is to encourage journeys less than 1 mile to be made on foot rather than by car.

Measure 5: BDC will work together with WCC to improve the facilities for cycling and walking within Bromsgrove and encourage greater uptake. For new development, developers will be encouraged to provide secure parking facilities and cycle paths where appropriate.

Parking Strategy

WCC have been developing a Parking Strategy within the framework of the Regional Transport Strategy. WCC are committed to the consideration of supporting measures across the Region, such as parking facilities, to help tackle congestion and air pollution and support the prescription of maximum parking standards for new development. Maximum parking standards have been established for all forms of development within the Local Plan.

Freight Strategy

The Stage 4 source apportionment for the Lickey End AQMA identified HDV as the main contributory vehicle type for NO_x emissions (58%). Improvements are therefore needed to improve the efficiency of freight distribution thus minimising air pollution, and reducing the impact of road based freight on local communities such as Lickey End.

Measures are required to encourage industry and business to develop and implement sustainable distribution systems and practices to minimise harm to the environment and human health. The movement of freight is currently dominated by road haulage and therefore the potential for transfer of freight to rail warrant further consideration.

The Freight Strategy was developed by WCC in 2001 in Partnership with the Road Haulage Association and Rail Operators. A County-wide Freight Quality Partnership¹² was established in 2002 and an advisory Lorry Route Map was published in 2003. BDC

¹² Informal partnership involving dialogue with local authorities, the freight industry and other relevant stakeholders to improve freight operation in the area and minimise its impact

has adopted local plan policies (TR5 and TR5A) in support of increased uptake of rail freight.

Measure 6: BDC will work together with WCC to develop Freight Quality Partnerships¹³ and encourage wider uptake of freight by rail.

7.2.2 Land Use Planning

Section 4 .1 summarises the main Bromsgrove District Local Plan (2003) policies which will contribute to improvements in air quality. Policies have been incorporated to ensure developments with the potential to cause environmental impacts are adequately assessed and to refuse development proposals where there are unacceptable impacts that the developer has not agreed to meet through planning obligations. However, these policies do not refer specifically to air quality objectives or air quality management areas and as a material planning consideration, it is important that air quality is taken fully into account in planning decisions.

Measure 7: BDC Environmental Services will continue to work closely with the Planning Department to ensure that air quality is taken into account in the planning process when located in or close to the AQMA or in areas marginally below air quality objectives.

Land use planning has a key role in delivering sustainable transport systems within the area by influencing the location, scale, density, design and mix of development and encouraging alternative modes of travel.

Measure 8: BDC will continue to work together with developers to improve sustainable transport links serving new developments.

To provide support to local plan policies, the development of supplementary planning guidance for air quality assessments of developments and, in particular, for development which may impact on an AQMA is recommended in the Policy Guidance LAQM.PG(03).

Measure 9: BDC will develop supplementary planning guidance to assist with air quality assessments of development proposals

7.2.3 Local Air Quality Management

Air Quality Strategy

The development of a local air quality strategy, to provide a framework for ensuring the longer-term commitment and support for air quality issues, is recommended in the Policy Guidance LAQM.PG(03).

The Strategy would incorporate a wider remit than the Action Plan, allowing related policy areas to be incorporated, such as climate change, in addition to consideration of non-transport (not within the remit of this Action Plan) and transboundary sources. Links can be made to other strategies and policy areas such as the Community Strategy and WCC Sustainability Strategy. The aim would be to ensure that air quality is considered across all BDC activities and to encourage others to adopt positive actions to improving local air quality.

¹³ Informal partnership involving dialogue with local authorities, the freight industry and other relevant stakeholders to improve freight operation in the area and minimise its impact

Measure 10: BDC will develop a local air quality strategy to provide a framework for ensuring long-term commitment and support for air quality issues

Air Quality Monitoring

The air quality monitoring network in BDC has been expanded to provide more accurate information and understanding of air quality within the AQMA at Lickey End. A continuous monitoring station has been installed to monitor NO₂ concentrations so that modelled predictions can be verified and the progression of action plan measures can be monitored and assessed.

Measure 11: BDC will continue their commitment to local air quality monitoring within the Bromsgrove District to ensure a high standard of data is achieved to assess against air quality objectives

Promotion and Education

It is important that information on air quality is provided in a clear and accessible way. BDC promote air quality through the Council website and LAQM Review and Assessment Reports are available for viewing.

Measure 12: BDC will make the Action Plan and annual progress reports available on the Website to ensure broad access to the consultation and implementation process.

BDC works in partnership with WCC on local sustainable transport measures and promotional and educational campaigns with communities within the Bromsgrove District.

Measure 13: BDC will continue to work together with WCC on promotional activities to raise the profile of air quality in Bromsgrove

A summary of the proposed general district-wide measures to improve air quality is provided in Table 6.

Table 5 Summary of Action Plan Direct Options for the AQMA

Action	Description	Organisation responsible	Date to be achieved by	Cost	Air quality improvement in AQMA	Other potential impacts	Rank
Option 1	Speed Restriction to 50mph (80kph)	Highway Agency/ Police	Yet to be agreed (short/medium term)	Low (without enforcement) - High (with ongoing enforcement)	Most effective method to achieve the objective by 2005	Reduction in noise levels. Improvements in safety. Cost savings through reduced fuel consumption. Potential for increased journey times.	1 – 2*
Option 2	Reduction in traffic flows on the M42	Central Government/ Highways Agency	Unlikely to be achieved before 2005	High	30% reduction would be required to achieve objective	Reductions in noise. Improved journey times.	6
Option 3	Reduction in %HDV flows on the M42	Central Government/ Highways Agency	Unlikely to be achieved before 2005	High	20% reduction would be required to achieve objective	Reductions in noise. Improved journey times.	5
Option 4	Reduction in overall background levels	Central Government/ WCC/BDC	Ongoing at a local level. National policies unlikely to be implemented before 2005	Low - High (Depends on extent of measures)	Depends on extent of measures, but unlikely to achieve necessary reduction by 2005.	Dependent on measures. Socio-economic - tighter standards and controls could affect industry, businesses and the public.	1 (ongoing. Will be in conjunction with other measures)
Option 5	Introduction of tolls	Central Government/ Highways Agency	Unlikely before EU Limit target date of 2010	High (but costs recoverable)	Depends on the type of scheme and the number of people transferring from cars to other forms of transport	Socio-economic impacts of road charging. Reductions in flows may lead to potential benefits in noise reduction and improved journey times.	4
Option 6	Improvements to Junction 1 of the M42	Highways Agency	Yet to be agreed (short/medium term)	Low - £1 million (nominal cost)	Unknown as to whether objective would be met. Feasibility study being undertaken.	Improved journey times	1 (if objective will be met & can be achieved by the end of 2005) - 2*
Option 7	Removal of the M42 Junction 1 slip roads	Highways Agency/WCC/BDC	Unlikely to be achieved before 2005 (medium term)	Low	Standard likely to be achieved, but after objective target date. Feasibility study required.	Reductions in noise and improved journey times at Lickey End. Possibly the reverse in other locations where traffic diverted.	3

Table 6 Summary of Proposed General District-wide Measures to Improve Air Quality

Proposed measure	Description	Organisation responsible	Date to be achieved by
Measure 1	BDC will ensure that the Action Plan measures are co-ordinated with relevant Local Transport Plan (LTP) measures and provide WCC with annual progress reports on air quality.	BDC/WCC	Ongoing
Measure 2	BDC will work together with WCC to improve public transport facilities within Bromsgrove and develop Quality Partnerships ¹⁴ with transport providers to promote greater uptake of public transport.	BDC/WCC	Ongoing
Measure 3	BDC will work with WCC to develop and implement a Council Travel Plan in accordance with the LTP Objectives	BDC/WCC	2004/5
Measure 4	BDC will continue to work together with WCC to encourage the uptake of Employer and School Travel Plans within Bromsgrove.	BDC/WCC	Ongoing
Measure 5	BDC will work together with WCC to improve the facilities for cycling and walking within Bromsgrove and encourage greater uptake. For new development, developers will be encouraged to provide secure parking facilities and cycle paths where appropriate.	BDC/WCC	Ongoing
Measure 6	BDC will work together with WCC to develop Freight Quality Partnerships ¹⁵ and encourage wider uptake of freight by rail.	BDC/WCC	Ongoing
Measure 7	BDC Environmental Services will continue to work closely with the Planning Department to ensure that air quality is taken into account in the planning process when located in or close to the AQMA or in areas marginally below air quality objectives.	BDC	Ongoing
Measure 8	BDC will continue to work together with developers to improve sustainable transport links serving new developments.	BDC	Ongoing
Measure 9	BDC will develop supplementary planning guidance to assist with air quality assessments of development proposals	BDC	2004/5
Measure 10	BDC will develop a local air quality strategy to provide a framework for ensuring long-term commitment and support for air quality issues	BDC	2004/5
Measure 11	BDC will continue their commitment to local air quality monitoring within the Bromsgrove District to ensure a high standard of data is achieved to assess against air quality objectives	BDC	Ongoing

¹⁴ Informal partnership involving dialogue with local authorities, public transport providers and other relevant stakeholders to improve public transport facilities

¹⁵ Informal partnership involving dialogue with local authorities, the freight industry and other relevant stakeholders to improve freight operation in the area and minimise its impact

Table 6 (Continued) Summary of Proposed General District-wide Measures to Improve Air Quality

Proposed measure	Description	Organisation responsible	Date to be achieved by
Measure 12	BDC will make the Action Plan and annual progress reports available on the Website to ensure broad access to the consultation and implementation process.	BDC	2004
Measure 13	BDC will continue to work together with WCC on promotional activities to raise the profile of air quality in Bromsgrove	BDC/WCC	Ongoing

8 IMPLEMENTATION AND MONITORING

BDC will work jointly on the action plan measures with the relevant partners including Worcestershire County Council and the Highways Agency. To secure the necessary air quality improvements there must be involvement by all local stakeholders and BDC will actively work to encourage public participation in the process.

Of the direct options proposed for the Lickey End AQMA at Junction 1 of the M42, the two most cost-effective measures identified through the action planning process are Junction 1 improvements and motorway speed restrictions. These will be pursued through ongoing discussions with the Highways Agency. The general borough-wide proposed measures will all be taken forward by the Council to improve air quality in the area and help work towards achieving the NO₂ annual mean air quality objective at Lickey End.

The implementation and effectiveness of the Action Plan will be carefully monitored through NO₂ monitoring at Lickey End and traffic flow changes on the M42 and at Junction 1 (island), in addition to the uptake of local measures such as Travel Plans. There will be regular review and assessment of the action plan proposals to evaluate progress and this will be reported annually.

9 GLOSSARY OF TERMS

Abbreviation	Full name
AQMA	Air Quality Management Area
BDC	Bromsgrove District Council
DEFRA	Department for Environment, food and Rural Affairs
DETR	Department for Transport and Regions
DMRB	Design Manual for Roads and Bridges
DOE	Department of the Environment
HDV	Heavy duty vehicles
LA21	Local Agenda 21
LAQM	Local air quality management
LTP	Local Transport Plan
NAQS	National Air Quality Strategy
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NSCA	National Society for Clean Air
PM ₁₀	Fine particle matter less than 10µm diameter
ppb	Parts per billion
µg/m ³	Micrograms per cubic metre
WCC	Worcestershire County Council

10 REFERENCES

Stage 4 Air Quality Review and Assessment - Bromsgrove District Council, August 2002

DOE (1997) The United Kingdom Nation Air Quality Strategy, The Stationery Office

DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working together for Clean Air, The Stationery Office

DETR (2000) The Air Quality Regulations 2000, The Stationery Office

DEFRA (2002) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, The Stationery Office

DEFRA (2003) Policy Guidance LAQM.PG(03)

NSCA (2000) Air Quality Action Plans

NSCA (2001) Air Quality: Planning for Action

Highways Agency (2003) The Role of The Highways Agency in Local Air Quality Management (draft)

Worcestershire County Council (2000) Local Transport Plan 2001 - 2006

Bromsgrove District Council (2003) Bromsgrove District Local Plan

Bromsgrove District Council (2001) Local Agenda 21 Strategy

11 APPENDIX 1 CONSULTATION FEEDBACK

11.1 Highways Agency Comments on direct measures for the M42

The Highways Agency provided the following commentary, via their consultants AmeyMouchel, on direct measures for the M42 as outlined in Section 7.

1.0 Improvements to Junction 1, M42

This junction was designated a Priority Action Site on the basis that remedial measures were required to prevent traffic on the exit slip road queuing back onto the motorway carriageway. The improvements to the junction currently being examined by AmeyMouchel will specifically address this issue.

The likely option to be put forward will be based on the provision of an additional lane to the exit slip road from the M42, and an additional lane on only the eastern side of the roundabout on the A38 above the M42. This option is not expected to produce any significant change in traffic flows at the junction but, although not quantifiable, may produce some slight increase of traffic leaving the motorway.

❖ Significant improvements in air quality in this AQMA due to improvements at Junction 1, M42, are improbable.

2.0 Traffic Speed Restrictions on the M42

2.1 Overall speed restrictions

This could include making the M42 a controlled motorway locally, although where it is currently in place on the M25, Junction 10 to Junction 16, it is primarily aimed at improving traffic flow, road capacity and safety. The principal behind the system is that, as traffic volume increases to predetermined levels, the mandatory speed limit is progressively reduced from 70mph with the view to discouraging lane swapping by having all lanes travelling at the same speed, thereby preventing a breakdown of traffic flow and avoiding congestion leading to traffic jams.

Apparently traffic detection loops may already be in place in the carriageways on the stretches of the M42 relevant to Junction 1, but the installation of appropriate gantries would be required. Enforcement of speed limits could be similar to the M25, with the inclusion of digital speed cameras in selected gantries. Dependant upon the successful outcome of the ATM pilot taking place from about June 2004 to June 2009, gantries and variable speed limits will be installed throughout the 'Birmingham Box' which includes the M42 (M5 intersection – J8).

One of the scheme aims of the controlled motorway system is to reduce emissions. TRL checked air quality on the controlled sections of the M25 (J15 - J16) by 'before and after' modelling only, and a reduction in NO_x annual mean emissions of 1.5% was derived. Real-time monitoring of air quality was originally considered for this study but rejected. The view expressed by those involved with the air quality aspect of the study was that, whilst a reduction in NO_x was derived from the modelling, the overall effect of the controlled motorway system was that it did not worsen the air quality with regard to NO_x, rather than actually achieving significant improvements. More detailed information regarding the derived vehicle emissions aspect of the M25 (J15 - J16) study may be made available by the Highways Agency if this information could be considered useful in progressing the action plan.

Permanent speed limits on motorways can be approved by the Highways Agency, but the application of variable speed limits may require a specific Act of Parliament.

- ❖ *The installation of permanent speed limits, posted on overhead gantries, may provide some actual improvements in air quality, but documented examples with respect to motorways are not available. Enforcement could be by the use of digital speed cameras installed in the gantries. If the ATM pilot is successful, however, this option may not be available.*

The installation of variable speed limits, as part of a controlled motorway system, is an option that may realistically become available only as an extension of the ATM pilot. This option, including the benefits on air quality of this system, has been discussed above.

2.2 Restricting HGV's to designated lane with speed restrictions targeted at that designated lane; lanes for other traffic probably unrestricted

This proposal is intended to address the fact that HGV's (*defined in DMRB Volume 11, Section 3, Part 1 – Air quality as rigid and articulated vehicles > 3.5 tonnes gross vehicle weight*) apparently emit a disproportionate level of pollutants. This proposal may be technically feasible in terms of the infrastructure, albeit requiring significant modifications to the gantry designs and functions currently proposed for the ATM pilot on the M42 north of Junction 3a. However, there may be practical and safety problems in the operation of this option, e.g.

- i) The change from normal motorway regulations for a relatively short distance centred on M42/Junction 1, with the consequential swapping of lanes by both cars and HGV's, together with the consequential traffic lane movements due to the proximity of the M5/ Junction 4a, would appear to be a significant safety hazard.
- ii) If cars are prohibited from the HGV designated lane, this prohibition cannot apply at junctions. Cars would have to cross the HGV designated lane (assumed to be the nearside lane) in order to leave the motorway. This would also appear to be a significant safety hazard. This hazard could be further increased if the wide range of type, size and speed capability of HGV vehicles as defined above results in vehicles in the designated lane running in 'convoy'.

- iii) Overall enforceability using digital cameras installed in the gantries may also be problematic.

Even if the safety aspects could be addressed, this option would almost certainly require a specific Act of Parliament.

- ❖ *This option is unlikely to be acceptable to the Highways Agency.*

3.0 Long-term Strategy for the M42

The Active Traffic Management¹⁶ (ATM) pilot is due to become operative about June/July 2004, and is planned to continue for 5 years. In the meantime the motorway widening study has been put on hold until the ATM pilot has been completed and assessed.

If the ATM system operates as anticipated, it will be equivalent to a motorway widening in some aspects of its functions, and the actual physical widening of the motorway may be cancelled.

No traffic modelling has apparently been done as far as M42/J1 in connection with the M42 widening proposals, and no modelling appears to have been done currently with regard to the ATM pilot. Such modelling may be carried out by the HA in the future but not specifically in connection with the ATM/widening studies.

- ❖ *Currently no quantified assessments of long-term effects on traffic flows at Junction 1, M42, are apparently available.*

4.0 Closing the Slip Roads at Junction 1, M42

This option would eliminate motorway traffic from the Lickey End junction, but whether this would adequately relieve congestion at this junction would need to be examined further. Motorway traffic to and from Bromsgrove would theoretically have available M42/J2 (Alvechurch), M5/J5 (Droitwich) and M5/J4 (Lydiate Ash) as exit/access points for the M42. All options would place more traffic locally onto county roads. However, it would be most likely that M5/J4 (Lydiate Ash) would be the first choice of those using the M42 route to and from Bromsgrove, and using the A38 route into and out of Bromsgrove via the Lickey End junction.

M5/J 4 (Lydiate Ash) is not a Priority Action Site and thereby is unlikely to be the subject of a study into any improvements works at present. Therefore the Highways Agency would probably not favour the closing of the slip roads at Junction 1, M42, in view of the potential for consequential increases in traffic levels at the Lydiate Ash junction, which currently appears to be at or beyond comfortable operating capacity during traffic peak periods.

- ❖ *Closing the slip roads at Junction 1, M42, would probably cause increases in traffic levels at M5/J4 (Lydiate Ash) that the Highways Agency would find unacceptable in the short to medium term. Also, the benefits likely to accrue in air quality in this AQMA due to such slip road closures alone appear to be uncertain as significant decreases in traffic congestion at Lickey End may not materialize.*

¹⁶ A pilot project on the M42 between junctions 3a and 7 to tackle congestion, by making the best use of existing road space.

Additionally, in overall environmental terms, closing the slip roads at Junction 1, M42, will probably increase traffic on local A-class and B-class roads which potentially could increase associated traffic congestion, journey times and fuel consumption.

11.2 Department for Environment Food and Rural Affairs Comments

The Department for Environment Food and Rural Affairs (DEFRA) provided commentary on the draft Plan as shown (in summary) below. The comments have been taken on board in this final version of the Plan.

“The draft plan is well produced and generally meets all the required criteria that have been set out by DEFRA. In completing the final version of the plan a few additions would be beneficial:

- A more active approach to consultation should be taken particularly with the residents on which the plan may impact;
- Options 3 and 4 should be framed in terms of measures to reduce traffic, rather than just targets, so that actual implementation can be considered
- Options that will be pursued should be identified from those considered.”

11.3 Birmingham City Council Comments

“Birmingham City Council have received the draft Action Plan and have no adverse comments to make in respect of it.”

11.4 Public Consultation Comments

Letters were received from two residents within the Air Quality Management Area at Old Birmingham Road, Lickey End. The comments as summarised below largely relate to concerns about congestion at peak times (i.e. short-term impacts) on the M42 Junction 1 island. An improvement scheme for the M42 Junction 1 is under consideration by the Highways Agency to improve flows on the slip road and island and therefore the comments have been forwarded to the Highways Agency for consideration within this scheme.

“Whilst there is no doubt that the M42 is a contributing factor to the air pollution, the other major factor which has not been taken into account is the (island) junction of the A38/M42 J1/B4096. Morning rush hour and from 4pm onwards, Monday to Friday, sees traffic around the island at a standstill. And dare let there be an accident or something wrong with the motorway – M42 or M5 – then it’s a nightmare.

The other contributing factor is the traffic lights on this island. These run 24 hours a day, seven days a week, so even in the middle of the night traffic has to stop to negotiate the island. This causes more fumes – as well as noise of lorries pulling away from the lights.

What about a re-design of the yellow box markings on the island – the one part of the island where they are needed there are no markings. And how about looking further down the road to the traffic lights where traffic turns right into Bromsgrove. You could also think about widening the A38 By-pass to 2 lanes all the way past

Bromsgrove from the M42 Junction up as far as Safeway. There are lots of creative ways to ease this congestion that do not involve doing anything with the M42.”

“Congestion around the island and the traffic lights results in vehicles including vast amounts of HGVs constantly stopping, starting and generally using low gears around the junction. Surely this is the main contributor to poor air quality. The report also states that the highway agency has plans to increase the lanes on the slip road leading off the M42 at junction1. This may allieviate the problem of the traffic backing on to the motorway, however I do not feel it would in any way help to reduce the emissions. Unless the plan also intends to widen the A38 in both directions, the traffic would still be unable to flow freely due to the congestion caused by 2 or 3 lanes reducing to 1 in both directions.

Closing the slip roads appears to be an option dismissed as too expensive and unpopular even though it is expected that the objective could be achieved in the given time. As a high proportion of vehicles, particularly HGVs, use both the entrance and exit at junction1 closing them would reduce overall traffic in the area as a whole resulting in fewer emissions, less congestion and a reduction in noise pollution.

The population of Bromsgrove has increased considerably in the last 10 to 15 years. However, no effort has been made to improve the road systems in the area to take the extra traffic. The highway agency recognised years ago the need to reduce congestion at junction1 of the M42. The proposal of a bypass road was shelved to be replaced by traffic lights. All this served to do was increase the time many vehicles are stationary or in low gears increasing the emissions, adding to the poor air quality and intensifying the noise pollution.”

1.1 Report Statement

Casella Stanger completed this report on the basis of a defined programme of works and within the terms and conditions agreed with the Client. This report was compiled with all reasonable skill and care, bearing in mind the project objectives, the agreed scope of works, prevailing site conditions and degree of manpower and resources allocated to the project as agreed.

Casella Stanger cannot accept responsibility to any parties whatsoever, following issue of this report, for any matters arising which may be considered outside the agreed scope of works.

This report is issued in confidence to the Client and Casella Stanger cannot accept any responsibility to any third party to whom this report may be circulated, in part or in full, and any such parties rely on the contents of the report at their own risk. (Unless specifically assigned or transferred within the terms of the contract, Casella Stanger asserts and retains all copyright, and other Intellectual Property Rights, in and over the report and its contents).

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