East Staffordshire Borough Council

Draft Air Quality Action Plan

2008

Summary

East Staffordshire Borough Council declared two Air Quality Management Areas (AQMAs) in Burton upon Trent in February 2007, after exceedences in the Government's annual air quality Objective for nitrogen dioxide were identified from monitoring and computer modelling undertaken as part of the Local Authority's requirements under the National Air Quality Strategy.

This draft Air Quality Action Plan has been drawn up in pursuit of reducing nitrogen dioxide levels to below the annual Objective.

A Further Air Quality Assessment was also completed as a result of the Air Quality Management Area declarations. The focus of this report was "source apportionment" of nitrogen dioxide in order to identify the level of nitrogen dioxide reduction required to meet the annual Objective, and to confirm the geographical extent of the AQMAs.

The Further Assessment identified road traffic as the most significant nitrogen dioxide contributor.

The conclusions of the Further Assessment were borne in mind in relation to selecting Air Quality Action Plan measures.

To draw up an effective Air Quality Action Plan it was important to consider how regional and local policies already affect air quality and how this Plan can compliment and better inform these policies. The most influential is the West Midlands Regional Spatial Strategy, which has identified Burton upon Trent as a 'Settlement of Significant Development', in line with its Government-recognised status as a 'Growth Point'.

In writing the Air Quality Management Plan it was important to bear in mind current guidance available from both Department for Environment Food and Rural Affairs (Defra) and Environmental Protection UK (previously the National Society for Clean Air (nsca)).

Stakeholders were identified and contacted to discuss measures to be included in the Air Quality Action Plan.

Once a list of options was drawn up it was then important to prioritise based on air quality impact, cost effectiveness, feasibility (practicability/perception), wider socio-economic/ environmental impacts and timescale.

A simple cost-benefit analysis was undertaken to prioritise these options before inclusion in the Air Quality Action Plan.

The Burton Urban Area Transport Management Study (BUATMS) forms the basis of most of the road related measures of the Air Quality Action Plan and is supplemented by a number of 'softer' local authority generated measures.

BUATMS is drawn up by Staffordshire County Council as part of the Local Transport Plan, aimed at reducing traffic congestion.

A series of performance indicators have been identified to measure the effectiveness of the Air Quality Action Plan, some of which are qualitative and some quantitative. Continued monitoring within the AQMAs will support this.

Reporting on Action Plan progress will be done on an annual basis.

Contents

Figure contents

Glossary

ADMS Roads (Version 2.2)	Atmospheric Dispersion Modelling System. A modelling tool used to predict and map current and future pollutant concentrations along roads.
AERMOD (Version 5.01)	Atmospheric Dispersion Modelling System. A modelling tool used to predict and map current and future pollutant concentrations along roads.
AQAP	Air Quality Action Plan- a series of measures to be implemented to address the nitrogen dioxide Objective exceedences in the AQMAs.
Air Quality Objective	A concentration limit for a pollutant that must not be breached after a specified date.
AQMA	Air Quality Management Area- an area which a local authority has designated based on exceedences of Air Quality Objectives.
BUATMS	Burton Urban Area Transport Management Study- a local strategy focusing on Burton upon Trent aimed at reducing traffic congestion. Part of the Local Transport Plan for Staffordshire.

BTCAAP	Burton Town Centre Area Action Plan- This will be a specific plan for Burton upon Trent town centre, setting the vision of development up until 2026, and is influenced by the Core Strategy and the West Midlands Regional Spatial Strategy.
Core Strategy	The Core strategy, which is currently under development, sets out a long-term strategy for accommodating the housing, employment and leisure requirements originating out of the West Midlands Regional Spatial Strategy.
Defra	Department for Environment Food and Rural Affairs.
Detailed assessment	An assessment, which uses more detailed information relating to pollutants and their sources. Often utilises accurate monitoring and modelling to determine current and future pollutant impacts.
Diffusion tube	A passive monitoring device used to give an average figure for concentrations of a pollutant at a specific location over a period of time.
DPDs	Development Plan Documents form the statutory development plan for the Borough along with the West Midlands Regional Spatial Strategy. These include the Core Strategy and BTCAAP. DPDs form part of the Local Development Framework.

Further Assessment	Assessment completed following the declaration of AQMAs. The purpose of the assessment is to quantify pollutant sources, check spatial distribution of AQMAs and determine pollutant concentrations required to comply with Objective(s).
LAQM	Local Air Quality Management.
LDDs	Local Development Documents- The Local Development Framework (LDF) comprises of a series of LDDs including; the Local Development Scheme, the Statement of Community Involvement, & an Annual Monitoring Report.
LDF	Local Development Framework- The LDF is a portfolio of documents known as Local Development Documents (LDDs), which guide the development of East Staffordshire, in line with the West Midlands Regional Spatial Strategy.
LTP	Local Transport Plan- A long-term transport strategy for Staffordshire based on the County Councils wider ambitions, whilst also conforming to national and regional transport strategies. It's five key aims include reducing congestion; better accessibility; creating safer roads; improving air quality; effective and efficient highway maintenance, whilst overall aiming to improve people's quality of life.

Modelling (computer)	A process used to predict pollutant concentrations at locations that are not monitored. Can be used to predict current and future air quality.
Monitoring	The actual measuring of air quality using automatic or passive sampling equipment to provide current information on pollutant concentrations.
NAQS	National Air Quality Strategy The strategy devised by national government with the aim of improving air quality by setting standards for specific pollutants.
NO_2	Nitrogen dioxide.
NO_X	Oxides of nitrogen, of which NO_2 is a component.
NSCA (now Environmental Protection UK)	National Society for Clean Air
PM_{10}	Particulate matter less than 10 microns in diameter.
$\mu g/m^3$	Micro-grams per cubic metre. A measure of concentration in terms of mass per unit volume.
Receptor	Any person, animal, object or living thing that can be adversely affected by pollutants in the atmosphere.

Service Plan	This document sets the annual performance targets, aimed at supporting the key priorities of the Corporate Plan. Completion of the AQAP is one of the main priorities of the Service Plan
SPDs	Supplementary Planning Documents- Supplementary Planning Documents replace Supplementary Planning Guidance under the new planning regime. They enable the subject of the Supplementary document to be a material consideration when determining a planning application.
Sustainable Communities Strategy	Still in draft- details how local organisations and agencies will work together to improve the economic, social and environmental well being of the area, with the emphasis on 'partnership' working. Poised to replace the Community Strategy.
USA	Updating and Screening Assessment - An assessment aimed at considering new and previous information to screen and prioritise areas that require more detailed investigation.
West Midlands Regional Spatial Strategy	This Strategy is the statutory planning document for the whole West Midlands region and covers a wide range of subjects including housing; economic development; the built; historic & natural environment; renewable energy; minerals; waste and transport.

1.0 Legislative Background.

Under Part IV of the Environment Act 1995, local authorities are required to review and assess current and future air quality in their areas for a number of pollutants, as set out in the Air Quality Regulations 2000 and Air Quality (England) Amendment Regulations 2002. This is undertaken as part of the Local Air Quality Management regime (LAQM).

Originating from the above legislation, the National Air Quality Strategy (NAQS) sets out policy to improve ambient air quality in the UK. These targets are known as health based Objectives, which are set for nine pollutants to be achieved between 2003 and 2010. These Objectives define the level of pollution below which health effects are unlikely to be experienced, even by the most sensitive members of the population. They are based mainly on the recommendations of the Expert Panel on Air Quality Standards.

In 1996 the European Union adopted the Framework directive 96/62/EC2 on ambient air quality and management, called the Air Quality Framework Directive. Four Daughter Directives have since been introduced, the main aims of which are to protect human health and the environment by avoiding,

reducing or preventing harmful concentrations of air pollutants. Collectively the Daughter Directives support the Framework Directive. This will in part be achieved by setting Limit Values. The key difference between Objectives and EU Limit Values is that the latter are legally binding whereas the Objectives are not.

The Objectives and corresponding EU Limit Values for the nine pollutants are set out in Appendix 1, with those of interest for this document, highlighted in bold.

The original NAQS has since been reviewed with the new Air Quality Strategy for England, Scotland, Wales and Northern Ireland being published in July 2007.

The new document does not revise any of the Objectives set out in the 2000 Strategy or its addendum, apart from replacing the provisional 2010 particulate (PM_{10}) Objective with an 'exposure reduction' approach for finer particles $PM_{2.5}$. The decision to retain the majority of previous Objectives was taken in the light of sound scientific evidence that showed they are still justified.

East Staffordshire Borough Council has completed two rounds of the air quality review and assessment process since 2000, as part of the NAQS. This process is a phased approach, comprising of an Updating and Screening Assessment, a Detailed Assessment (if required) and an Annual Progress Report.

All local authorities are required to undertake periodic Updating and Screening Assessments and Annual Progress Reports, although Detailed Assessments are only required when the Updating and Screening Assessment indicates possible Objective exceedences.

Where it is demonstrated or anticipated that an Objective is unlikely to be met, it is a requirement of the local authority to declare an Air Quality Management Area (AQMA).

2.0 Air Quality Management Areas in East Staffordshire

East Staffordshire Borough Council passed an Order for the declaration of two AQMAs for nitrogen dioxide (NO_2) from road traffic at the end of February 2007, with the declarations coming into affect within three months of the Order being made.

Prior to the declarations, East Staffordshire Borough Council completed its second Updating and Screening Assessment of air quality within East Staffordshire in April 2003. The Assessment identified that two areas within Burton upon Trent required a Detailed Assessment, these being the Derby Turn roundabout and Wellington Street. Cambridge Environmental Research Consultants (CERC) were appointed to undertake detailed computer dispersion modeling using ADMS-Urban to predict and map current and future NO_2 concentrations along these roads and outlying areas. Predictions showed that NO_2 levels were expected to exceed the annual Objective at Derby Turn roundabout and Wellington Street. This Detailed Assessment was completed in 2004.

Throughout 2005 and 2006 however, further monitoring using diffusion tubes highlighted additional areas that were exceeding the annual NO_2 Objective, these included Horninglow Street, Horninglow Road, Derby Street, Derby Road and the Derby Street, Waterloo Street, Borough Road and Byrkley Street gyratory. The St Peters Bridge roundabout in Stapenhill and part of St Peters Street also highlighted exceedances. A decision was therefore made in February 2007 to declare two AQMAs, the first and largest, being centered on Derby Turn and the routes that lead away from this roundabout and the second smaller AQMA, being confined to the St Peters Bridge roundabout and a part of St Peters Street in Stapenhill. Maps showing the locations of each AQMA are shown in Figures 1 and 2 respectively.

AQMA 1 has approximately 1075 addresses within it, although it must be borne in mind that not all of these will necessarily be receptors due to their distance from the centre of roads. For businesses, exposure periods against the annual average are not of a sufficient duration. It should be noted that not all road sections of the AQMA have pollutant exceedences, plus there is a trend towards NO_2 reduction since the declaration.

For AQMA 2 there are approximately 38 addresses within the area, most of which are residential. Many will be receptors, although those addresses further from St Peters roundabout are less likely to be affected. Computer modeling for the Further Assessment shows that these addresses are unlikely to be classed as 'receptors' by 2010, as detailed in Section 7.3.

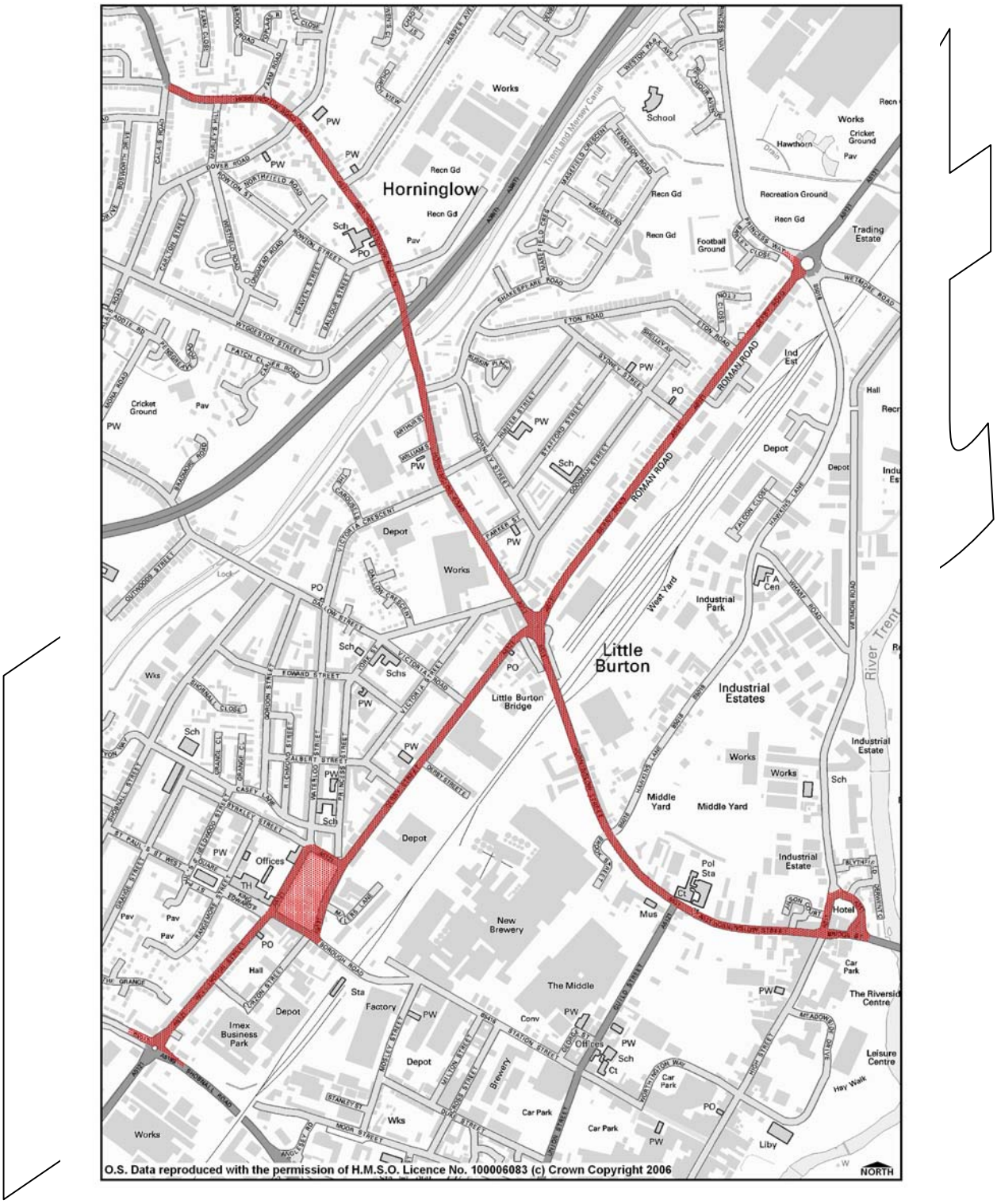

Figure 1: Location of AQMA 1. Burton upon Trent - Derby Rd, Derby St, part of Princess Way roundabout, Horninglow St, Horninglow Rd, Bridge St, Wellington St, part of Borough Road, part of Wellington St roundabout, part of Waterloo St and part of Byrkley St.

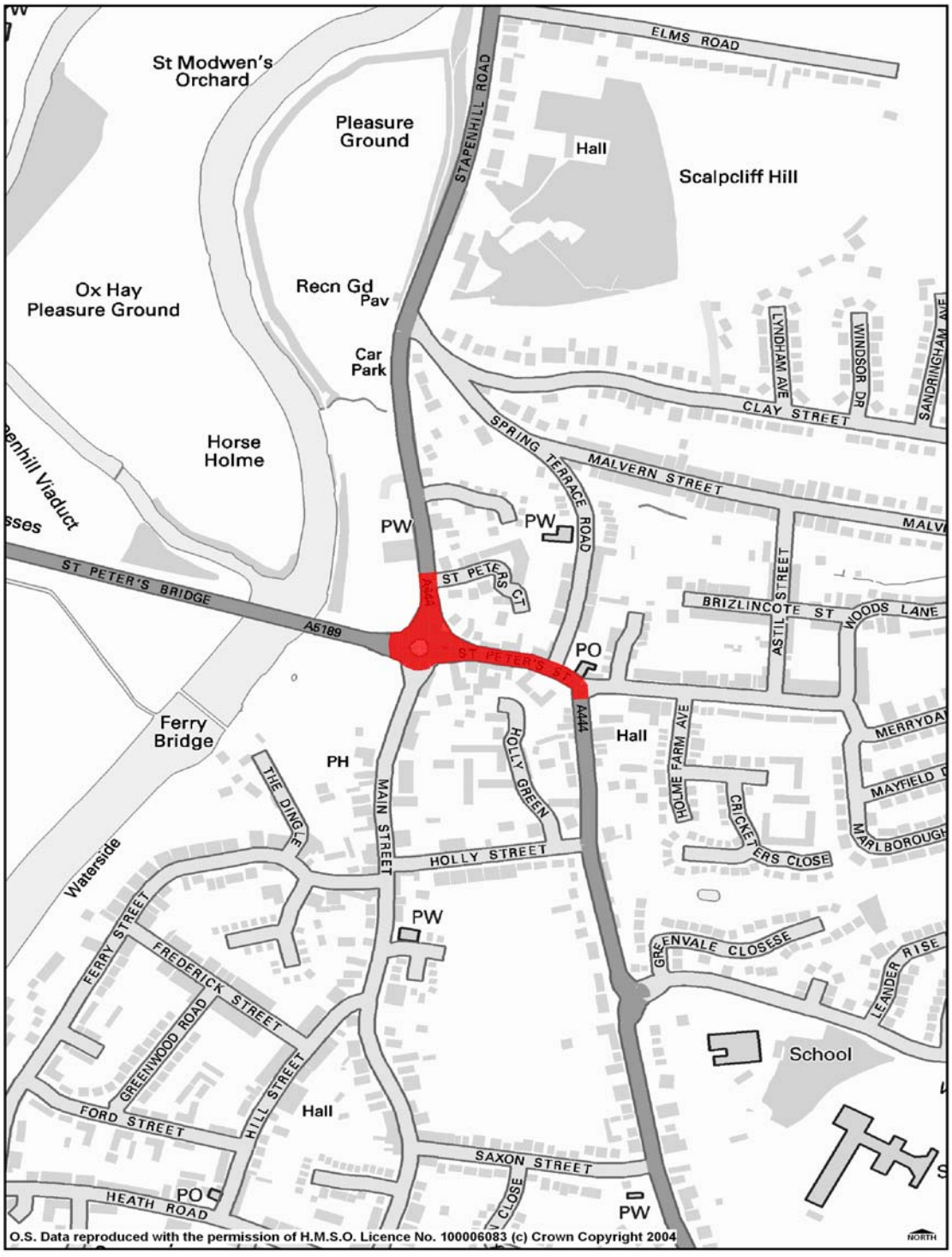

Figure 2: Location of AQMA 2 – St Peters Bridge roundabout, Stapenhill, Burton upon Trent – St Peters Bridge roundabout and part of St Peters St.

3.0 Air Quality Action Planning in East Staffordshire

As a result of the AQMA declarations for NO_2, East Staffordshire Borough Council is required under Section 82 (4) of the Environment Act to draw up an Air Quality Action Plan (AQAP), setting out what it intends to do to improve air quality, in line with the Annual Objective for this pollutant.

Alongside the AQAP, a Further Assessment is also required to identify the sources of Objective exceedence and to quantify the NO_2 reductions required. The Further Assessment is discussed in the following chapter.

The AQAP should be a working document, which compliments current regional and local policies.

Defra Policy Guidance LAQM.PG(03) states that an AQAP must contain the following:

- Quantification of the source contributions to the exceedences of the Objective; to allow action planning to be effectively targeted;
- Evidence that all available options have been considered on the grounds of cost-effectiveness and feasibility;
- How the local authority will use its powers and work with other organisations in pursuit of the Objective;
- Clear timescales in which the local authority and other organisations and agencies propose to implement the measures within its plan;
- Quantification of the expected impacts of the proposed measures and, where possible, an indication as to whether the measures will be sufficient to meet the Objective; and
- How the local authority intends to monitor and evaluate the effectiveness of the plan.

These requirements were followed in the development of this AQAP.

Following on from the Further Assessment, the AQAP considers and prioritises the programme of measures aimed at improving air quality sufficiently to comply with the NO_2 Objective limit.

The Government acknowledges that in certain circumstances Objectives can be difficult to meet and therefore the requirement of the AQAP is that the measures it contains are 'in pursuit' of complying with the Objectives.

The Further Assessment identified that at a number of locations within the AQMAs between 2005-2010, there will be a 'natural' reduction of NO_2 concentrations, through national policies predominantly aimed at cleaner vehicle emission technologies. These improvements appear to be sufficient at a number of locations to meet the Objective, with exceedences being focused in a smaller geographical location within the larger AQMA.

It is important not to adopt a 'do nothing' approach however, or to devise a 'scaled down' AQAP, because as explained in more detail further in this document, Burton upon Trent has been earmarked for significant future growth and a degree of 'headroom' will inevitably be required. There is also a degree of uncertainty involved with air quality modelling and many of the locations indicated as improving by 2010 will still be too close to the Objective limit to discount at this stage.

In addition, as we have designated the larger AQMA along linear arterial routes leading towards the centre of Burton upon Trent, it would be inappropriate just to consider specific actions, which affect a very limited area, thereby simply 'shifting' the air quality problem. It is also unrealistic given the nature of the town's road infrastructure to consider mitigation measures that purely focus upon a small target area.

Bearing the above in mind the AQAP has considered a program of varied measures that will cover the AQMA areas and in some instances, beyond.

The prioritised programme of mitigation measures proposed in this document are divided into two categories:

i) actions contained within the Burton Urban Area Transport Management Study (BUATMS), that are already timetabled for implementation.

&

ii) actions that have been identified by East Staffordshire Borough Council in response to the requirement for air quality improvements (defined as Local Authority measures).

As discussed further in this document, the BUATMS measures have been predominantly devised to improve congestion within the centre of Burton upon Trent, although they also have regard to air quality because of it's relationship with the Local Transport Plan (LTP). The BUATMS series of measures focuses on the same geographical area as that designated within the larger AQMA, but also has the 'potential' to impact upon the smaller AQMA area (namely the A5189 Route Strategy).

The BUATMS document forms the core of 'hard' actions that directly affect traffic and therefore air quality in the vicinity of roads within the AQMAs, whereas the Local Authority measures tend to be generally 'softer', with the potential to affect a wider area, other than just the AQMAs.

Whilst both sets of measures are subject to the cost/benefit assessment process within this document, only the latter require prioritising and ranking, since the former are already in the process of being implemented.

4.0 Further Assessment for the AQMAs

Section 84 (1) of the Environment Act requires local authorities to carry out a Further Assessment of existing and likely future air quality in AQMAs. Local authorities are required under Section 84 (2) to report on the Further Assessment within twelve months of designating any AQMAs.

The main purpose of the Further Assessment is to allow local authorities to supplement information from their earlier review and assessment work. The Further Assessment should provide the technical justification for the actions a local authority includes in its AQAP.

Defra's 2001 Guidance to local authorities on further ("stage 4") assessments, states the aims of the Further Assessment are:

• To confirm the original assessment of air quality against the prescribed Objective, to ensure the accuracy of the AQMA designation;

• To calculate more accurately how much of an improvement in air quality would be needed to deliver the air quality Objective within the AQMAs;

• To refine knowledge of the sources of pollution so that the AQAP can be properly targeted;

• To take account of national policy developments, which may come to light after the AQMA declaration;

• To take account as far as possible of any local policy developments which are likely to affect air quality, and which were not fully factored into earlier calculations;

• To carry out real-time monitoring where this has not been done as part of the earlier review and assessments;

• To carry out further monitoring in problem areas to check earlier findings;

• To corroborate other assumptions on which the designation of the AQMA have been based, and to check that the original designation is still valid, and does not need amending in any way;

• To respond to any comments made by statutory consultees in respect of the local authority's previous review and assessment reports.

For the purposes of delivering the Further Assessment, East Staffordshire Borough Council appointed Hyder Consulting (UK) Ltd. The terms of

engagement included detailed dispersion modelling of NO_2 for both road traffic and industrial sources that had the 'potential' to influence the AQMAs.

ADMS Roads (Version 2.2) was used to model road emissions and AERMOD (Version 5.0.1) for industrial sources for 2005 and 2010. The most up to date road traffic data available from Staffordshire County Council (2005), was entered into the emissions spreadsheet on the National Atmospheric Emissions Inventory (NAEI) website, to calculate oxides of nitrogen (NO_x) emissions for each road for 2005 and 2010. In addition, meteorological data from Coleshill for 2005 (the closest meteorological station), were also used in the model runs.

Model verification was undertaken to derive verification factors to assess the model performance against monitored concentrations, whereby diffusion tubes with similar relationships to modelled concentrations were segregated into 5 distinct zones. From this, a number of sensitive receptors, for example residential houses, schools etc., were modelled as points to accurately determine the concentrations at individual receptors (for more details see Section 7.3). Modelled NO_x concentrations were then converted to NO_2 using the revised NO_x to NO_2 calculator available at www.airquality.co.uk. Annual

average contour plots were also produced for 2005 and 2010, which showed that modelled concentrations matched well with the areas designated as AQMAs, thus confirming that the boundaries of the AQMAs are justified.

In addition to the modelled NO_2 concentrations at receptors, source apportionment was also undertaken to determine the impact the roads and industrial sources modelled have on NO_2 concentrations at receptors for the base year of 2005. Source apportionment was also undertaken according to the type of road source i.e. HGV's and non-HGV (see Section 7.2 for more details).

East Staffordshire Borough Council submitted it's Further Assessment in February 2008 followed by an amended re-submission in June 2008.

The Further Assessment document can be viewed via the Pollution Team homepage or by searching for "Air Quality Further Assessment" at the ESBC website www.eaststaffsbc.gov.uk

5.0 Description of East Staffordshire

The East Staffordshire Borough is situated in the central eastern area of the county of Staffordshire, with its eastern boundary bordering South Derbyshire.

The Borough covers an area of 96,000 acres and had an estimated population of 107, 700 in 2006. East Staffordshire is largely rural with ancient woodlands in part, and the Weaver Hills adjoining the Derbyshire Dales, in the North. The two main towns where industrial and commercial activities are concentrated are Burton upon Trent and Uttoxeter.

Burton is the principal town with the greatest concentration of population, providing approximately 70% of the Borough's employment.

Within East Staffordshire there are approximately 50 industrial processes subject to control under the Environmental Permitting Regulations 2007. Industrial activities in the area include brewing, rubber manufacture, ferrous and non-ferrous metal production and engineering.

There are no motorways in the Borough although there are two major trunk routes, namely:

- A38 between Birmingham and Derby

- A50 linking the M1 near Nottingham and the M6 at Stoke on Trent and the main commuter routes into Burton upon Trent from Leicestershire, Derbyshire and other parts of Staffordshire include;

- A511 linking the A50 to the north and the M1 near Coalville

- A444 traversing the M42 and Nuneaton in Leicestershire

A map showing the extent of the East Staffordshire Borough is shown in Figure 3 (below).

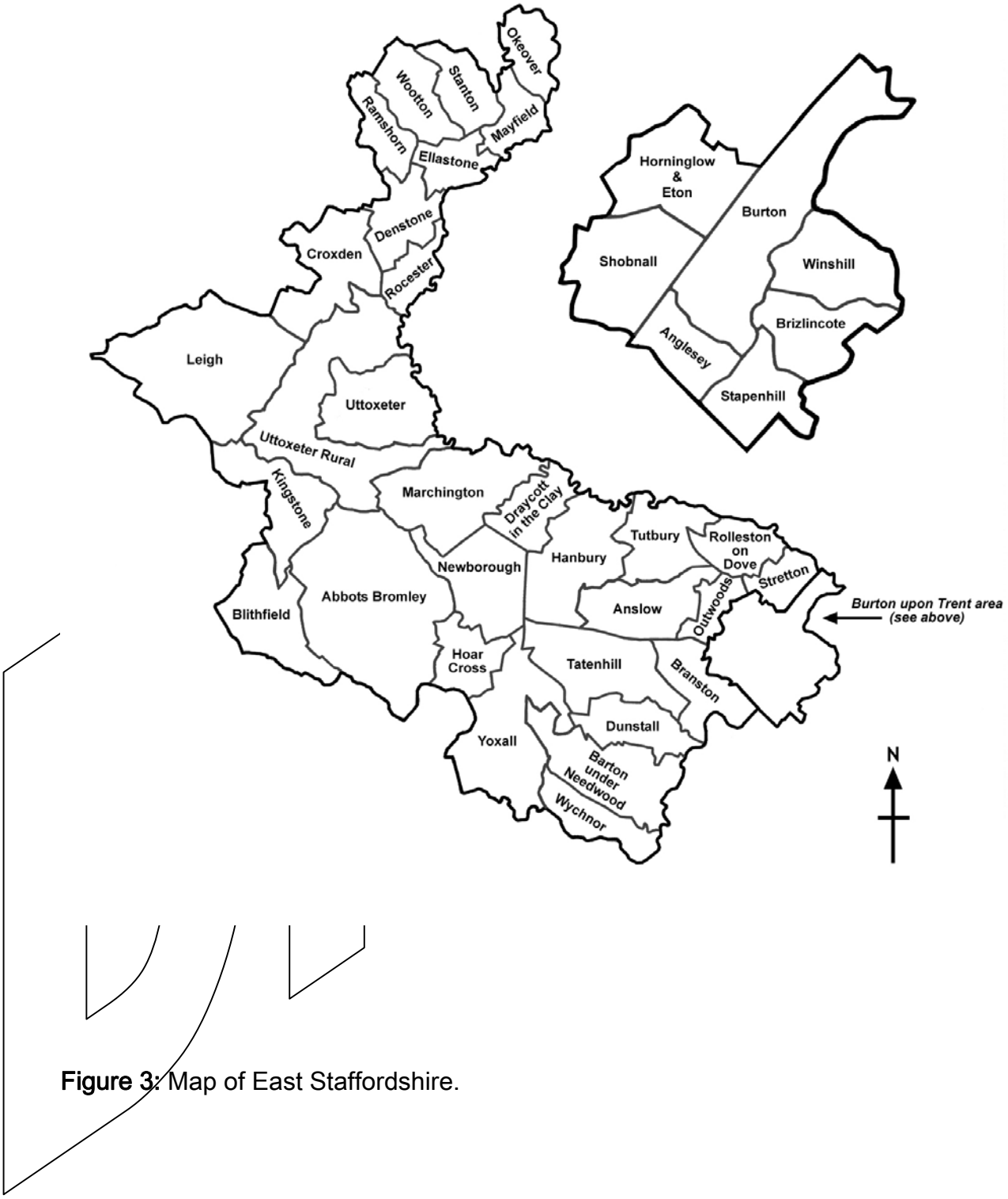

Figure 3: Map of East Staffordshire.

6.0 Regional and local policies influencing air quality

As the NSCA guidance 'Air Quality Action Plans: Interim Guidance for Local Authorities' (2001) points out, an effective AQAP relies heavily upon the integration of a variety of local government functions, as well as integration with regional plans and collaboration with external agencies.

As a result of the recognised importance of air quality in recent years, more strategy documents and policies are including this factor as a 'material' consideration. The aim of the AQAP is to compliment and inform these documents and not to conflict with them.

In this section it is important to briefly discuss the various regional and local policies and strategies that influence and underpin this AQAP.

The interrelationships of these documents can be seen in the flow diagram (Fig 4.) below and the content discussed in the remainder of this section.

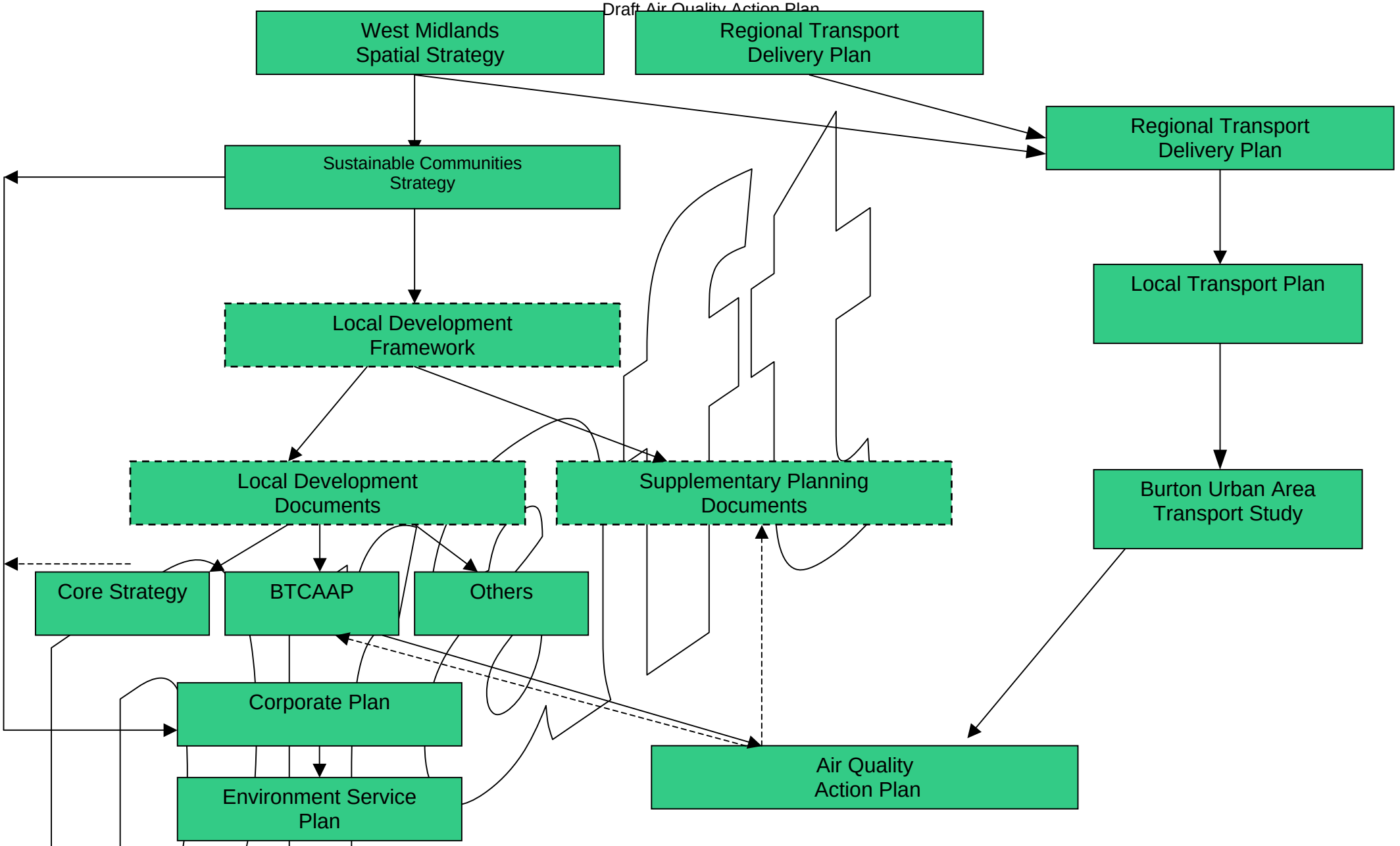

Figure 4. Policy flow chart

6.1 The West Midlands Regional Spatial Strategy

East Staffordshire falls under the influence of the Regional Spatial Strategy for the West Midlands. This Strategy influences the whole West Midlands region and covers a wide range of subjects including housing, economic development, the built, historic & natural environment, renewable energy, minerals, waste and transport. The Strategy compliments the Regional Transport Strategy.

The Strategy's framework guides the preparation of local development frameworks and determines the scale and distribution of housing and economic growth across the region, investment priorities for transport and sets out policies for enhancing the environment.

This Strategy has identified Burton upon Trent as a 'Settlement of Significant Growth' and therefore earmarked it for local regeneration. Consequently there will be a need for land for both increased housing and employment opportunities in the future, which clearly has an impact on air quality. However, there is also the opportunity to introduce new measures, such as

improvements to the existing infrastructure, which is capable of delivering positive air quality improvements.

The Strategy is currently being reviewed and once completed, will set the development targets up until 2026.

It is recognised that this future development for Burton upon Trent and East Staffordshire in general, should be undertaken in a strategic and sustainable way. The Local Development Framework for East Staffordshire Borough Council and Staffordshire County Council's Local Transport Plan reflects this. The future regeneration for Burton upon Trent Town Centre for example, is the subject of the Burton Town Centre Area Action Plan (BTCAAP), which is discussed in further detail at section 6.5.

A copy of the West Midlands Spatial Strategy is available at the West Midlands Regional Assembly website and searching for "Regional Strategies".

6.2 Sustainable Communities Strategy

This document is currently in draft form and will shortly replace the existing Community Strategy.

The document brings together organisations from the public, private, community and voluntary sector within East Staffordshire, with the objective of improving the quality of life of local people.

It details how local organisations and agencies will work together to improve the economic, social and environmental well being of the area, with the emphasis on 'partnership' working.

6.3 East Staffordshire Borough Council's Local Development Framework

The Planning and Compulsory Purchase Act 2004 incorporated a number of changes in relation to the Development Plan system, with the structure of the local plan being replaced by the Local Development Framework (LDF).

The LDF is a portfolio of documents known as Local Development Documents (LDDs), which guide the development of East Staffordshire, in line with the West Midlands Regional Spatial Strategy.

The Local Development Scheme sets out the timetable for preparing each LDD and describes it's contents.

Although the LDF comprises of a series of documents including; the Local Development Scheme, the Statement of Community Involvement plus, an Annual Monitoring Report; it is the several Development Plan Documents (DPDs) and Supplementary Planning Documents (SPDs) that are important to mention with respect to air quality.

DPDs form the statutory development plan for the Borough along with the West Midlands Regional Spatial Strategy.

Whilst many of the DPDs currently being drafted can affect air quality, the SPDs are discussed in detail below.

6.4 The Core Strategy

The Core Strategy DPD will set out the Borough's vision and spatial strategy. It will form the central element of the Local Authority's Development Framework over the next 20 years.

The Core Strategy, which is currently being drafted goes beyond planning for land use and will act as a tool for implementing other strategies and plans for East Staffordshire, which relate to the environment, health, education, housing, transport and the economy.

The Core strategy must set out a long-term strategy for accommodating the housing, employment and leisure requirements originating out of the West Midlands Regional Spatial Strategy.

6.5 Burton Town Centre Area Action Plan

The Burton Town Centre Area Action Plan (BTCAAP) is one of a series of DPDs that make up the Local Development Framework.

The Area Action Plan element is a mechanism for providing a 'planning framework' for an area, where a significant change or conservation is needed.

The opportunity has arisen to guide development in Burton upon Trent town centre through the implementation of the BTCAAP. It is also recognised that a 'successful' town centre is fundamental to creating a sustainable community. The BTCAAP will provide a method for ensuring future development is of an appropriate scale, mix and quality for key areas of opportunity.

The Area Action Plan (AAP) for Burton upon Trent town centre, will deliver the vision for development up until 2026, and is influenced by the Core Strategy and the West Midlands Regional Spatial Strategy.

The content of the said plan will also have the 'potential' to affect air quality in either a negative or positive way. A well thought out plan will provide the opportunity to support alternatives to car use, thereby reducing congestion and improving accessibility. The design, location and layout of developments are also important, hence Environment Services continue to play an active role within the consultation process.

Ultimately, this Plan will provide the opportunity to further some of the measures within the AQAP.

6.6 Supplementary Planning Documents

In addition to the DPDs, Supplementary Planning Documents (SPD's) will play an important role in support of air quality in the future.

Development Control, through processing individual planning applications, is an important tool for promoting sustainable travel and therefore reducing traffic congestion.

SPDs replace Supplementary Planning Guidance under the new planning regime. Whereas the former guidance was not statutory, the new documents have a 'statutory status', but do not form part of the Statutory Development Plan. They enable the 'subject' of the Supplementary document to be a 'material consideration' when determining a planning application.

SPDs form part of the Local Development Framework.

Whilst the existing national Planning Policy Statement (PPS 23) for Planning & Pollution Control enables air quality to be a material consideration, this

AQAP will look to develop these SPDs further in pursuit of improving air quality.

6.7 Local Transport Plan

The Local Transport Plan (LTP) sets out the long-term transport strategy for Staffordshire based on the Government's four key aims of reducing congestion, better accessibility, creating safer route and improving air quality. This is the second LTP plan for Staffordshire and runs from 2006-2011. The LTP is one of the mechanisms of regeneration set out in the West Midlands Regional Spatial Strategy.

As one of the key aims is the improvement of air quality, it underpins the more strategic documents for Burton upon Trent that affect the AQAP. Many of the themes of the LTP are actioned on a local scale within the Burton Urban Transport Management Study, which is described in the following section.

The LTP is also supported by a number of smaller more specific strategies, of which the Bus Strategy is worth mentioning, as this influences the AQAP.

Through the LTP, Highways Authorities have a duty under the Environment Act 1995 to propose actions towards meeting air quality Objectives (Defra guidance (LAQM.PGA (05) 2005).

6.8 BUATMS (Burton Urban Area Transport Management Study)

Whilst many of the proposed measures within this AQAP fall under the direct control or influence of the Local Authority and have originated specifically as a result of this document, the vast majority of highways/traffic related proposals already exist under BUATMS.

BUATMS was drawn up in 2001 by Staffordshire Highways Authority as part of the Local Transport Plan (LTP) for Staffordshire and subsequently approved by Staffordshire County Council's Executive in September 2002. Burton upon Trent is one of the key strategic centres identified in the LTP (which is now in it's second phase, LTP 2), and as a result BUATMS was established to address traffic issues related to the town specifically. It is a ten-year strategy running from 2001/2002 until 2010/2011.

The Strategy has three key elements: -

- Sustainable travel
- Traffic and demand management
- Highways measures

The project is part funded by developer contributions and part through the LTP.

BUATMS, forms the basis for most of the traffic related measures identified in this AQAP, and although many of the BUATMS actions have commenced or are completed, there are still numerous ongoing initiatives for it's second phase, that directly relate to the AQAP.

Information on works that have already been undertaken as part of this ten-year strategy can be found in the BUATMS Review 2006.

Further information on BUATMS and other Area Strategies is available by searching for LTP: Area Transport Strategies at

http://www.staffordshire.gov.uk/

6.9 East Staffordshire Borough Council's Corporate Plan

The AQAP supports one of the key priorities of East Staffordshire Borough Council's Corporate Plan for 2007/8-2010/11. The priority being to promote *'A cleaner, safer, healthier and happy environment in which our population live and work*'.

One of the aims of this priority is for the remedying of traffic congestion in and around Burton upon Trent, which will have a positive affect on air quality. Improving air quality will also compliment health and the environment related aims.

The Corporate Plan also supports the requirements of the West Midlands Regional Spatial Strategy.

6.10 Environment Services Service Plan

This document sets the annual performance targets, aimed at supporting the key priorities of the Corporate Plan.

Completion of the AQAP is one of the main priorities of the Service Plan and sufficient air quality monitoring provision is considered as one of the key assets to service delivery.

In addition to the completion of this AQAP, there is also a commitment for the revision of the Travel Plan for ESBC and promotional campaign work, which are measures included in the AQAP.

The Environmental Services Service Plan also has to meet the National Performance Indicator NI194: Level of air quality reduction in NO_2 and Primary PM_{10} emissions through Local Authority estate and operations, which will be addressed through the AQAP, and will help form one of the key indicators for many of the AQAP actions.

7.0 Air Quality Action Plan Development

This section details the process that has been followed in drawing up the AQAP.

7.1 Guidance and requirements

In drawing up the AQAP, the Local Authority followed:

-Policy Guidance 'Part IV of the Environment Act 1995 Local Air Quality Management' LAQM.PG(03) (2003)

&

-Policy Guidance: Addendum LAQM.PGA(05) (2005)

Both documents are issued by Defra and can be found at www.Defra.gov.uk

This Authority also used the guidance notes:

-'Air Quality Action Plans: Interim Guidance for Local Authorities (2001)'

&

-'Air Quality:Planning for Action-Part 2 of the NSCAs Guidance on the Development of Air Quality Action Plans and Local Air Quality Strategies' (2001)

Both documents are published by the National Society for Clean Air and Environmental Protection (NSCA) (now known as the Environmental Protection UK).

7.2 Pollutant Sources

To be able to target the AQAP effectively it was important to have a clear indication of the sources of the pollutants to be addressed within the AQAP, which in this case is NO_2.

East Staffordshire Borough Council's previous review and assessment exercises identified that the annual Objective for NO_2 was exceeded at numerous roadside locations along the main arterial routes in Burton upon Trent and at a smaller location in Stapenhill to necessitate the need to declare the two AQMAs.

These studies allowed us to define the geographical extent of Objective exceedences, however they didn't necessarily help apportion the contribution of the pollutant sources to NO_2 levels at these locations.

The Further Assessment (detailed earlier in this report at Section 4) identified that road transportation sources accounted for between 94.5-99.4% of total NO_X and therefore NO_2 emissions across the sixteen modelled receptor locations within the AQMA. These sixteen modelled points were chosen as the potentially 'worse case' examples, in terms of pollutant concentrations and were predominantly at roadside locations (1-5m from the road). Industrial contributions were therefore very small at all the locations.

The full results of the source apportionment exercise from the Further Assessment can be seen in Appendix 2.

The Further Assessment clearly highlights that road transport should be the main focus of the AQAP and that any measures directed towards industrial premises will only be of limited use.

The Further Assessment also considers the contribution of HGVs towards NO_X (NO_2) emissions. Although lower in numbers, HGVs can contribute a disproportionate amount of NO_2. The results show more variation than for the traffic/industrial split, ranging from Princess Way with a HGVs contribution of 18% of the total road NO_X contribution to Hawkins Lane, which feeds into the AQMA at 65% HGV contribution.

The results relating to vehicle type can be seen in Appendix 3.

The source apportionment exercise demonstrates that whilst many of the proposed measures in the AQAP address HGVs throughout the AQMAs, the Local Authority should focus certain measures where possible on the more significant roads affected by HGVs, although realistically this is difficult to do given the BUATMS is already underway.

As discussed earlier in this document, because of the interrelationships between the roads within the larger AQMA, most of the measures within the AQAP are for the whole AQMA, which will avoid 'shifting' congestion and associated pollution to a different point within or outside the AQMAs.

Unfortunately, owing to the quality of traffic composition data available, it was only possible in the Further Assessment to breakdown HGVs and Non-HGVs. It was not possible to determine the contribution of buses, which can be significant. This is not considered a setback however, since the AQAP proposes measures to influence buses, some of which stem back to the County Council's Bus Strategy.

7.3 Quantification of NO_2 reduction required

A proportion of the NO_X concentrations at each of the modelled receptor locations will be composed of the general background concentration, however the Further Assessment also determines the amount of NO_X (NO_2) that road and industrial sources contribute. As mentioned above, the Further Assessment has identified that road sources are by far the most significant contributor. For the purposes of drafting the AQAP it is important to have an indication of the level of (NO_2) reduction required at each of the locations to help influence the extent of actions required within the AQAP and therefore, to help focus on the areas that require the greatest reduction.

Of the sixteen locations modelled, twelve had verified 2005 annual average concentrations exceeding the 40ug/m^3 annual Objective limit, ranging from

2.1ug/m^3 – 21.9ug/m^3 above the Objective limit at Horninglow Street and Waterloo Street respectively. This would mean a required reduction of 5% and 35% respectively from the 2005 concentration.

The average modelled NO_2 concentration at these twelve locations exceeding the Objective was 47.7ug/m^3, showing an average reduction of 7.7ug/m^3 is required across the AQMA. This equates to a 16% pollutant concentration reduction.

The predicted modelled NO_2 concentrations for 2010 however, show only four of the sixteen locations exceeding the Objective limit, ranging from 0.4-11.2ug/m^3 above the Objective, with both these locations being located along Wellington Street. This would mean a required reduction of 1% and 21% respectively from the 2010 concentration.

The lowering of concentrations between 2005 and 2010 is attributed to a 'natural' reduction of NO_2 due to the impact of national measures aimed at lowering vehicle emissions.

The average reduction required at these four 2010 locations is 4.26ug/m^3, a required reduction of 9.6% from 2010 levels.

Appendix 4 summarises the required NO_2 reduction at each modelled location in 2005 and 2010.

Although the AQAP's primary aim is to reduce NO_2 emissions to below the Objective limits, as previously mentioned it is important to acknowledge that Burton upon Trent is earmarked for future development and that a degree of 'headroom' should be maintained.

It is also important to consider the level of 'uncertainty' associated with computer modelling, with several locations within the AQMA predicted to be very close to the Objective limit. It should not therefore be assumed that they will automatically be within the Objective, particularly if traffic levels increase at an unpredictable level, although the BUATMS seeks to control this.

In addition to modelling results, current 2007 monitoring can be seen in Appendix 5 along with comparisons with previous years. As of 2007, the highest current NO_2 levels can be found at Derby Street approaching Borough Road (53.2ug/m^3), Wellington Street (51.1 ug/m^3), Derby Street junction opposite Byrkley Street (48.9 ug/m^3), Derby Turn (48.3 ug/m^3) and Derby Street approaching Derby Turn (46.2 ug/m^3). These concentrations are in

relation to the annual Objective limit of 40 ug/m^3. The locations representative of receptors are those at roadside (Rs), not kerbside (Ks) locations.

It must be borne in mind that these NO_2 levels will vary year on year due to meteorological variation, although as can be seen in Appendix 5, there appears to be a trend towards a gradual NO_2 reduction.

7.4 Stakeholders

In order to establish an effective AQAP, it was necessary to form a steering group to both determine what is currently undertaken that way influence air quality and to identify other positive measures that could be implemented.

Initial communications predominantly involved the Highways Authority at Staffordshire County Council, as they were already involved with BUATMS.

The following meetings involved further stakeholders, including the Highways Agency and internal local authority representatives from Planning Policy, Engineers, Waste Management and Environmental Health.

East Staffordshire Borough Council is in a relatively fortunate position in that the BUATMS already provided a focus for traffic congestion within Burton upon Trent, and as such, a large number of actions were already identified and committed to, therefore extensive Steering Group involvement was not necessary. However other additional actions, less directly traffic related, were identified, discussed and assessed.

Initial meetings were used to highlight why there was a requirement for AQMAs in East Staffordshire and what was statutorily required in terms of air quality action planning and further assessment. It also included discussions in relation to BUATMS, and how each of the representative organisations/departments would be affected or could contribute to the AQAP.

Following these initial meetings, several more focussed meetings/discussions were made with the appropriate department/organisation.

A list of organisations/departments involved in the action planning is included in Appendix 6.

7.5 Identifying options

Once the main stakeholders and contributors were identified, it was important to identify what actions are already being implemented or planned in other local or regional strategies and who is responsible for their implementation.

These strategies/plans have already been described in some detail in Section 6.0.

Where road transport is identified as a significant major contributor to poor air quality in the AQMA, a wide range of control measures need to be considered.

As discussed, the BUATMS is already established to try and improve traffic movement through the centre of Burton upon Trent, which approximately corresponds to the larger of our AQMAs. This similarity of geographical areas is not a surprise as the main reason for declaring AQMAs was due to traffic congestion.

The BUATMS forms the foundation of the road infrastructure and traffic related measures in this AQAP. The BUATMS also supports the BTCAAP proposals over the next few years.

In addition to BUATMS actions, East Staffordshire Borough Council had discussions with departments of Staffordshire County Council Highway Authority including Passenger Transport, Road & Sustainable Travel, Transport & Policy and Transport Strategy, regarding the 'Additional Highways Measures', which were not included in BUATMS.

Further information on BUATMS and other Area Strategies is available by searching for LTP: Area Transport Strategies at

http://www.staffordshire.gov.uk/

As these 'Highways' actions have already been decided upon prior to this AQAP, it is logical to separate these from the 'Local Authority' actions identified in this document, which form the AQAP.

East Staffordshire Borough Council acknowledges that the BUATMS generally only focuses on Burton upon Trent, although the smaller AQMA in Stapenhill

will be influenced by the A5189 route strategy, which is investigating measures to improve traffic flow. It must be borne in mind however, that the Further Assessment predictions indicate that national measures alone should be sufficient to address the current Objective exceedence by 2010 or earlier within the smaller AQMA. It is hoped however that the indirect affect of BUATMS and many of the 'softer' Local Authority AQAP measures will also help contribute to possible NO_2 reductions.

To identify potential actions that were not BUATMS related, it was important to liaise with other Local Authority departments and stakeholders to identify where air quality improvements could be made, to identify their feasibility and to discuss ownership.

East Staffordshire Borough Council believes in leading by example, and many of these 'softer' measures are aimed at the Authority itself, with the aim of 'cleaning up our back yard' before expecting other organisations and the public to participate.

Existing AQAPs from other local authorities were also reviewed to identify actions that could be appropriate for our area.

7.6 Prioritising options

Once a list of potential measures had been drawn up, a simple cost/benefit analysis was required to determine which could be adopted into the AQAP and to prioritise these options.

The policy guidance issued by Defra does not require a formal cost/benefit analysis, but does require some form of assessment to identify the cost-effectiveness of the options considered.

Whilst it is the air quality benefits that are of most interest in relation to the AQAP, the wider social-economic and environmental benefits should not be ignored. An ideal AQAP measure would be one that is cost effective, improves air quality and has wider non-air quality benefits. Often the wider benefits affect the perception of the measure and can make it more acceptable, but in some instances may make some potential actions undesirable.

Following the various guidance detailed in section 7.1 a cost benefit matrix was been drawn up to list and rank all of the chosen options. The ranking considered:

- The potential air quality impact (rated low-high)
- Overall approximate cost-including direct and indirect costs (rated low-high)
- The potential non-air quality impact (rated low-high)
- Perception and practicabilities (referred to as feasibility)(rated low-high)

&

- Timescale of implementation (rated short/long-term)

7.6.1. Air quality impacts

Air quality reductions are the reason why measures are proposed for inclusion in the AQAP and are arguably the most important consideration in the prioritisation process.

To provide an accurate indication of the NO_2 reduction each option provides at this stage is unachievable and would be misleading. Many of the 'softer' proposals encourage behavioural change or are policy documents, which indirectly affect traffic and air quality, or alternatively affect them over a wider area, making the quantification of pollutant reductions difficult. Despite this, professional judgement has been used to attempt to quantify the potential impact of the options. The air quality affect (NO_2 reduction), has been categorised into low (0.2ug/m^3), medium (0.2-1ug/m^3) & high (1ug/m^3).

A few micrograms (ug/m^3) NO_2 reduction to meet the Objective limit of 40ug/m^3 may not appear to be that large a target, although in fact it is very difficult to meet. Even modest reductions can be difficult to achieve.

Many individual actions contained within the AQAP are not expected to have a large impact on air quality, but cumulatively they will form an effective package of mitigation.

The BUATMS actions are likely to have some of the largest potential reduction impacts, although these come at increased cost.

7.6.2. Cost effectiveness

However large an expected pollutant reduction may be, the inclusion of a measure in the AQAP is determined by it's cost effectiveness.

Some actions with potentially large air quality benefits are prohibited by cost, and typically include some of the more radical measures that are undertaken in cities, such as low emission zones, and congestion charging etc.

The approximate cost of each option considered has been estimated, ranging from low (<£5,000), medium (£5,000-20,000) to high (>£20,000).

It is noted from looking at other local authority examples of action plans, that these cost categories range significantly, with larger authorities having higher cost ranges and *vice-versa*. The cost range included in the matrix was chosen as 'middle ground' for an authority of East Staffordshire's size. If the range were set too low, then most of the actions would fall into the 'high' category.

The various guidance documents suggest that when considering the costs of an option, this should include both direct and indirect costs, in addition to any revenue that may be generated. For non-technical options it is widely recognised that these costs are more difficult to quantify, compared to stationary abatement technologies.

Due to these difficulties associated with accurately quantifying the level of emission reduction and costs, it is not possible to work out a cost per 1ug/m^3 of NO_2 reduction.

The BUATMS costs were taken from the 2006 review document and therefore were easier to quantify than many of the Local Authority options. For most of these Local Authority actions it is only possible to give an approximate estimate of cost, nevertheless, it does allow a degree of cost comparison to be made between the proposed measures. The justification of costs is detailed more in Section 8, where each proposal is described in more detail.

Where feasibility studies have been suggested, then the cost of the 'subject' matter has been estimated, rather than just the cost of the study.

The aim of an AQAP is to identify a list of sufficient actions to address exceedences above the air quality Objective. This list is ranked according to cost effectiveness, starting with the cheapest options, which offer the greatest air quality reduction.

The NSCA guidance documents identify that other factors affect ranking beyond merely cost and air quality benefit, such as; desirability of the option, practicability, willingness of the responsible party, relevance of wider implications, relationships with other strategies/policies and proportionality.

East Staffordshire Borough Council also recognises that this AQAP, should not purely be decided upon by costs effectiveness and that wider environmental, social and economic factors are important considerations. It is also unrealistic to ignore the link between air quality and climate change, with most options identified also having carbon emissions reduction potential, and therefore, it is desirable for the AQAP to contain as many measures as practicable.

With this in mind, East Staffordshire Borough Council has proposed a list of actions within the AQAP that may in fact go beyond the required NO_2 reduction at many of the AQMA locations currently exceeding the Objective.

7.6.3. Practicability/perceptions (feasibility)

Practicability is an important consideration when finalising the actions to be included in the AQAP. The practicability of an option may be influenced by stakeholders perception, including the public, commerce, politicians and the Local Authority itself. If the perception of an option is poor then the practicability and it's effectiveness will be reduced.

Effective communications between stakeholders, in particular the parties responsible for implementing the proposals is the key to improving the practicability of options.

On many occasions, because most stakeholders welcome improved air quality and reduced traffic congestion, it is envisaged the majority of options will be well supported, however, certain measures may have undesirable or unforeseen effects. This is why consultation is an important tool prior to the AQAP being formally adopted. There is no point in choosing options that disproportionately effect stakeholders, it is more a case of choosing the right balance of proposals.

The perception of stakeholders depends on their role. As discussed, the public are widely expected to support improved air quality, but only where they are 'encouraged' to participate in some of the measures, rather than feeling they are 'forced'. Likewise, some commercial stakeholders, may perceive some of options less favourably, particularly if they involve expenditure and changes to the way they operate.

Where possible the AQAP includes measures that have a wider positive benefit other than just air quality, to establish a 'win win' situation.

The cost-benefit matrices included in this report give consideration to the practicability and perception (referred to as feasibility [ranked low-high] of each option, based on how easily they can be implemented. In many cases it is likely a particular proposal will be implemented, as part of an existing local strategy, in which case the feasibility is high. In many instances however, measures will be implemented predominantly as a result of this AQAP, and therefore, the feasibility rating is an important consideration.

7.6.4. Wider impacts/non-air quality impacts

As discussed above, the AQAP proposals will have wider non-air quality impacts.

The NSCA guidance documents point out that these impacts should not penalise any particular sector or social group. It also states that the AQAP measures should complement the Community and Sustainability Strategies.

This means that consideration needs to be given to these wider impacts. Section 8 details further some of the wider impacts associated with the proposed options.

As noted, one wider impact that cannot be ignored is the effect on climate change through potential carbon emission reductions.

There are now emerging targets aimed at carbon emission reductions both locally and nationally. Whilst this AQAP is being developed to address air quality, it will also have a potential positive affect in terms of carbon reduction.

Many of the measures identified within this AQAP may be developed within a Carbon Reduction Plan in the future.

It must be pointed out however, that certain air quality improvement measures can have negative affects on carbon emissions. East Staffordshire Borough Council will therefore not include any actions that have foreseeable negative effects in terms of climate change. The feasibility studies included in this AQAP will give consideration to climate change and this stance will also be adopted for any air quality impact assessments for larger developments, such as those included in the BTCAAP.

7.6.5. Timescales

Timescale is also an important consideration within the AQAP. The intention is to have a combination of short, medium and long-term options, all with the aim of improving air quality in pursuit of the Objective limit.

In some instances measures may be relatively straightforward to implement or relate to the completion of a feasibility study, and as such are designated as short-term options. In other cases, larger-scale changes, or those subject to longer-term strategies need to be implemented over a greater length of time.

Whilst the ranking system prioritises which proposals should be implemented first, in reality, because different parties undertake the measures or packages of measures, many will be developed and implemented simultaneously.

Where an option has a potentially large impact on reducing air quality emissions, the Local Authority will endeavour to complete it within the shortest timescale.

For the purposes of the cost-benefit matrix, the timescales for the implementation of options has been divided into short-term (>2yrs), medium term (2-5yrs), and long-term (>5yrs).

Measures designated in BUATMS already have their own timescales for implementation, leading up until 2011.

8.0 Action Plan measures

Strategy 1: Sustainable Travel

8.1. Bus priority

BUATMS identifies that bus priority measures are very important in helping to encourage alternatives to the car and several schemes are being investigated in detail, sponsored by the main local bus operator Arriva. The schemes can be seen in more detail in the BUATMS document and the BUATMS Review 2006, and they will be implemented from 2007/08 onwards. BUATMS states that the schemes will help increase bus access, reliability and promote the enforcement of bus/cycle only access, the latter of which will improve pedestrian safety.

Rising bollards are being installed during 2008 at three junctions around the Station St/ High Street junctions in Burton upon Trent to help bus access and improve safety.

In addition to the prioritisation schemes, a number of issues have been identified as causing delays to bus services, many of which are also to be addressed.

-***Cost effectiveness***- *Relatively expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-***Air quality impacts***- *Could have a significant air quality benefit, given that buses contribute a disproportionate amount of emissions in relation to cars and other small vehicles. Improved service could encourage more user uptake and reduce the amount of cars on the road.*

-***Non-air quality impacts-*** *More effective use of road space. Helps improve the bus service making it more attractive to users. Some of bus access measures will improve pedestrian safety. Increased bus patronage reduces car use not only improving air quality, but also helps carbon reduction in terms of climate change. Increased bus patronage, would also benefit public transport providers.*

*-**Practicability & perceptions-** Generally positive given that the public support air quality improvement and reduced congestion. This is strengthened by the other positive non-air quality impacts.*

8.2. Bus information and awareness/Travel Plans

As part of BUATMS, Staffordshire County Council will be considering further, the introduction of Real Time Passenger Information (RTPI), to help the promotion of alternative forms of transport to the car. The system is already in place in some neighbouring Counties and it is hoped RTPI can be extended to include Staffordshire.

The BUATMS document also includes commitments for promoting and publicising new sustainable transport facilities, encouraging existing companies to produce Travel Plans and developing Area Travel Plans for certain local developments.

*-**Cost effectiveness-** Relatively expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Could have a significant air quality benefit, given that buses contribute a disproportionate amount of emissions in relation to cars and other small vehicles. Improved bus service could encourage more user uptake and reduce vehicle numbers. Travel plans will encourage a move away from car use, further benefiting air quality.*

-Non-air quality impacts- *Public transport is a more effective use of road space. Helps improve the bus service making it more attractive to users. Increased bus patronage and a general move away from car use also helps carbon reduction in terms of climate change. Increased bus use would also benefit public transport providers. Travel Plans may disadvantage certain business sectors, although they can improve the environmental profile of a company.*

-Practicability & perceptions- *Generally positive in relation to the provision of bus information. For Travel Plans, perception will be positive only if they are implemented correctly and staffs are fully consulted.*

8.3. Enhancement of New Street bus interchange

Improvements made on New Street, Burton upon Trent to create a better waiting environment. Whilst there are no further short-term plans, there are possible longer-term measures to develop a “bus hub” as part of the BTCAAP, notably a public area for the main arrival point in the town centre.

-Cost effectiveness- *Relatively inexpensive in relation to other Highways related issues. Expensive in relation to ‘soft’ measures.*

-Air quality impacts- *Some positive affect on air quality if bus use is increased.*

-Non-air quality impacts- *A bus hub provides a “focal point” for public transport users, improving the service and a recognisable location where people know they can catch buses from. Promotes bus use, which is a more effective use of road space. Helps improve the bus service making it more attractive to users. Increased bus patronage reduces car use not only improving air quality, but also helps carbon reduction in terms of climate change. A more efficient bus service could encourage increased bus use, which would benefit public transport provide. Reduces social exclusion of non-car users.*

-Practicability & perceptions- *Positive perception due to non-air quality impacts. Relatively practicable given that New Street is already the main bus area for the town.*

8.4. Public Transport Partnership (PTP) routes

Staffordshire County Council, in partnership with bus operators has already made improvements in terms of bus routes, bus stop infrastructure, raised kerbs, information provision and low floor vehicles along one of the routes serving Burton upon Trent town centre and additional funding is being identified to improve further routes.

-Cost effectiveness- *Expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some limited positive affect on air quality.*

-Non-air quality impacts- *Helps improve the bus service making it more attractive to users. Increased bus patronage reduces car use not only improving air quality, but also helps carbon reduction in terms of climate change. A more efficient bus service could encourage increased bus use, which would benefit public transport providers. Reduces social exclusion by improving accessibility.*

-Practicability & perceptions- *Very positive perception due to non-air quality impacts and minimal negative issues. Practicable if funding available.*

8.5. Cycle parking

BUATMS currently has proposals to increase the number of secure racks throughout Burton. The locations of such racks will be identified within the next 5 years in consultation with local cycling groups. The provision of secure and convenient cycle parking is also an aspiration under the BTCAAP, which BUATMS supports.

-Cost effectiveness- *Inexpensive in relation to other Highways related issues.*

-Air quality impacts- Some positive affect on air quality if cycling displaces sufficient car use.

-Non-air quality impacts- Improves facilities for people choosing to cycle and provides an alternative to car use. Cycling can provide health benefits. Cycling is one of the most environmental forms of travel, providing climate change benefits as well as for air quality. Reduces social exclusion of non-car users. Fuel efficient in relation to other transport modes, With rising fuel costs, more people are choosing to cycle due to economic reasons, which this measure would support. Potential conflict with other transport modes for road space etc.

-Practicability & perception- Generally positive although may be perceived as too expensive for too little return. Very practicable.

8.6. Cycle links and crossings

A review of the progress towards delivering cycle routes proposed in the original BUATMS in 2002 has been undertaken and has prioritised the

completion of two National Cycle network routes and several local links. The expansion of cycling in the centre of Burton upon Trent is possible given that many people live within close proximity of the town. The BTCAAP in conjunction with BUATMS recognises this fact.

The BTCAAP has identified a number of potential cycle route improvements, including improving links with Station Street, the railway station and residential areas.

-Cost effectiveness- *Relatively expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect on air quality if cycling displaces sufficient car use.*

-Non-air quality impacts- *The BTCAAP preliminary exercises have shown a need for improved walking and cycling facilities, because of lower car ownership and proximity to the town centre, which these improvements will contribute towards. Improves facilities for people choosing to cycle and provides an alternative to car use. Cycling can provide health benefits.*

Climate change benefits as well as for air quality. Reduces social exclusion of non-car users. Fuel efficient in relation to other transport modes, with rising fuel costs, more people are choosing to cycle due to economic reasons, which this measure would support. Potential conflict with other transport modes for road space etc.

-Practicability & perception- *Generally positive, but not if there is conflict with other road users. May be perceived as too expensive for too little return.*

8.7. Pedestrian improvements

BUATMS has prioritised the provision of a safer more convenient pedestrian environment within Burton upon Trent starting in 2006/07 with schemes based on the Burton upon Trent town centre Walking Strategy, which aims at meeting objectives set out in the original BUATMS (2002).

Through BUATMS the BTCAAP also acknowledges the opportunity to encourage walking in Burton upon Trent. There are plans to expand pedestrianisation within the town centre, which will not only encourage safe areas for pedestrians, but also redirect some of the traffic on nearby roads,

which could improve traffic flow overall. The BTCAAP has recognised the need for improved crossing points and more direct pedestrian routes, which will form one of this documents Action Plan measures. The BTCAAP also recognises the need to move away from retail fronts opening away from car parks onto more pedestrianised routes. A number of "Pedestrian Desire Routes" have been identified.

Under BTCAAP proposals, a feasibility study is also under way towards making New Street a "bus only" route.

-Cost effectiveness- *Relatively expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect on air quality if walking displaces sufficient car use.*

-Non-air quality impacts- *Pedestrianisation provides a more attractive and safer environment for shoppers and improved pedestrian routes encourages people to walk instead of using their cars. Climate change benefits in addition*

to air quality. A more pleasant shopping environment may attract more visitors to the town. Encourages social interaction. Improved perception of the town centre and a potential increase in trade for businesses. Encourages healthier modes of movement. Accessibility issues for trade and shoppers who are less mobile.

-Practicability & perception- *Positive perception provided it does not disrupt the road network. May be perceived as too expensive for too little return.*

8.8. Railway station improvements (forecourt and car park)

BUATMS is looking to build on upgrades already made to the railway station car park in Burton upon Trent. Proposals are in place to upgrade and improve the layout of the railway station forecourt, improving accessibility to non-car users, although the timing will be dependent on strengthening of the 'listed' bridge on which the forecourt is situated and availability of funding that will be required for such works.

BTCAAP recognises that there is greater potential for more journeys to be made to and from Burton, with its link to a main rail line. BTCAAP does

recognise however, that there is a need for improved integration between the railway station and the town centre. A cycle route is proposed between the station and the town centre and also improved signage for pedestrian and cycle routes.

-Cost effectiveness- *Expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect on air quality.*

-Non-air quality impacts- *An improved railway station will be more attractive to users and improved pedestrian and cycle links will provide better facilities for the public. Climate change benefits exist in addition to air quality. An improved railway link could attract more rail users, which would benefit the rail companies and could attract more visitors to the town. Potential to increase vehicle movement in locality.*

-Practicability & perception- *Improvements would be supported and seen as positive. Some issues of practicability.*

Strategy 2: Traffic and Demand Management

8.9. Junction improvements and restrict access to inner area

The recommendations of BUATMS, to convert roundabouts in Burton upon Trent at Shobnall Road/ Wellington Road and A444 Stapenhill Road/ St Peters Bridge to signalised junctions is being taken forward to allow the management of traffic on the edge of the 'Access only' area, to extend the Urban Traffic Control to cover all key town centre junctions, and to allow bus prioritisation.

These measures will be taken forward through the 'Route Strategies for the A511 and A5189', which form two sides of the 'Access Only' area.

The route strategy for the A5189 will also be considering junctions at:

- Shobnall Rd/Shobnall St
- Shobnall Rd/Wellington Rd
- Orchard Street/Evershed Rd
- St Peters Bridge/Branston Rd

- Stapenhill Rd/St Peters Bridge

The A5189 route strategy will hopefully reduce the amount of stationary traffic at A444/St Peter's Bridge/Main Street roundabout, which in turn will improve air quality.

This route strategy is also investigating the feasibility of implementing a bus lane along the A444 (from the County boundary to approximately Saxon Street).

-Cost effectiveness- *Expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect if congestion is reduced. This is probably the most focussed measure in relation to the smaller AQMA in Stapenhill.*

-Non-air quality impacts- *Lower congestion reduces carbon emissions in relation to climate change. Reduced traffic congestion could encourage more visitors to Burton upon Trent and attract investment.*

-Practicability & perception- *Positive perception in the longer–term, but may be negative if there is disruption to the network in the short-term. Public may perceive that their freedom of movement is restricted.*

8.10. Expansion of Urban Traffic Control (UTC) network

Expanding on the UTC system that has been installed at a number of junctions and pedestrian crossings during the first part of BUATMS, it is expected that the system will be extended further over the next few years to include proposed signalised junctions and any new pedestrian crossings, to aid bus priority and ease traffic flow.

If implemented the BTCAAP will allow the road network to be reorganised to a certain degree, through it's Traffic Management Strategy. The aim of the strategy is to produce safer roads and improve traffic flow, in particular for buses. This will involve extending pedestrianisation in some areas, making

junction improvements, restricting on-street parking and limiting access on some streets. The Variable Messaging System (VMS) will continue to be utilised.

In addition to the above there is currently a feasibility study underway into the possibility of signalising Derby Road/Derby Street/Horninglow Road junction (Derby Turn). Although this is only a feasibility study at present, it has the potential to significantly affect this area.

-Cost effectiveness- *Expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect if congestion is reduced.*

-Non-air quality impacts- *Lower congestion reduces carbon emissions in relation to climate change. Reduced traffic congestion could encourage more visitors to Burton upon Trent and attract investment.*

-Practicability & perception- *Positive perception in the longer–term , but may be negative if there is disruption to the network in the short-term. Public may perceive that their freedom of movement is restricted.*

Strategy 3: Highways Measures

8.11. Highway capacity improvements at Wellington Road in Burton

Initially there have been delays with the widening of part of the A5121 Wellington Road, due to delays in receiving funding from Coors for the improvements to roundabout D (A38/Branston junction). There had also previously been delays in the development of land east of this section of Wellington Road, which will be accessed, via a signalised junction half way down Wellington Road. These delays have now been resolved and capacity improvements to the highway are now underway and due for completion later this year.

-Cost effectiveness- *Expensive in relation to other Highways related issues. Expensive in relation to 'soft' measures.*

-Air quality impacts- *Some positive affect if congestion is reduced.*

-Non-air quality impacts- *Reduced congestion lowers carbon emissions in relation to climate change. Supports and attracts new development in the Centrum area.*

-Practicability & perception- *Positive perception in longer –term, but may be negative if there is disruption to the network in the short-term.*

Additional County Council Actions

8.12. Countywide Freight Map

Although there is no longer a freight quality partnership for Staffordshire, the County Council is committed to reviewing the Staffordshire road hierarchy over the course of the current Local Transport Plan. This involves categorising roads in terms of function, to help form a coherent and consistent approach for managing the road network. This will ensure the best use of the existing network through design, maintenance and management. A

Countywide Freight Map shall be developed, which will display appropriate roads for HGVs.

-Cost effectiveness- *Expensive in relation to 'soft' measures.*

-Air quality impacts- *Significant if HGV movement is reduced, given it's disproportionate emissions.*

-Non-air quality impacts- *Less large vehicles on certain roads, which in turn can improve road safety and encourage cycling etc. Carbon emission reductions as well as air quality benefits. Could help companies to operate more efficiently with less congested roads and attract development into Burton upon Trent.*

-Practicability & perception- *Will vary, with residents and other road users having a positive view, but haulage companies may consider this measure more negatively unless they are fully consulted.*

8.13. Supporting Bus fleet upgrades

East Staffordshire Borough Council will work with the Transport Projects Team at Staffordshire County Council to consider the feasibility of encouraging the upgrade of the ageing bus fleet in Burton upon Trent.

The County Council will also encourage the minimisation of 'waiting' and 'layover' times of buses within the AQMA.

-Cost effectiveness- *May be very expensive to implement.*

-Air quality impacts- *Significant, considering the number of buses and their proportion of emissions.*

-Non-air quality impacts- *Modern buses encourage increased bus use and provide a more pleasant journey for users. Carbon emission reductions as well as air quality benefits. Costs involved in upgrading bus fleet, although some positive benefits if more people start using the services.*

-Practicability & perception- *Good from the public, but bus operators may be less enthusiastic given the expense involved. Practicability may be affected due to funding of the upgrades.*

8.14. Burton Traffic modelling

A large-scale road traffic modelling exercise is to be undertaken as part of the BTCAAP.

This will prove beneficial for the modelling of air quality in the future, particularly when trying to quantify air quality improvement actions.

-Cost effectiveness- Will be relatively costly, but not in terms of most highways measures.

-Air quality impacts- *Could be very significant in the future- will aid in effective development and traffic planning.*

-Non-air quality impacts- *May help computer modelling in relation to climate change.*

-Practicability & perception- *Very specific measure unlikely to have any negative perception. Very practicable.*

8.15. Changes to trunk road signage

The Local Authority in conjunction with Staffordshire County Council and the Highways Agency, will consider the feasibility of changing local trunk road signage to divert heavy goods vehicles to the most appropriate exits for Burton upon Trent from the A38 trunk road. It has been identified that A38 signage from Derby could be improved to encourage goods vehicles to take the most appropriate exit for Burton, therefore avoiding excess through traffic.

-Cost effectiveness- *Inexpensive in relation to other Highways measures.*

-Air quality impacts- *Could be significant if it prevents unnecessary HGV movement through the town centre.*

-Non-air quality impacts- *The potential reduced traffic, particularly HGVs could improve road safety. Carbon reduction emissions would also be reduced.*

-Practicability & perception- *Generally positive. Practicable.*

8.16. Increased traffic counts on certain roads (County Council/ Pollution Team)

Staffordshire County Council will undertake traffic counts on certain roads to provide further information in relation to vehicle use/flows.

This will be useful for the Local Authority's Air Quality Review and Assessment modelling. The more accurate road data available, the better the benchmark for assessing the effectiveness of action planning measures.

-Cost effectiveness- *Inexpensive in terms of other Highways measures.*

-Air quality impacts- *N/A*

-Non-air quality impacts- *May help computer modelling in relation to climate change. Helps demonstrate effectiveness of AQAP.*

-Practicability & perception- *No significant negative perception. Very practicable.*

Local Authority Actions

8.17. Policy for replacement of East Staffordshire Borough Council's vehicle fleet. (ESBC Environment Services)

East Staffordshire Borough Council will formalise a policy for vehicle replacement. This includes considering the latest Euro Class vehicles, general emissions, carbon emissions, fuel efficiency and engine size when purchasing vehicles. It will also consider the frequency of vehicle replacement.

-Cost effectiveness- *Some expense, although replacement is periodically necessary anyway. Some increased cost because of the newer vehicle specifications and more frequent replacement. Some ongoing cost savings through more efficient vehicles.*

-Air quality impacts- *A small amount of air quality improvement.*

-Non-air quality impacts- *Newer vehicles have lower emissions across the board, including lower carbon emissions. Improved environmental profile for the Local Authority-leading by example. Wider environmental and social impacts through sensitive purchasing.*

-Practicability & perception- *Certainly practical. Positive perception, provided that the benefit of 'cleaner' vehicle s versus extra cost is demonstrated to the public*

8.18. Policy for vehicle leasing (ESBC Environment Services)

East Staffordshire Borough Council currently leases a large proportion of the total vehicle fleet. A formal policy will be adopted to ensure that the latest Euro Class vehicles are leased to ensure each vehicle is emitting the lowest emissions. The policy will also consider the same factors as the above Vehicle Replacement Policy.

-Cost effectiveness- *Some expense although replacement is periodically necessary anyway. Some increased cost because of the newer vehicle specifications and more frequent replacement. Some ongoing cost savings through more efficient vehicles.*

-Air quality impacts- *A small amount of air quality improvement.*

-Non-air quality impacts- *Newer vehicles have lower emissions across the board, including lower carbon emissions. Improved environmental profile for the Local Authority-leading by example. Wider environmental and social impacts through sensitive purchasing.*

-Practicability & perception- *Certainly practical. Positive perception provided that we demonstrate the benefit of 'cleaner' vehicles to the public versus extra cost.*

8.19. Policy for Retrofitting East Staffordshire Borough Council vehicles (ESBC Environment Services)

East Staffordshire Borough Council currently uses EMINOX scrubbers on existing vehicles to improve overall emissions. A formal policy shall be drawn up to ensure that future "retrofitting" includes the most effective filters for nitrogen dioxide reduction. An assessment would need to be made however, to ensure that by reducing one pollutant through retrofitting other pollutants are not increased e.g. particulate traps can increase nitrogen dioxide levels.

Vehicles shall continue to be tested regularly to demonstrate compliance with the appropriate emissions certifications.

-Cost effectiveness- *Some cost involved but largely not overly expensive.*

-Air quality impacts- *A small amount of positive air quality benefit.*

-Non-air quality impacts- *May increase carbon emissions and other pollutants. May increase maintenance requirements.*

-Practicability & perception- *If vehicle purchasing/leasing policies are implemented, then it is less likely this option will be necessary. This measure will not create much of an impact with the public.*

8.20."Green Fleet Review" (ESBC Environment Services)

East Staffordshire Borough Council will commit to undertaking a "Green Fleet Review" assessment undertaken by the Energy Saving Trust. The Green Fleet Review helps to lower running costs, reduce environmental impact and enhance corporate social responsibility.

-Cost effectiveness- *Little initial cost relative to potential cost savings from a more efficiently run fleet.*

-Air quality impacts- *Some limited positive impact on air quality.*

-Non-air quality impacts- *Helps in lowering carbon emissions from the Local Authority's fleet. Improves environmental image of the Local Authority.*

-Practicability & perception- *Highly practicable. Positive perception by stakeholders, although there may be some initial negative perception by people directly affected, if they need to change operating practices etc.*

8.21. Use of alternative fuels for East Staffordshire Borough Council vehicles (ESBC Environment Services)

A feasibility study will be completed considering the possibility of using alternative fuels in certain Local Authority vehicles to improve emissions. This could involve considering biofuels, hybrid vehicles, electric vehicles etc. Care must be given in considering the wider implications of using alternatives such as some biofuels, as they can have wider negative impacts on the environment.

-Cost effectiveness- *The use of cleaner fuels may lower running costs, although there may be significant costs required in relation to infrastructure and vehicle conversion. There may be greater maintenance costs.*

-Air quality impacts- *Some slight positive air quality benefit.*

-Non-air quality impacts- *Helps in lowering carbon emissions from the Local Authority's fleet. Conversely, a different fuel may increase carbon emissions.*

Encourages innovation. Improvement of the Local Authority's environmental profile. May restrict vehicle fleet. There may be fuel availability issues. Helps promote environmental profile of the Local Authority.

-Practicability & perception- *Not the most practicable option. Has a mixed perception, may not be that popular with vehicle operators.*

8.22. Waste collection operations & route review (ESBC Waste Management)

Changes to waste collection operations are being considered. This could be beneficial in reducing contributions to overall traffic congestion and associated emissions.

In addition, a review of the current waste collection routes is being undertaken, to ensure that the most efficient routes are used to minimise the amount of time that vehicles are out on the streets and therefore minimising congestion.

-Cost effectiveness- *More efficient collections would result in significant cost savings. Route optimisation would also result in fuel cost savings.*

-Air quality impacts- *Some improvement.*

-Non-air quality impacts- *Lower carbon emissions. Less disruption to traffic flow because of waste collection vehicles. Fewer collections stimulate greater recycling.*

-Practicability & perception- *Mixed, perceived by some as a very positive measure, and perceived by others as a very negative issue if collections were less frequent.*

8.23. Driver training for employees (ESBC Environment Services)

People driving in a more efficient manner can attain significant fuel efficiency improvements. This not only saves on fuel use and emissions, but also on running costs.

Some training is already given to certain employees. The current training will be formalised and extended to ensure maximum efficiency and effectiveness.

The training will also cover procedural checks to ensure vehicles are operating in the most effective method i.e. checking tyre pressure etc.

This training will also benefit employees out of work as they can save on their own fuel use and costs through implementing the advice learnt.

The Local Authority is applying for SAFED (Safe and Fuel Efficient Driving) funding, aimed at all operational staff, beginning with large goods vehicle users, company vehicle users and then occasional car users.

A feasibility study on the use of telematics will also be undertaken. Telematics can be used to monitor and manage driving styles to minimise mileage and therefore save on emissions and costs. Telematics will also help the routing review to be as efficient as possible.

-Cost effectiveness- *Low cost, with potential fuel cost savings.*

-Air quality impacts- *Some air quality benefit.*

-Non-air quality impacts- *Staff would benefit by being safer and more efficient drivers. More efficient driving reduces greenhouse gas emissions.*

-Practicability & perception- *Very practical, generally well received. Employees may feel that they are being told what to do.*

8.24. East Staffordshire Borough Council website enhancement to promote alternatives to the car (ESBC General)

The Local Authority will promote further, public transport, cycles routes, local walks and alternative to the car in general. This could be communicated via a variety of methods, ranging from providing visitors with clear and prominent information on accessing council amenities by non-car modes, through to having specific promotional publicity for walks or cycle routes to encourage people to make use of our existing facilities. There are links to bus company and train timetables at present but this will be adapted further.

-Cost effectiveness- *Low cost, with the potential to reach a wide spectrum of the public.*

-Air quality impacts- *Could have a relatively significant positive impact, by highlighting the air quality issues locally and supporting non-car modes.*

-Non-air quality impacts- *Provides information to the public on how they can be more environmentally aware. Could help encourage healthier lifestyle choices. Helps encourage lower carbon emissions amongst the general public. Promotes alternatives to the car, which may be more economical. A danger of over exposure of this issue to the public, which could lessen it's impact.*

-Practicability & perception- *Positive, the public care about the environment, although we should 'support/encourage' lifestyle change rather than 'pressure/force' change.*

8.25. Updating leaflets and other information publications (ESBC General)

Information leaflets and other publicity materials advertising Local Authority amenities, services and events will have prominent information relating to access for visitors through non-car modes e.g. information on nearest bus stops, cycle paths etc.

The Local Authority's Customer Service Centre will also be useful in providing this information to the public, since it is the main customer facing service within the organisation.

-Cost effectiveness-*Low cost, potential for extensive coverage*

-Air quality impacts- *Some impact given the coverage of the documents.*

-Non-air quality impacts- *Helps encourage lower carbon emissions amongst the general public. Provides information to the public on how they can access services and facilities. Reduces social exclusion, by providing information for non-car users.*

-Practicability & perception- No perceived negative impacts.

8.26. Travel Plan review (ESBC Environment Services)

The Local Authority is currently reviewing its Travel Plan. This includes making assessments of the current transport trend and also encouraging employees to complete a questionnaire to help focus the Travel Plan to meet their needs and to enable it to be supported.

A successful Travel Plan needs to involve employees and should have a combination of incentives and disincentives, to promote a move away from the dependence on car use.

The Travel Plan will focus on such issues as reviewing the essential car user allowance system, changing the payment structure for mileage to encourage people to use cars with smaller engine sizes, introduce better facilities for cyclists/pedestrians, incentivise people to car share and to use public transport etc.

-Cost effectiveness- *May be relatively high costs initially in relation to the infrastructure to facilitate Travel Plan measures.*

*-**Air quality impacts-*** *Some potential air quality improvement.*

-Non-air quality impacts- *Creates an opportunity for staff not wanting to always travel by car and encourages healthier alternatives. Lower car use also reduces greenhouse gas emissions. Supporting alternatives to the car may help staff save on fuel costs. Encourages non-car provision. May cause recruitment difficulties. Reduced parking requirements. Improve environmental credentials of the Local Authority.*

-Practicability & perception- *Perceived positively by stakeholders, although there may be some negative perception by employees, if they feel they are being dictated to.*

-8.27. Increased car sharing (Stafford County Council/ ESBC Environment Services)

The Local Authority will promote Staffordshire County Council's "Share a lift" scheme further, both for our own employees/members and also the public/commerce in general.

The revised Travel Plan should facilitate still further, the ability for staff to car share through incentives e.g. priority parking, etc.

There is scope for partnership working with this option, i.e. involving other local authorities, the Police and the Fire Service within Staffordshire, as carbon emissions reduction with respect to climate change is a desirable for all parties.

-Cost effectiveness- *Low cost to promote, with cost savings for participants.*

-Air quality impacts- *Some potential air quality impact dependent on uptake.*

-Non-air quality impacts- *Helps staff to 'network' with other colleagues. Lower car use also reduces greenhouse gas emissions. Positive environmental profile for Local Authority. Cost savings for participants.*

-Practicability & perception- *Good perception, will need work to make it appealing to staff.*

8.28. Review signage for Local Authority leisure centres along cycle paths and pedestrian routes (ESBC Sports Development Team)

A review of the current signage for the Authority's leisure centres along cycle paths and pedestrian routes will be undertaken. This will help to encourage people to use alternative modes of transport to the car in order to visit the leisure centres. Leisure centres are a good starting point, as people using these facilities are more likely to be pedestrians/cyclists than for other service users.

-Cost effectiveness- *Low cost option.*

-Air quality impacts- *Low air quality impact as a 'stand alone' action, although will be more affective as part of a package.*

-Non-air quality impacts- *Delivers climate change benefits. Encourages health benefits. Helps support more economic alternatives to the car.*

-Practicability & perception- *Generally will be well received, but other associated facilities will need to be in place to support this option, such as secure cycle parking etc.*

8.29. Smart Card Scheme (ESBC Sports Development/Environment Services)

A feasibility study will be completed considering the introduction of a 'smart card' style system, for cyclists/ pedestrians using Local Authority leisure centres.

The Meadowside Leisure Centre in Burton upon Trent currently reimburses car park tickets for facility users, although there is no incentive for people choosing not to drive. There are no local bus stops nearby in order to offer concessions for users, although a reward system could be considered for people using leisure facilities who have not driven. This could be in the form of a discount.

Although outside the AQMAs, the intention is for the Uttoxeter Leisure Centre to introduce a similar incentivised system.

The Local Authority would like to 'consider' adopting a system similar to the concessionary travel 'Gold Card' schemes, for cyclists, where discount could be offered in stores. There are obviously, difficulties to overcome in proving that people have cycled, although this may be something worth considering in the long-term on the back of the BTCAAP, where a 'cycle hub' could be set up with purpose built cycle facilities.

-Cost effectiveness- *Relatively expensive particularly if considering a bus hub, but innovative. Could be funded through BTCAAP development*

-Air quality impacts- *Low air quality impact as a 'stand alone' action, although will be more affective as part of a package.*

-Non-air quality impacts- *Delivers climate change benefits. Improves social exclusion by providing better facilities for non-car users. Encourages health benefits.*

-Practicability & perception- *Very good perception provided it is funded and operated correctly and does not 'interfere' with car user facilities. Not immediately practicable, but possible in some form in the longer-term.*

8.30. Cycle Parking at leisure centres review (Sports Development)

The Local Authority will review cycle parking facilities at leisure centres. There are currently some limited cycle-parking facilities although these could be extended and upgraded.

-Cost effectiveness- *Inexpensive, could be funded through a grant or developer contributions.*

-Air quality impacts- *Low air quality impact as a 'stand alone' action, although it could be more affective as part of a package.*

-Non-air quality impacts- *Delivers climate change benefits. Improves social exclusion by providing better facilities for non-car users. Encourages health benefits.*

-Practicability & perception- *Very practicable, positive perception if good quality and secure.*

8.31. Review of Taxi licensing (ESBC Licensing Dept)

The new Licensing Policy now allows any engine-sized cars to be used as taxis, which encourages smaller more efficient vehicles.

Further reviews of the licensing policy will 'consider' a charging system that encourages operators/drivers to use more environmentally friendly vehicles i.e. a charging system similar to car road taxing could be used.

The policy review already includes a maximum age restriction albeit the current bar will be included in scheduled reviews of the policy, the 'ideal' being the newer Euro Classes of vehicle.

-Cost effectiveness- *Low cost to implement, potentially lower revenue generated through taxi licensing.*

-Air quality impacts- *Some benefit given the number of taxi journeys that operate within the AQMAs.*

-Non-air quality impacts- *Incentivises drivers to buy more efficient vehicles. Lowers greenhouse gas emissions by encouraging the use of smaller vehicles. Cost savings for drivers who operate more efficient vehicles. Improves environmental profile of Local Authority.*

-Practicability & perception- *Should be relatively practical to implement and seen positively by both the public and by taxi operators.*

8.32. Promotional campaigns (ESBC General)

The Local Authority already participates in various promotional campaigns, and although we will consider increasing the number that we participate in, it is more important that they fulfil the SMART criteria.

Currently there are numerous national campaigns such as “Green Transport Week, European Car Free Day & National Cycling Week”.

We will promote these campaigns still further within the Authority and throughout the wider community, linking them with health.

We would also like to promote other air quality issues that the public may find of interest such as “Ecodriving” and “Climate Change”.

We also intend to support some of the County Council schemes such as the “Walking to School” campaigns and as already mentioned, there is scope for partnership working within Staffordshire.

-Cost effectiveness- *Low cost, has potential to reach a wide cross-section of the public.*

-Air quality impacts- *Over time, this could have a significant positive impact.*

-Non-air quality impacts- *Helps provide information to the public. Some of the campaigns support healthier lifestyles. Many campaigns also support the reduction of greenhouse gas emissions. Encourages social interaction. Improves environmental profile of the Local Authority.*

-Practicability & perception- *Seen positively by all stakeholders and practical to implement.*

8.33. Modifying air quality monitoring network and community monitoring (ESBC Environment Services)

The Local Authority already has an automatic monitoring station and recently purchased a more compact second station with the aid of a Government grant. This will be located at a suitable location towards the centre of the larger AQMA.

We were however unsuccessful in a further bid for grant monies towards a targeted monitoring exercise at an additional location on the outskirts of the larger AQMA. Other funding streams are currently being prioritised in this regard.

In addition we have over 50 diffusion tubes located around the town, which monitor air quality. These locations are regularly reviewed as to whether they are 'fit for purpose' in light of report findings and traffic changes within the Borough.

The Local Authority will consider the feasibility of involving schools more in our monitoring network. Community monitoring' would involve the location of a monitoring tube (provided by the Authority) at the appropriate premises within the AQMAs, which are then sent in on a monthly basis in return for regular reports of the results. By doing this the community will hopefully feel more involved with air quality issues, which in turn will make them appreciate how their actions affect air quality and the environment in general.

-Cost effectiveness- *Low cost initiative.*

-Air quality impacts- *No reduction impact but will help extend the monitoring network.*

-Non-air quality impacts- *People participating in monitoring feel more 'involved' in air quality issues. Increased social interaction.*

-Practicability & perception*- Very easy and practical to implement, and will be seen positively by the community.*

8.34. Car Park Strategy (ESBC Engineers)

BTCAAP acknowledges the need to provide sufficient car parking provision for the maintenance of the town centre development, but whilst not deterring people from using sustainable modes of transport. There is also a desire to prevent congestion.

It is generally accepted that access to existing town centre car parking is the cause of localised traffic congestion and, the BTCAAP recognises this fact. Whilst the town's development will necessitate the need for some extra parking, is also important to site car parking in such a way as to prevent through traffic in Burton upon Trent by simplifying access. The car park strategy will mean the capacities for the town's car parks will change with the proposed intensification of some car parks being accommodated by multi storeys.

In summary, car parks will be located at the periphery of the retail centre of town, reducing congestion and freeing the way for sustainable transport modes.

-Cost effectiveness- *Strategy is relatively low cost, but car park development in the future will be high cost, although there is a need for this development despite air quality issues. This may mean very little extra cost due to air quality considerations. Some costs will be offset by car park charging.*

-Air quality impacts- *Could have quite a large impact either way, due to the effect of directing traffic through the network.*

-Non-air quality impacts- *Public would welcome improved parking facilities and less congestion. Public would also benefit from any investment in the town. Less congestion will mean less greenhouse gas emissions. Reduced congestion and better parking would encourage investment in Burton upon Trent. Encourages urban regeneration.*

-Practicability & perception- *Perception will be mixed. Traders will support this development; the public will see this measure more favourably if it helps the congestion issue in Burton upon Trent.*

8.35. Burton Park and Ride feasibility study (ESBC Engineers)

The likely implications of a park and ride scheme in Burton upon Trent shall be revisited.

Park and ride is not a planned development, but may constitute a long-term option.

-Cost effectiveness- *May be very expensive to implement, particularly for Burton where more than one park and ride car park will be required.*

-Air quality impacts- *Potential to have a large effect on air quality within the centre of Burton.*

-Non-air quality impacts- *May make Burton more attractive to visitors and improve accessibility to local people. Reduced congestion will also have a carbon reduction benefit plus a more effective use of road space.*

-Practicability & perception- *May not be that practical for a town like Burton upon Trent due to it's size and geographical layout of it's road network and the*

River Trent. Perception may be mixed, some stakeholders may feel that cost outweighs any benefits.

8.36. 3rd River Trent crossing feasibility study (ESBC Engineers)

A feasibility study will be undertaken as regards a third river crossing over the River Trent. This study is a longer–term goal and will include the potential air quality benefits.

-Cost effectiveness- *This is an expensive option, although it's implementation would not be solely based on air quality.*

-Air quality impacts- *May be significant if some of Burton upon Trent's through traffic is redirected.*

-Non-air quality impacts- *Reduced congestion will also have a carbon reduction benefit. Commuting times may improve. May attract investment into the area. Loss of open space. May increase demand for road space.*

-Practicability & perception- *Mixed perception, will be welcomed by some stakeholders, but not so welcomed by others i.e. people living close by.*

8.37. Supplementary Planning Guidance (ESBC Planning Policy)

There are currently several useful documents relating to planning and air quality considerations, these being;

- Planning Policy Statement 23 which sets the framework for considering environmental considerations through planning development, including air quality, which can be a material consideration.

- The London Councils have produced a useful document called “Air Quality & Planning Guidance”, written by The London Air Pollution Planning and the Local Environment (APPLE) working group.

- Environmental Protection UK (formerly National Society for Clean Air) also produces a document entitled “Development Control: Planning For Air Quality”, which could form the basis for any planning guidance.

The Local Authority is considering the preparation of a Supplementary Planning Document that will guide developers on the types of measures that

they will be required to contribute towards, either by means of a s.106 agreement or the proposed Community Infrastructure Law (CIL). With regard to air quality measures, these would include:

- providing information to developers and planners on when an Air Quality Assessment is required.

- formalise a communications link with the County Council in relation to monitoring/enforcing Travel Plans more effectively.

- a workable policy for planning decisions that adversely affects air quality

&

- responsible contractor requirements

The above documents will vary in complexity.

-Cost effectiveness- *Low cost, with the potential to be far reaching. Generation of funding for air quality through Section 106 Agreements.*

-Air quality impacts- *Could have a large impact over time through the control of development to minimise negative effects on air quality.*

-Non-air quality impacts- *Will create more pleasant environment for residents and workers in East Staffordshire. Encourages sustainable development with other soci-economic benefits. Potential positive effect on carbon emissions.*

-Practicability & perception- *Positive perception generally, may be seen in a negative light by developers.*

8.38. Review of Local Authority home working policy (ESBC General)

Increased support for staff wanting to work from home is already underway, but will be expanded upon.

-Cost effectiveness- Some initial setup and infrastructure costs, but then potential cost savings in terms of less demand on resources and accommodation.

-Air quality impacts- A small positive benefit on air quality.

-Non-air quality impacts- Greater flexibility for employees. Family friendly. Less demand on car parking facilities at the Local Authority. Less commuter miles also reduces greenhouse gases.

-Practicability & perception- Generally seen as a positive measure by employees, providing that it is an option and not a requirement. Potential savings for staff who save on travel expenses and also for the Local Authority in terms of building and car park capacity requirements.

8.39. National TravelWise Association (ESBC Environment Services)

The Authority will sign up to the National TravelWise Association to become a member.

Several other 1st and 2nd tier local authorities in the East Midlands are members.

The aim of the scheme is to raise awareness of environmental, health economic & social effects of car use, changing attitudes towards car use, promoting more sustainable modes of transport etc.

Being a member allows organisations to network with other members in order to benefit from each other's experience in areas such as travel plans, campaign work and associated initiatives.

-Cost effectiveness- *Low cost option, with potential efficiency savings.*

-Air quality impacts- *Some positive air quality benefit.*

-Non-air quality impacts- *Carbon reductions through vehicle fleet being operated in a more efficient manner. Improved environmental profile for Local Authority.*

-Practicability & perception- *A positive perception and practicable.*

8.40. Industrial regulation (ESBC Environment Services)

The Local Authority will continue to regulate industrial installations under the Environmental Permitting Regulations 2007, with additional consideration given to processes that can affect the AQMAs.

-Cost effectiveness- *Low cost option*

-Air quality impacts- *Only small affect on air quality.*

-Non-air quality impacts- *In some instances there may be opportunities to promote reduction of greenhouse gases. Encourages innovation. Potential to reduced energy requirements.*

-Practicability & perception- *There may be negative perception by operators in term of additional cost.*

9. Measures not included in the final AQAP

- **Low Emission Zones (LEZs)**- These tend to suit larger cities. Burton upon Trent has a limited road network with restricted capacity, and preventing certain vehicles based on emissions, could severely disrupt the road network and 'isolate' the thriving town centre. There would also be the danger of simply 'spreading' the problem and actually having no overall air quality improvement. There could also be the problem of social exclusion/prejudice, of people with older vehicles.

Whilst there could well be a very positive air quality benefit, the enforcement of any LEZs could be costly and prove to be difficult. There are some positive non-air quality benefits such as carbon emission reductions and the perception of an area can be improved, but these are outweighed by the other factors.

- **Congestion charging-** This particular measure has received a lot of publicity in London over the last few years and has arguably been effective.

Whilst several other cities are planning some form of congestion charging, this is not a viable option for a town the size of Burton upon Trent. As with LEZs, enforcement would prove very difficult, and the town's road network would not be suitable for congestion charging, with very few alternative routes. Charging would have a negative affect on the town's commerce, industry and residents, with shoppers travelling elsewhere and social exclusion for people with older vehicles.

A very good public transport system would be needed to support such a measure, in the town and more importantly, for the surrounding rural area where there is a reliance on the car to travel into town.

Finally, an additional 'tax' for car users would not be a popular measure, in the currently climate of increased fuels costs etc.

- **Vehicle emissions testing-** Has been trialled in East Staffordshire previously with the support of the Vehicle Inspectorate. The Local Authority has considered a repeat of this exercise in recent years although there are limitations on suitable locations to actually undertake the inspections, which also involve the support of the local Police.

In addition, the costs for these exercises can be high in some instances, involving a high amount of organisation and resources. Testing can also cause quite a high degree of highway disruption.

One of the most important factors however, is the negative perception of vehicle testing with the public, which can be the case with these 'enforcement' type options.

- **Light transit systems**- Again, these tend to be an option for larger cities with the introduction of trams, metros etc. Clearly, the infrastructure of Burton upon Trent is not suitable to support such a measure. There would simply not be the demand for a town the size of Burton.

- **Bus lanes**- Whilst common in larger towns and cities, there has to be sufficient road space to accommodate these extra lanes, which currently does not exist and would be difficult to introduce with many of the Burton upon Trent's roads having roadside terraced properties. Such a measure would also be very expensive.

10. Consultation

In addition to the early input from the steering group and other contributors in drawing up the proposed AQAP options, the first draft of this document will be circulated to those responsible for 'delivery'.

Once this exercise has been completed, a second draft of this document will be circulated to all stakeholders for comments. This formal consultation process will last eight-twelve weeks and involve:

-Statutory consultees- Secretary of State, the Environment Agency, the Highways Authority, all neighbouring local authorities & Staffordshire County Council.

-Councillers and other internal Departments at the Local Authority

-The general public, including members of the 'Citizens Panel' consultation group.

-Local businesses and schools

&

-Other interest groups within the local community.

This will allow all stakeholders to give their opinion on the proposed options and for this Local Authority to make any amendments in light of these comments, before adopting the final AQAP document.

11.0 Evaluation/appraisal of the Air Quality Action Plan

It is important to be able to both quantify progress against the AQAP measures and also to evaluate the effectiveness.

As Defra requires details on how the Local Authority intends to monitor and evaluate the effectiveness of the AQAP, it is important to have a series of performance indicators that are measurable and therefore able to demonstrate that chosen measures are being implemented and completed on time.

In most instances the performance indicators tend to be a combination of qualitative and quantitative measures.

It is recommended that the measures are monitored and reported annually through existing frameworks. It is envisaged that this will be undertaken, for the most part, through Service Plans for the appropriate Division/Department.

The qualitative indicators tend to be the completion of a document or policy etc, to demonstrate that progress is being made on measures within the AQAP. These are the indicators most likely to be included in the Service Plan in the case of this Local Authority or in the LTP, in the case of BUATMS measures.

The quantitative indicators will attempt to show either directly or indirectly (as a surrogate measure), the effectiveness of the measures or package of measures, in terms of NO_2 reduction and will be reported back to Defra annually.

In the case of the BUATMS measures, the indicators feed back from the LTP.

The main direct quantitative indicator will be linked to the Government's National Indicator 194, which requires the Local Authority to reduce NO_X and primary PM_{10} (particulate) emissions through a local authority's estate and operations against a baseline year of 2008.

This indicator relies on a spreadsheet of factors and inputs on various local authority actions to calculate NO_X (NO_2) emissions. This allows measures on certain aspects of the Local Authority's fleet etc., to be calculated to identify the reduction in NO_2 emissions.

Further information can be found on this indicator at www.Defra.gov.uk.

In addition, the Local Authority's monitoring programme will continue to monitor air quality within the AQMAs, which will demonstrate the overall effectiveness of both national measures and also most importantly this Authority's AQAP.

To determine the effectiveness of the AQAP at this stage is very difficult, due to factors already discussed in terms of quantifying air quality emissions, particularly with the 'soft' measures.

This Authority has identified a package of measures that it anticipates will enable most, if not all locations within to AQMAs to comply with the NO_2 Objective over time.

The AQAP does not simply include the minimum number of options to comply with the annual NO_2 Objective, we have tried to incorporate as many options as practicable.

As work towards the implementation of the AQAP increases, further work on air quality quantification will identify the effect of the actions, and the Plan modified accordingly.

Work is currently underway with Staffordshire County Council (as the Highway Authority) and other local authorities that have declared AQMAs within the Staffordshire Air Quality Forum, regarding the reporting of baselines.

The Highways Authority will soon be required to report progress (to Defra), on the LTP in relation to air quality. A universal and coordinated approach to this reporting will be devised, in which each local authority will feedback to the Highways Authority. This is likely to be based on a 'rolling' annual NO_2 average, (possibly over three years), to 'smooth out' short-term effects on air quality. This method is likely to be used for this Local Authority's future reporting functions.

Finally, the AQAP is not intended to be a ‘one off’ document and as such, will be reviewed on a regular basis to take account of the local air quality and also, any changes to local policies that may affect air quality, either directly or indirectly.

12.0 Future Actions

12.1 Integration with the LTP

Members of the Staffordshire Air Quality Forum have recently met with Staffordshire County Council regarding the integration of AQAP performance, with the requirement for the County to report back on the effectiveness of their LTP in terms of actions at improving air quality. As stated in Section 11.0, a reporting baseline is to be decided upon.

Future actions with regard to this AQAP could include integration with the LTP. Defra guidance (LAQM.PGA (05) 2005) provides guidance on the integration of AQAPs with the LTP, where local road transport is identified as a major source of local air pollution.

Although the decision comes down to the local authority, the Guidance states that there are a number of advantages with integrating the AQAP with the LTP, including:

- Increasing the profile of air quality in transport planning and helps takes a balanced overview in relation to other key priorities of the LTP, in addition to air quality, namely road safety, congestion and accessibility.

- Integration helps increase communication, both within the local authority and also with the Highways Authority.

&

- Can assist with funding in some instances.

Although the LTP five-year cycle is out of sync with the production of this AQAP, it is possible to integrate them both before the production of the new LTP.

12.2 Further Assessment revision and AQAP quantification

It is this Authority's intention to revisit the Further Assessment document once the large-scale road traffic modelling exercise for Burton upon Trent has been completed. This will hopefully enable a further breakdown of traffic composition effects on air quality. Although this will not radically change the proposed options, it may allow for further quantification of certain measures or packages of measures.

12.3 Funding air quality improvements

East Staffordshire Borough Council has already successfully applied for a Defra grant towards a new monitoring station at Derby Turn (soon to be installed).

It is hoped, in the future, that S106 agreements will help secure funding towards the Authority's monitoring commitments and also importantly, for supporting non-car facilities, such as a 'bike hub' etc.

13.0 Conclusion

Once the final consultation exercise has been completed the Council will have a completed AQAP, which it is hoped will go a long way to addressing the air quality Objective exeedence for annual NO_2 concentrations, (which the Further Assessment identified as predominantly a result of road traffic and congestion).

It is acknowledged that no one measure or package of measures is likely to have sufficient impact to provide significant NO_2 reductions, in order to meet the Objective at all locations within the AQMAs. The AQAP however, is comprised of a diverse list of measures, ranging from direct road traffic related actions through to 'softer' measures aimed at the overall reduction of NO_2 concentrations.

The success of proposed measures, (particularly the 'softer' measures), will rely heavily on the support of stakeholders and those who are directly responsible for their implementation.

It has not been possible to quantify the air quality improvement associated with each measure or package of measures, or accurately quantify costs to calculate the cost per 1ug/m^3 reduction in NO_2. The qualitative cost/benefit analysis has however allowed the cost effectiveness of the measures to be approximated and evaluated the ranking of the final measures included in the AQAP.

The proposals were prioritised predominantly on cost and air quality impact, although non-air quality impacts were also considered along with practicability and perception.

The AQAP measures originating from the BUATMS tend to be more 'focussed' on the AQMAs, whereas the Local Authority measures tend to be more 'general' measures that will affect a wider geographical area.

This AQAP will be a flexible document that will 'evolve' over time, in order to react to policy changes and the ongoing 'air quality' within the AQMAs and any other geographical areas that influence the AQMAs.

The progress towards the AQAP will be reported annually to Defra and the various measures will be included in the various Service Plans for those local authority Departments directly responsible for their implementation.

Owing to the difficult nature of measuring the direct effect of the AQAP measures, particularly the 'softer' measures, a series of 'surrogate' performance indicators have been chosen to measure the effectiveness of the AQAP.

The Local Authority's monitoring network will also continue to monitor the air quality within the AQMAs to identify whether NO_2 concentrations are reducing within these target areas.

References

Defra. 2001. Guidance to local authorities in the further ("stage 4") assessments of air quality required under section 84 of the Environment Act 1995.

Defra. 2003. Policy Guidance (LAQM.PG(03)) Local Air Quality Management.

Defra. 2003. Technical Guidance Note (LAQM.TG(03)) Local Air Quality Management.

Defra. 2003. Technical Guidance Note (LAQM.TG(03) Update – January 2006) Local Air Quality Management.

Defra. 2005. Part IV of the Environment Act 1995. Local Air Quality Management Policy Guidance Addendum LAQM.PGA (05).

Defra. 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Volume 1.

Defra. 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Volume 2 Evidence Base.

Hyder Consulting 2008. East Staffordshire Borough Council Air Quality Further Assessment.

NSCA. 2001. 'Air Quality Action Plans:Interim Guidance for Local Authorities.

NSCA. 2001. Guidance on the Development of Air Quality Action Plans and Local Air Quality Strategies.

Appendices

Appendix 1

AIR QUALITY OBJECTIVES AND EUROPEAN DIRECTIVE TARGET VALUES FOR PROTECTION OF HUMAN HEALTH

Pollutant	Applies	**Concentration Objective ($\mu g/m^3$)**	**Date to be achieved by and maintained thereafter**	**EU Obligations**	**Date to be achieved by and maintained thereafter**	**New or Existing**
Particles (PM_{10})	UK	50 $\mu g/m^3$ not to be exceeded more than 35 times a year (24-hour mean)	31 December 2004	50 $\mu g/m^3$ not to be exceeded more than 35 times a year (24-hour mean)	1 January 2005	Retain Existing
	UK	40 $\mu g/m^3$ (annual mean)	31 December 2004	40 $\mu g/m^3$ (annual mean)	1 January 2005	
	Indicative 2010 Objectives for PM_{10} (from 2000 Strategy and 2003 Addendum) have been replaced by an exposure reduction approach for $PM_{2.5}$ (except in Scotland – see below)					
	Scotland	50 $\mu g/m^3$ not to be exceeded more than 7 times a year (24-hour mean)	31 December 2010			Retain Existing
	Scotland	18 $\mu g/m^3$ (annual mean)	31 December 2010			
Particles ($PM_{2.5}$)	UK (except Scotland)	25 $\mu g/m^3$ (annual mean)	2020	Target value 25 $\mu g/m^3$	2010	New (European obligations still under negotiations)
	Scotland	12 $\mu g/m^3$ (annual mean)	2020	Limit value 25 $\mu g/m^3$	2015	
	UK urban areas	Target of 15% reduction in concentrations at urban background	Between 2010 and 2020	Target of 20% reduction in concentrations at urban background	Between 2010 and 2020	

Nitrogen dioxide (NO_2)	**UK**	**200 μg/m^3 not to be exceeded more than 18 times a year (1-hour mean)**	**31 December 2005**	**200 μg/m^3 not to be exceeded more than 18 times a year**	**1 January 2010**	**Retain Existing**
	UK	**40 μg/m^3 (annual mean)**	**31 December 2005**	**40 μg/m^3**	**1 January 2010**	
Ozone	UK	100 μg/m^3 not to be exceeded more than 10 times a year (8-hour mean)	31 December 2005	Target of 120 μg/m^3 not to be exceeded more than 25 times a year averaged over 3 years	31 December 2010	Retain Existing
Sulphur dioxide (SO_2)	UK	266 μg/m^3 not to be exceeded more than 35 times a year (15-minute mean)	31 December 2005			Retain Existing
	UK	350 μg/m^3 not to be exceeded more than 24 times a year (1-hour mean)	31 December 2004	350 μg/m^3 not to be exceeded more than 24 times a year	1 January 2005	
	UK	125 not to be exceeded more than 3 times a year (24-hour mean)	31 December 2004	125 not to be exceeded more than 3 times a year	1 January 2005	
Polycyclic aromatic hydrocarbons	UK	0.25 ng.m^3 B(a)P (annual average)	31 December 2010	Target of 1 ng.m^3	31 December 2012	Retain Existing
Benzene	UK	16.25 μg/m^3 (running annual mean)	31 December 2003			Retain Existing
	England and Wales	5 μg/m^3 (annual average)	31 December 2010	5 μg/m^3	1 January 2010	
	Scotland, Northern Ireland	3.25 μg/m^3 (running annual mean)	31 December 2010			
1,3-Butadiene	UK	2.25 μg/m^3 (running annual mean)	31 December 2003			Retain Existing
Carbon monoxide (CO)	UK	10 mg/ m^3 (maximum daily running 8-hour mean/in Scotland as running 8-hour mean	31 December 2003	10 mg/ m^3	1 January 2005	Retain Existing
Lead (Pb)	UK	0.5 μg/m^3 (annual mean)	31 December 2004	0.5 μg/m^3	1 January 2005	Retain Existing
		0.25 μg/m^3 (annual mean)	31 December 2008			

Appendix 2. NOx concentration at receptors from industry and roads

Receptor	NOx industrial sources (µg/m3)	NOx road sources (µg/m_3)	NOx total (µg/m3)	Percentage road contributions	Percentage industrial contribution
R1	0.2	21.2	21.3	99.2	0.8
R2	0.2	9.7	9.9	97.8	2.2
R3	0.3	22.3	22.6	98.7	1.3
R4	0.3	19.3	19.7	98.4	1.6
R5	0.2	35.6	35.8	99.4	0.6
R6	0.3	23.8	24.1	98.8	1.2
R7	0.2	17.8	18.0	98.8	1.2
R8	0.1	24.2	24.4	99.4	0.6
R9	0.1	11.4	11.5	99.3	0.7
R10	0.1	22.3	22.4	99.4	0.6
R11	0.1	12.1	12.2	98.9	1.1
R12	0.5	21.6	22.1	97.6	2.4
R13	0.5	28.7	29.2	98.1	1.9
R14	0.7	11.9	12.6	94.5	5.5
R15	0.6	17.2	17.8	96.8	3.2
R16	0.7	16.5	17.2	95.8	4.2

Reproduced from Hyder Consulting Further Assessment

Appendix 3 % NOx emissions for HGVs & non-HGVs

Road	% Non-HGVs	% HGVs
A38	60	40
Bridge St	30	70
Borough Rd (nr Town Hall)	32	68
Borough Rd (nr Railway Station)	21	79
Byrkley St	32	68
Curzon St	45	55
Derby Rd (north)	62	38
Derby Rd (south)	47	53
Derby St (leading to Derby Turn)	54	46
Derby St (nr Byrkley St/Borough Rd link)	57	43
Guild St	25	75
Hawkins Rd	35	65
High St	9	91
Horninglow Rd	48	52
Horninglow St	50	50
Horninglow St (nr Magistrates Court)	41	59
Princess Way	18	82
Stapenhill Rd	41	59
Stanton Rd	48	52
Shobnall Rd	33	67
St Peters Bridge	34	66
St Peters St	33	67
Station St	21	79
Trent Bridge	50	50
Waterloo St	33	67
Waterloo St (nr Town Hall)	57	43
Wellington Rd	63	37
Wellington St	53	47
Wetmore Rd (nr gyratory)	33	67

Appendix 4. Annual average NO_2 concentration at sensitive receptors 2005 and 2010.

Receptor	2005 Annual average NO_2 concentration ($\mu g/m_3$)	Reduction in NO_2 concentration needed to achieve Objective ($\mu g/m_3$)	2010 annual average NO_2 concentration ($\mu g/m_3$)	Reduction in NO_2 concentration required to achieve Objective ($\mu g/m_3$)
Objective	**40**		**40**	
Derby Rd	47.1	-7.1	39.1	-
Hawkins Ln	30.3	-	26.1	-
Derby Turn (1)	37.8	-	32.0	-
Derby Turn (2)	45.6	-5.6	38.1	-
Horninglow Rd	43.5	-3.5	36.4	-
Horninglow St/Hawkins Ln	46.9	-6.9	39.1	-
Horninglow St/Guild St	42.1	-2.1	35.4	-
Horninglow St/High St	47.1	-7.1	39.2	-
Trent Bridge (Stapenhill)	35.9	-	30.6	-
St Peters Island	43.9	-3.9	36.7	-
Stanton Rd	36.5	-	31.0	-
Derby St/Byrkely St	54.0	-14.0	44.6	-4.6
Wellington St/Waterloo St	61.9	-21.9	51.2	-11.2
Borough Rd/Derby St	42.9	-2.9	36.0	-
Wellington St	49.1	-9.1	40.9	-0.9
Shobnall Rd/Wellington St	48.4	-8.4	40.4	-0.4

Reproduced from Further Assessment produced by Hyder Consulting

Appendix 5 Diffusion tube data

Tube No	Location address	2007 Annual Mean Bias Corrected (ug/m^3)	2006 Annual Mean Bias Corrected (ug/m3)	2005 Annual Mean Bias Corrected (ug/m3)	2004 Annual Mean Bias Corrected (ug/m3)	2003 Annual Mean Bias Corrected (ug/m3)
1	Trent Bridge (Rs)	40.7	43.0	39.5	44.3	49.2
2	Trent Bridge (Rs)	39.3	45.1	44.5	46.4	51.6
3	St Peters Bridge (Rs)	47.5	49.6	46.1	51.1	56.7
4	St Peters Bridge (Rs)	44.7	51.9	51.2	53.4	59.3
5	Shobnall Playing Fields (B)	25.8	30.9	28.5	31.9	35.4
6	Shobnall Playing Fields (B)	25.7	31.5	26.8	32.4	36.0
7	Horninglow Croft (Rs)	35.2	39.0	35.0	40.2	44.6
8	Monitoring Station St Peters Bridge (Rs)	35.0	35.6	37.2	36.7	40.7
9	Monitoring Station St Peters Bridge (Rs)	33.3	36.4	32.3	37.5	41.6
10	Monitoring Station St Peters Bridge (Rs)	33.2	36.2	31.3	37.3	41.4
11	Wellington St (Rs)	45.9	52.2	46.9	53.7	59.6
12	Wellington St (Rs)	51.1	53.1	48.1	54.7	60.7
13	Horninglow St (Rs)	42.5	47.7	43.8	49.1	54.6
14	Derby Turn (Rs)	48.3	54.6	48.9	56.2	62.4
15	Derby Turn (Ks)	50.2	61.3	49.3	63.2	70.1
16	Horninglow School (Rs)	39.8	46.0	41.1	47.4	52.6
17	Winshill School (Urban Background) (B)	Discontinued	23.1	23.4	23.8	26.4
18	Stretton School (Urban Background) (B)	23.4	23.9	24.1	24.6	27.3
19	A38 Lichfield Rd Slip Rd (Rs)	39.8	44.3	34.8	45.6	50.6
20	A38 Lichfield Rd Slip Rd (Rs)	39.4	49.0	35.7	50.4	56.0
21	Horninglow Rd- approaching Arthur St (Rs)	42.2	46.3	42.6	n/a	n/a
22	Horninlow Rd - approaching Parker St (Rs)	40.1	45.2	36.4	n/a	n/a
23	Derby St - approaching Derby Turn (Ks)	53.2	65.0	59.6	n/a	n/a
24	Horninglow Rd Nrth- Castle Court (Rs)	33.3	36.4	34.0	n/a	n/a
25	Derby St- opp junction Byrkley St (Rs)	48.9	52.7	46.3	n/a	n/a
26	A444- nr Wood Lane (Ks)	53.2	57.7	49.4	n/a	n/a
27	Princess Way Roundabout (Rs)	35.2	40.6	n/a	n/a	n/a
28	Derby Rd – approaching Princess Way roundabout (Rs)	41.4	43.3	n/a	n/a	n/a

29	Derby Rd/Eton Rd junction (Rs)	41.3	45.1	n/a	n/a	n/a
30	Sydney Street – nr junction Derby Rd (Rs)	32.5	37.7	n/a	n/a	n/a
31	Derby Rd – approaching Derby Turn (Rs)	43.4	45.3	n/a	n/a	n/a
32	Derby St – approaching Derby Turn (Rs)	46.2	48.5	n/a	n/a	n/a
33	Derby St – approaching Albert St (Ks)	49.2	57.5	n/a	n/a	n/a
34	Derby St - Maltings Court (Rs)	43.6	46.6	n/a	n/a	n/a
35	Albert St – nr junction Derby St (Rs)	29.3	35.5	n/a	n/a	n/a
36	Derby St – nr Derby St East junction (Rs)	39.8	45.6	n/a	n/a	n/a
37	Byrkley St – opp. Princess St (Rs)	39.2	55.1	n/a	n/a	n/a
38	Waterloo St – (Ks)	43.8	51.6	n/a	n/a	n/a
39	Derby St – approaching Borough Rd (Rs)	53.2	58.1	n/a	n/a	n/a
40	Wellington St – Crossing (Ks)	60.0	59.9	n/a	n/a	n/a
41	Curzon St – nr junction Wellington St (Rs)	35.2	39.7	n/a	n/a	n/a
42	Wellington St – Imex Business Park (Rs)	39.4	48.0	n/a	n/a	n/a
43	Wellington St – approaching roundabout (Rs)	44.4	44.5	n/a	n/a	n/a
44	Wellington St / Shobnall Rd roundabout (Rs)	43.6	52.3	n/a	n/a	n/a
45	Dover Rd – nr junction Horninglow Rd (Rs)	30.8	34.1	n/a	n/a	n/a
46	Rolleston Rd – nr junc Horninglow Rd (Rs)	39.2	41.6	n/a	n/a	n/a
47	Harper Avenue – Becketts Court (Rs)	32.8	35.1	n/a	n/a	n/a
48	Balfour St – nr junction Horninglow Rd (Rs)	26.0	30.2	n/a	n/a	n/a
49	Shakespeare Rd – nr junc Horninglow Rd (Rs)	36.9	38.5	n/a	n/a	n/a
50	Goodman St – nr junct Horninglow Rd (Rs)	30.2	35.7	n/a	n/a	n/a
51	Dallow St – nr junction Horninglow Rd (Rs)	31.1	35.0	n/a	n/a	n/a
52	Horninglow St – Bridge (Rs)	40.0	45.2	n/a	n/a	n/a
53	Horninglow St – approaching one way system (Rs)	44.1	50.3	n/a	n/a	n/a
54	Horninglow St / High St corner (Rs)	48.3	55.5	n/a	n/a	n/a
55	Bridge St - nr Trent Bridge (Rs)	41.8	45.7	n/a	n/a	n/a
56	High St - junction Station St (Ks)	48.7	n/a	n/a	n/a	n/a
57	High St - approaching new St junction (Ks)	45.6	n/a	n/a	n/a	n/a

Key- B (Background), Ks (kerbside), Rs (Roadside)

Appendix 6. AQAP Consultees

East Staffordshire Borough Council

- Engineer's Department
- Planning Policy Department
- Pollution Team
- Waste Management Department

Staffordshire County Council

- Passenger Transport
- Road & Sustainable Travel
- Transport Policy
- Transport Strategy

Highways Agency

- Traffic Operations