South Tyneside Council

AIR QUALITY ACTION PLAN

FINAL DOCUMENT

September 2010

Prepared by
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Economic Regeneration

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EXECUTIVE SUMMARY

This report sets out the **Air Quality Action Plan** for South Tyneside. It describes the processes that are in place and sets out the measures currently being considered to improve air quality within South Tyneside as a whole, and specifically those areas declared as **Air Quality Management Areas (AQMA)**.

This plan forms part of the **Local Air Quality Management (LAQM)** process and is required following the observed exceedances of the annual mean air quality objectives for **Nitrogen Dioxide** in two areas of the Borough (Boldon Lane / Stanhope Road and the A19 / Leam Lane).

The main aim of the Air Quality Action Plan is to propose and deliver viable measures that will work towards achieving the desired reductions in Nitrogen Dioxide to meet the prescribed air quality objectives *(Appendix 1)*.

Pollutant emissions within South Tyneside are largely linked to road transport and in line with government guidance, the Council will seek to incorporate its final Air Quality Action Plan into the next revision of the Tyne and Wear Local Transport Plan (LTP3). South Tyneside Council is also working closely with other Tyne and Wear Authorities on implementing the Tyne and Wear Local Air Quality Strategy, Local Transport Plan and its associated Air Quality Delivery Plan.

It is likely that the Action Plan will not succeed through interventions initiated by South Tyneside Council alone; for success to be realised and air quality objectives to be achieved partner organisations, residents, local businesses and voluntary organisations need to be aware of issues regarding air quality and need to commit to the measures detailed in the action plan. Where appropriate these other persons and organisations have been involved in the development of the Action Plan as part of the consultation process. Following completion of the consultation process the plan will be revised to incorporate responses, where appropriate.

Once the Action Plan is implemented an annual Action Plan Progress Report will be completed which will advise on the achievement of objectives. The final Air

Quality Action Plan will be a working document, which will be updated annually through the Progress Report.

This document should be read in conjunction with the following published documents:

- South Tyneside Council, Local Air Quality Strategy (2008-2011)
- Tyne and Wear Local Air Quality Strategy
- Second Local Transport Plan for Tyne and Wear (LTP2)
- LTP2 Air Quality Delivery Plan

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1.0 INTRODUCTION AND AIMS

1.1 Location

The Borough of South Tyneside (Figure 1.1.a) is located on the south bank of the River Tyne, extending from the river mouth at South Shields, west to Gateshead, and is bounded to the south by the City of Sunderland and to the east by the North Sea. The Borough incorporates town centres of South Shields, Jarrow and Hebburn and villages of Boldon, Cleadon, and Whitburn.

Covering an area of 64 square kilometres, South Tyneside has a population of approximately 152,500 *(as of mid 2001)* making it one of the smallest metropolitan districts in England. Given its locality, the coast and other authorities can impact upon local air quality. Topographically, much of the Borough is flat with the exception of the Cleadon hills. The dominant wind direction is from the west-southwest (Gateshead).

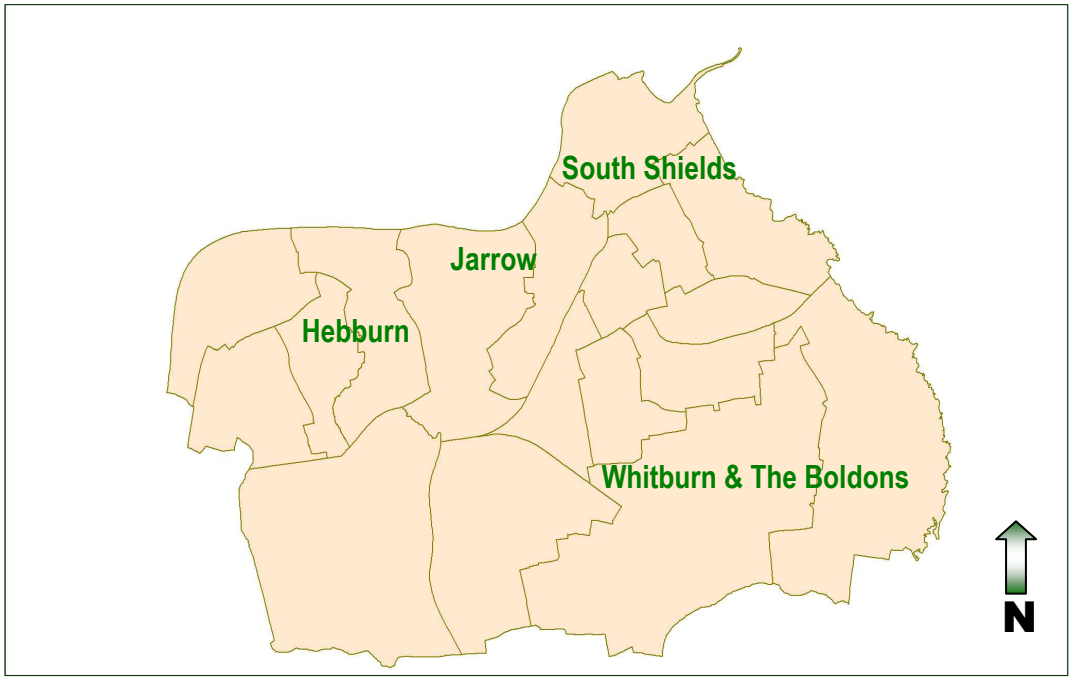


Figure 1.1.a. Map of South Tyneside

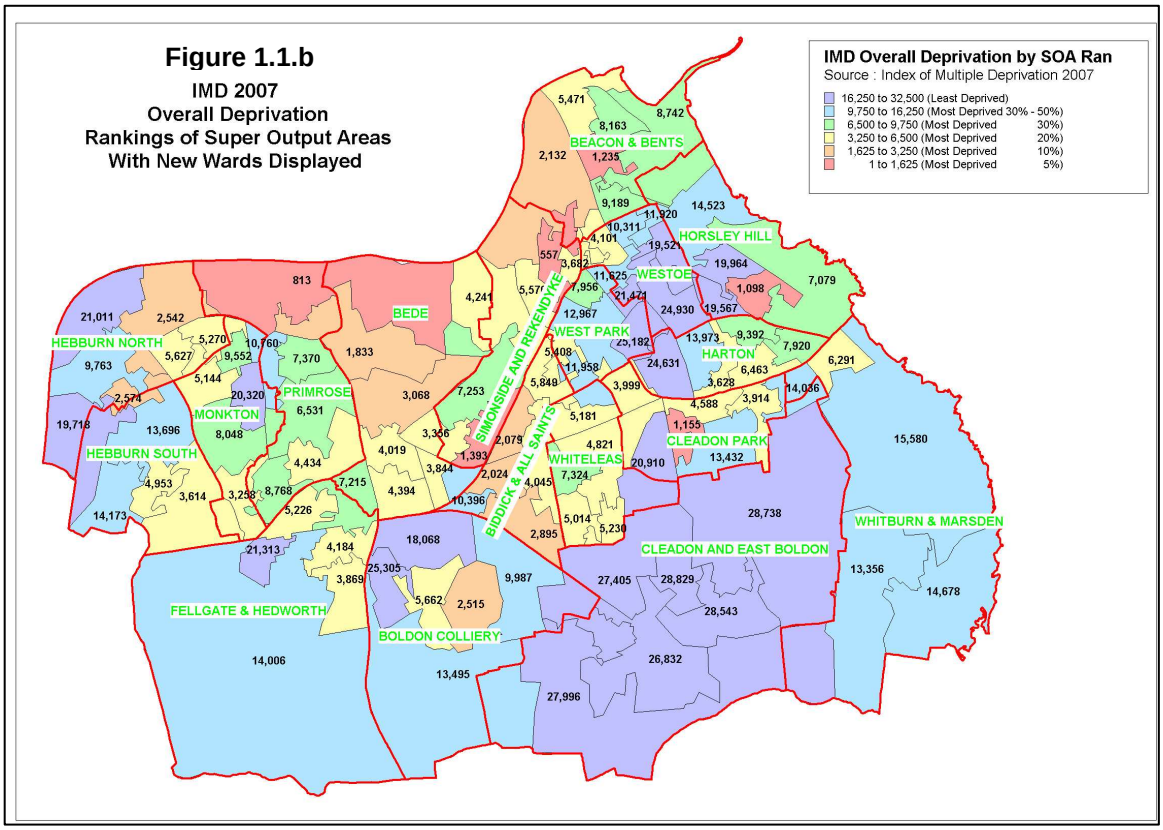
1.2 Background Information on South Tyneside

South Tyneside is part of the Tyne and Wear city region, with a stunning coastline on one side and a strong connection to the river Tyne on another. Running north-

south across South Tyneside, the A19 is the Borough's main economic artery. South Tyneside is home to one World Heritage Site – Arbeia, and another has been selected as the UK's nomination in 2010 – Wearmouth-Jarrow, a 7th Century European centre of learning and culture. The recent history of South Tyneside is characterised by heavy industries such as shipbuilding, coal mining and engineering. Following the demise of heavy industry the local economy suffered severe social and economic consequences in the 1970's and 1980's, the results of which are still apparent today.

Deprivation is an extensive problem in South Tyneside; Figure 1.1.b *(below)* identifies the Index of Multiple Deprivation (IMD) 2007, 20% of South Tyneside's Super Output Areas (SOA's) are amongst the most deprived 10% in the country, and 47% (48 SOA's) are among the most deprived 20%. However a further 20% are among the least deprived.

In 2002 South Tyneside was ranked the 15th most deprived council in the country, this improved to 28th in 2004 and are currently ranked 37th (out of 354).



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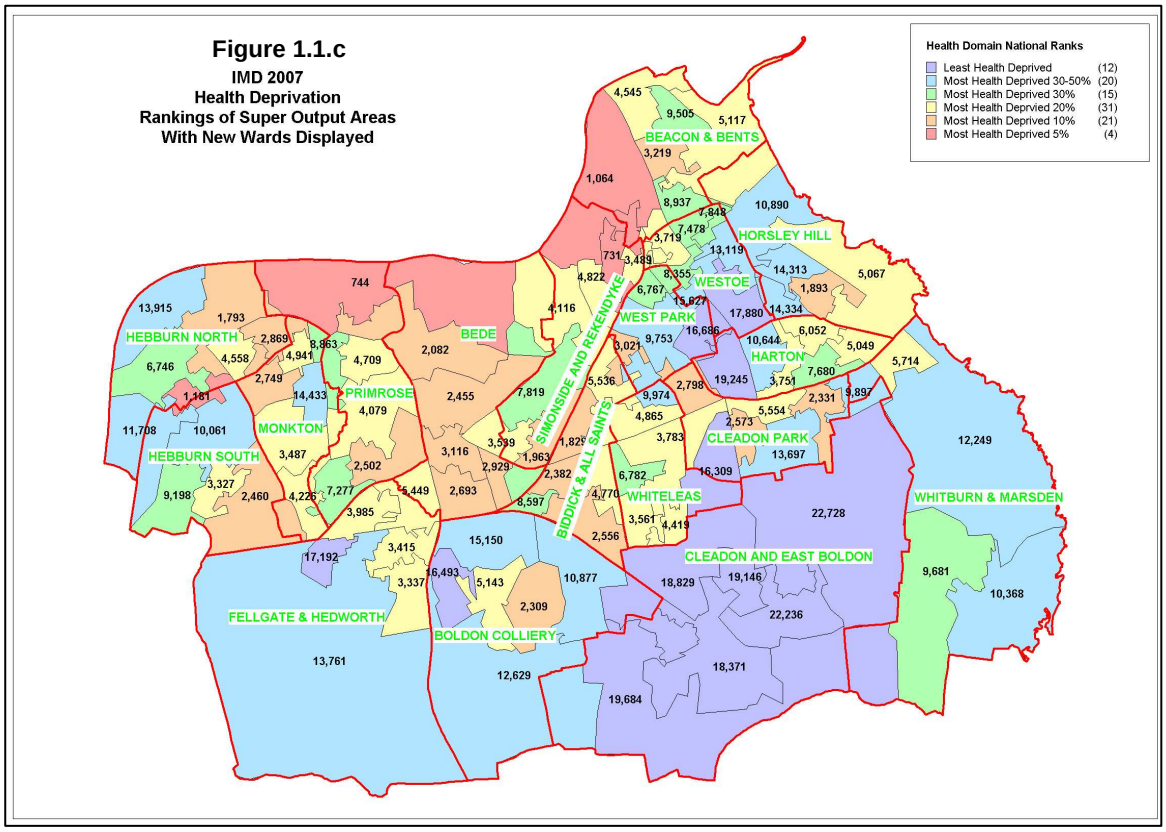
Strong links exist between levels of deprivation and health; Figure 1.1.c, below, shows the IMD 2007 Health Deprivation Rankings for South Tyneside. This identifies areas with relatively high rates of people who die prematurely or whose quality of life is impaired by poor health or who are disabled, across the whole population.

Health problems have always been a serious concern in South Tyneside and in 2004 this was reflected in the fact that a third (34) of the Borough's neighbourhood's were in the worst 10% nationally. This has improved greatly between 2004 and 2007 - now only 25 SOAs are in the most health deprived 10%, a drop of 10. The areas with the most health problems are concentrated in Jarrow and along the Riverside.

Health is still a major issue as over half of South Shields is in the worst 20% in the country (56 SOAs). In particular, the area around the Town Centre, Riverside and Commercial Road Area has dropped into the most deprived 5%. Health is also the only domain where South Tyneside does not have any areas in the top 30% in the country.

Although South Tyneside's Community Strategy notes the "difference in life expectancy between areas of South Tyneside and with other regions has reduced", there is still much to do to realize our vision for "Healthy Living & Care".

It is important to note that this domain measures morbidity, disability and premature mortality but not aspects of behaviour or environment that may be predictive of forthcoming health deprivation. It is however, important to acknowledge the general state of health in our communities; air quality plays a part in the general health of the Borough.



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It has long been known that poor air quality can results in health concerns, 'Air pollution is currently estimated to reduce the life expectancy of every person in the UK by an average of 7 – 8 months, with equivalent health costs estimated to be up to £20 billion a year'[1]. Air quality within South Tyneside is generally regarded as being good; however there are still significant benefits to be gained from improving air quality.

To date, around 200 local authorities in the UK have designated air quality management areas; most of these are due to concentrations of nitrogen dioxide (NO_2) and particulate matter (PM_{10}). NO_2 concentrations closely follow vehicle emissions in many situations therefore NO_2 levels are a reasonable marker of exposure to traffic related emissions. Health effects of NO_2 in ambient air are therefore difficult to disassociate from other primary and secondary combustion related products with which it is typically correlated. Those areas designated as AQMAs within South Tyneside are due to an observed exceedance of the annual mean for the NO_2 objective, this will be discussed further in later sections.

[1] DEFRA 2007. (www.defra.gov.uk/environment/airquality/strategy/index.htm)

Notwithstanding the above, in 1996 The Expert Panel on Air Quality Standards (EPAQS), an independent panel of experts providing advice to the government on the health effects of air pollution, identified:

'People with healthy lungs, whether at rest or exercising, show little response to experimental inhalation of nitrogen dioxide at concentrations well above those occurring in ambient air, even during extreme pollution episodes… Measurements of the responsiveness of the lung to inhalation of irritant chemicals have shown that the airways of some people with asthma may become more sensitive to such stimuli after exposure to nitrogen dioxide at concentrations down to about 200ppb'. [2]

This action plan aims to reduce exposure to ambient nitrogen dioxide. Exposure to nitrogen dioxide in the indoor environment is often an important contributor to the overall exposure of individuals, for example as a result of emissions from domestic gas appliances; advice on controlling exposure to NO_2 indoors is beyond the scope of this action plan.

1.3 Need for the Action Plan

Part IV of the Environment Act (1995) places a statutory duty on Local Authorities to periodically review and assess air quality within their area against a set of National Air Quality Objectives. Where an exceedance of the objective value is observed, or is not likely to be achieved by the relevant due date, an Air Quality Management Area (AQMA) must be declared.

South Tyneside Council has declared two AQMA's, one at the Leam Lane / Lindisfarne Roundabout, Jarrow (A19 / A194 junction) the other at Boldon Lane / Stanhope Road, South Shields. The AQMA's were declared in March 2006 as an exceedance of the annual mean objective value for Nitrogen Dioxide (NO_2) was observed at both locations. Dispersion modelling conducted at the time indicates that major contribution to the observed levels in these areas was made by road traffic.

[2] Expert Panel on Air Quality Standards (1996)

Following the declaration of an AQMA, the authority must carry out a further assessment of existing and likely future air quality. The Authority must then develop an Air Quality Action Plan (AQAP), which sets out the local actions that can be taken to make improvements towards the air quality objectives setting out the most cost effective measures to improve air quality within each area.

An action plan is an important and significant aspect of the Local Air Quality Management process; the AQAP is expected to include the following:

- Quantification of the source contributions to the predicted exceedences of the objectives, to allow the action plan measures 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 also work in conjunction with other organisations in pursuit of the air quality objectives;

- Clear timescales in which the local authority and other organisations and agencies propose to implement measures within the action plan;

- Quantification of the expected impacts of the proposed measures and, where appropriate, an indication as to whether the measures will be sufficient to meet the air quality objectives; and

- How the local authority intends to monitor and evaluate the effectiveness of the action plan.

DEFRA Policy Guidance: Addendum LAQM PGA(05) sets out the requirements for the integration of AQAPs into Local Transport Plans (LTPs) following the Local Government White Paper, ‘Strong Local Leadership – Quality Public Services’ in 2001. PGA(05) identifies that the Action Plan should include the following:

- Background regarding the air quality situation in the AQMA, building on the air quality review and assessment work.

- A consideration of all available measures to improve air quality with regard to their cost-effectiveness and feasibility.

- A consideration of the wider environmental, social and economic impacts of the proposed measures.

- A summary of all the chosen measures that will be implemented, setting out:

    - The main impact assessments;
    - Wider environmental, economic and social consequences of each option;
    - Target dates for implementation of the measures;
    - Responsibility of implementing the action;
    - Indication of funding for the measures; and
    - How the authority will monitor progress

- Set out where possible a 2004 baseline and a 2010 target relating to pollutant concentrations.

- Details of how consultation has fed into the development of the Action Plan

1.4 Action Plan Aims and Objectives

This Air Quality Action Plan will provide the methods by which the national air quality objectives will be achieved within South Tyneside. The plan aims to bring together relevant Council Plans and Policies and those of external agencies and partners in working towards the achievement of national air quality objectives. There are also a number of programmes already underway within South Tyneside and Tyne and Wear that will have positive benefits on local air quality, these are considered in following sections.

The aim of the action plan is to minimise harm to human health and the environment from local air pollution, specifically for those pollutants where an exceedance of the air quality objective has been observed. Measures contained within the plan will not necessarily be focused on the AQMAs directly and may

contain interventions, which will achieve air quality improvements across South Tyneside and Tyne and Wear.

1.5 Legislation, Policies and Strategies relevant to Air Quality

1.5.a European Situation

European Union **Air Quality Framework Directive (96/62/EC)** on ambient air quality management and assessment defines the policy framework for pollutants that may impact on human health and the environment. The limit values for specific pollutants are set out through a series of Daughter Directives, which prescribe limit values that all member states must meet.

In May 2001 the European Commission formally adopted the **Clean Air for Europe Programme, CAFÉ**, which effectively formed a European Air Quality Strategy and co-ordination of European Air Quality policies.

The latest European Air Quality Directive (**Directive 2008/50/EC**) came in to force in June 2008, and will be transposed in to UK national legislation. The Directive simplifies existing EU legislation by consolidating into a single directive the Framework Directive and the first three Daughter Directives (Council Directives 1996/62/EC, 1999/30/EC, 200/69/EC, and 2002/3/EC) along with the Council decision on exchange of information (Council Directive 97/101/EC).

The Sixth Environment Action Programme (6^{th} EAP) introduced a Thematic Strategy on Air Pollution in September 2005. It seeks to establish staged health and environmental objectives and emission reduction targets. The focus is to protect EU citizens from exposure to ambient particulate matter, ozone and to improve the protection of ecosystems from acid rain, excess nutrient nitrogen, and ozone.

1.5.b National Situation

The Department for Environment, Food and Rural Affairs (DEFRA) is the lead government department with overall policy responsibility for Air Quality.

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) sets out the Governments long term vision for improving air quality within the UK and suggests options to reduce risks to human health and the environment from air pollution. The latest version of the Air Quality Strategy has committed the UK to consider:

- Incentivising early uptake of European Emission Standards **(Euro-Standards)**, the acceptable limits for exhaust emissions of new vehicles sold in EU member states, where a higher standard number equals tighter vehicle emissions. UK Budget and Pre-Budget Report 2007 included announcements that Government would consider the case for incentivising Euro 5 and subsequently Euro 6 vehicles through company car tax and other instruments;

- Increased uptake of low emission vehicles: this would be aimed at encouraging motorists to consider purchasing vehicles which emit low quantities of NO_x, PM_{10} and CO_2; and

- Reducing emissions of oxides of nitrogen (NO_x) and sulphur dioxide (SO_2) from shipping around the UK through potential scenarios under consideration by the International Maritime Organisation, such as sulphur content of marine fuel and emissions of NO_x from ships' engines.

Policies to improve air quality cannot be considered in isolation from those designed to tackle climate change, improvements in air quality can often have an added benefit of reduced carbon emissions and vice-versa. The government sets out its position on climate change in the document **Climate Change: The UK Programme 2006**, calling for national and international action on what it terms as the greatest long-term challenge facing the world today.

The UK Government's **Future of Transport White Paper (2005)** recognises the need to plan for long-term transport developments, which respect and protect the environment. This will involve sustained investment, improvements in transport management, and planning ahead to ensure that transport decisions are taken

alongside decisions on liveability, sustainable communities and other policy areas. The **Local Transport Plan** translates this at a regional and local level.

South Tyneside Council has statutory responsibilities for local air quality enforcement under the following Acts:

The **Environment Act 1995** formally requires all Local Authorities to review and assess current and likely future air quality within their administrative areas against prescribed objectives. Where prescribed limits are unlikely to be met by the specified date, Air Quality Management Areas (AQMAs) must be declared and Action Plans implemented to work towards the Air Quality objectives. This process is termed **Local Air Quality Management (LAQM)** in the UK.

The **Air Quality Regulations (England) (Wales) 2000** and the **Air Quality Amendment Regulations (2002)** provide the basis for the Local Air Quality Management regime; these translate objective values from European Directives in to law.

The **Environmental Protection Act 1990** introduced an integrated approach to pollution control in the UK. The Act allows for Local Authorities to deal with certain domestic and industrial emissions that, by legal definition, are prejudicial to health or a nuisance.

The Clean Air Act 1993 gives powers to Local Authorities to address smoke emissions from domestic solid fuel burning and dark smoke from industrial premises.

Environmental Permitting (England and Wales) Regulations 2007 have created one single regulatory regime streamlining Waste Management Licensing (WML) and Pollution Prevention and Control (PPC). The standards that a WML holder or a PPC permit is required to meet have not changed dramatically. The Environment Agency regulates the most polluting activities and Local Authorities regulate lesser polluting industries (Where LA-IPPC or Part A2 processes cover multi-media emissions, to air, water and land and LA-PPC or Part B processes are concerned with emissions to air only).

1.5.c Local Situation

This Air Quality Action Plan has full regard of the **South Tyneside Council Local Air Quality Strategy** 2008 - 2011, which considers legislation, strategies and policies relevant to local air quality.

The Local Government Act 2000 came into force on 1 February 2005 negating the need for those local authorities rated as excellent from having to produce certain plans and strategies, including air quality action plans, from the date the order came into force. In 2004 South Tyneside Council was awarded excellent status, this improved to 'Excellent 3 Star Improving Well' in 2005, 'Excellent 4 Stars Improving Strongly' in 2006 and was awarded 'Excellent 4 Star Improving Well' in 2007. Due to the fact that South Tyneside Council has been awarded excellent status, there was no formal requirement to produce an Air Quality Action Plan. South Tyneside Council is however of the opinion that the production of a specific Air Quality Action Plan for its AQMAs will allow a co-ordinated response to moving towards meeting the national air quality objectives.

The second version of the **Tyne and Wear Local Plan (LTP2),** for the period 2006 to 2011 was submitted to Department for Transport (DfT) in March 2006. LTP2 has air quality embedded as one of its core themes. Due to the date LTP2 was published, improvement actions for South Tyneside were not sufficiently developed and therefore not included in LTP2 at that time. The current Action Plans were developed by a joint working group comprising of members of all Tyne and Wear local authorities and other experts, the working group considered measures which are relevant across all areas of Tyne and Wear. As part of the LTP2 process an Air Quality Delivery Plan has been published which aims to address transport related air quality issues within AQMA's and 'hotspot areas' across Tyne and Wear.

The Tyne and Wear **Congestion Reduction Plan** aims to limit the growth in person journey time per person mile to 7% by 2010/11. The plan identifies 16 strategic corridors; these represent a cross-section of strategic routes that are representative of corridors across Tyne and Wear. These corridors will be the target of actions to address congestion.

A key aim of the plan is to encourage a modal shift from cars to public transport. The Metro rapid transit system is at the centre of the public transport infrastructure in Tyne and Wear and is coming to the end of its proposed operational life. The 'All Change' initiative has been proposed by the Tyne and Wear Authorities and Nexus to maintain and improve the Metro system over the next 10 years. 'All Change' will see stations and trains modernised and millions spent on renewing track, overhead lines, communications and technology systems, bridges, tunnels and other structures. In South Tyneside improvements to the Metro system have included the opening of the Simonside Metro station. Two potentially new stations are also being considered for South Tyneside at High Lane Row (between Jarrow and Hebburn) and at Monkton Business Park.

As well as the major programme of improvements to the Metro system, there are a number of proposed enhancements to bus services in Tyne and Wear. Areas that are being considered for improvements in South Tyneside are:

- Asda Boldon, via Boldon Lane to South Shields Town Centre (B1298)
- South Shields to Cleadon (A1018)
- South Shields – Jarrow – Hebburn (Road numbers A194/A185)

LTP2 has an embedded **Air Quality Delivery Plan**. The plan outlines transport related air quality issues and tries to implement improvements across Tyne and Wear. The overall aim is to outline air quality conditions across Tyne and Wear, to show where potential problems lie and finally to outline what can be done to improve air quality and thus the quality of life for the people of Tyne and Wear. The Delivery Plan places emphasis on action and a clear stance to prevent, where possible, further areas in Tyne and Wear becoming AQMA's.

Another plan embedded in the LTP2 is the **Tyne and Wear Accessibility Delivery Plan.** Good levels of accessibility are crucial to enable people to participate fully across all levels of society. Improving accessibility for non-motorists also encourages more walking and cycling, benefiting health and air quality. Accessibility was one of the four-shared priorities for transport identified by the Local Government Association and central government. The others were

congestion, air quality and road safety. The Accessibility Delivery Plan is one of the four action plans outlining how we are addressing these shared priorities across Tyne and Wear.

This action plan confines itself to the matter of Local Air Quality Management and does not comment on the wider topic of climate change, however consideration has been made to the effects each of the proposed improvement measures will have on the wider environment. It is not the intention of this plan to implement measures that may have a significant detrimental effect upon the environment, therefore each proposed measure will be considered closely. Without proper consideration, there is the possibility that some policies to mitigate air quality could have a negative impact on climate change and vice-versa. Where practicable, synergistic policies beneficial to both air quality and climate change will be pursued.

This process will be integrated in to the work of all relevant services of the Council and will also involve joint working with external parties, other organisations and the local community.

2.0 AIR QUALITY WITHIN SOUTH TYNESIDE

The air quality objectives set out in the Air Quality (England) Regulations 2000, as amended by the Air Quality (England) (Amendment) Regulations 2002, provide the statutory basis for the system of local air quality management. Section 82 of the Environment Act (1995) requires Local Authorities to regularly review and assess air quality within their areas.

Section 83 of the Act requires local authorities to designate an Air Quality Management Area where air quality objectives are not being achieved, or are not likely to be achieved within the relevant period, as set out in the Air Quality Regulations 2000. Section 84 then requires a local authority to develop an Action Plan for the Air Quality Management Area.

The results of South Tyneside's Local Air Quality Management assessments are provided below:

Updating and Screening Assessment 2003

The updating and screening assessment (USA) 2003 concluded that air quality was predicted to improve in the Borough; however, two pollutants required further assessment (benzene and nitrogen dioxide).

Detailed Assessment 2004

Air Quality Consultants Ltd were commissioned by the Tyne & Wear authorities to undertake their detailed assessment for 2004. The purpose of the detailed assessment was to evaluate the likelihood of air quality objectives being exceeded in those locations that were highlighted in the USA 2003. The detailed assessment concluded that there was a need to declare two Air Quality Management Areas (AQMAs), one covering Boldon Lane in South Shields and the other a large section of main highway in the vicinity of the Lindisfarne Roundabout / Leam Lane with the A19 Tyne Tunnel approach.

Air Quality Progress Report 2005

The 2005 progress report concluded that there was a need to declare an AQMA in two areas of the Borough for exceedances of nitrogen dioxide, at Boldon Lane and Lindisfarne Roundabout / Leam Lane. All other pollutants within the Borough were considered to meet their respective compliance objectives.

South Tyneside Council subsequently declared two AQMAs in March 2006.

2.1 AQMA Locations

Boldon Lane / Stanhope Road

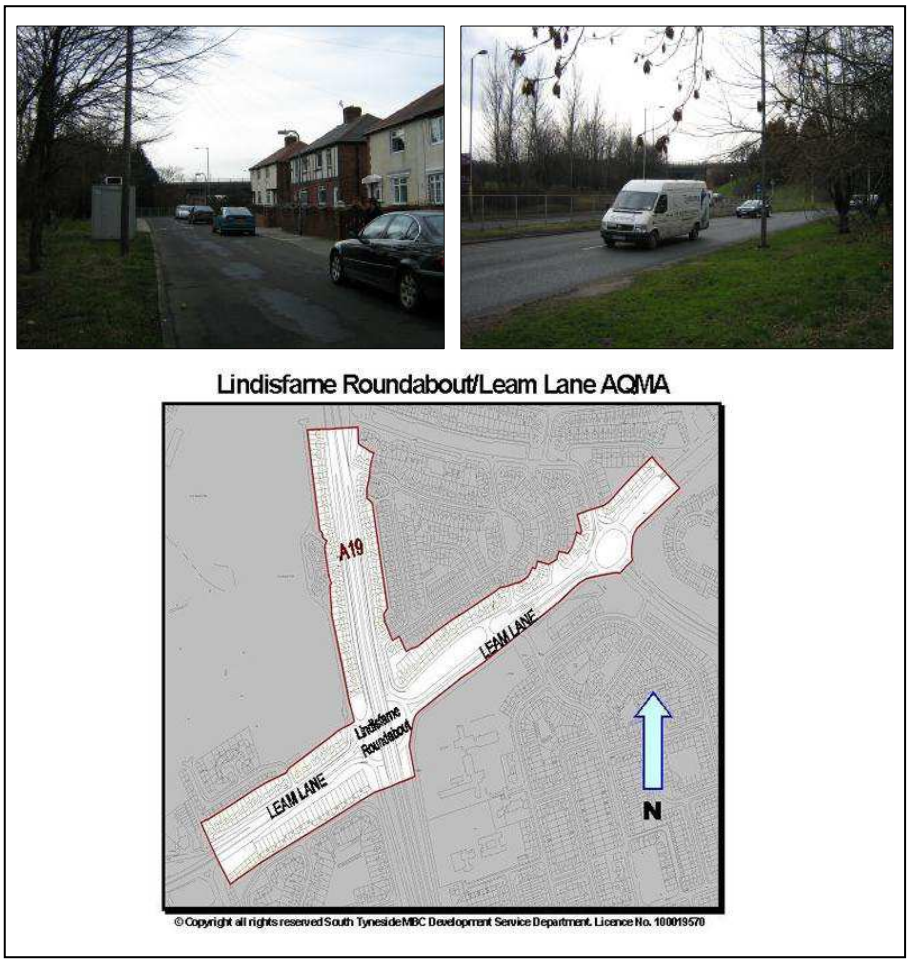
Boldon Lane is a congested high street location as illustrated in the following photographs. The AQMA extends along Boldon Lane and a short distance up Stanhope Road.

Figure 2.1.a. Boldon Lane / Stanhope Road AQMA photos and map

Leam Lane / Lindisfarne Roundabout AQMA

The second AQMA covers receptor locations around Lindisfarne Roundabout (extending along Leam Lane and the A19).

Figure 2.1.b Leam Lane / Stanhope Road AQMA photos and map



Updating and Screening Assessment 2006

The updating and screening assessment produced by South Tyneside Council in 2006 concluded that no further action was required for carbon monoxide, benzene, 1,3 butadiene, lead and sulphur dioxide.

The report identified that a detailed assessment was required for the following pollutants:

Nitrogen dioxide:

(i) As part of AQMA work, a further assessment was required to ascertain a more accurate concentration of nitrogen dioxide against the air quality objectives.

(ii) The updating and screening assessment established that there was no requirement to go to a detailed assessment in any areas within the Borough that were outside the two declared AQMAs.

Particulate matter (PM_{10}):

(i) The 2006 updating and screening assessment identified a requirement to go to a detailed assessment, for fine particulate matter (PM_{10}), at the Port of Tyne due to dusty cargo handling and close proximity to relevant receptors.

(ii) The 2006 report identified that there was no need to progress to a detailed assessment for fine particulate matter (PM_{10}), in any other locations in the Borough.

Further Assessment of Air Quality, April 2007

A further assessment was conducted by AQC Ltd in relation to the AQMAs that were declared at Boldon Lane and Leam Lane. The assessment focused on nitrogen dioxide, the pollutant for which the AQMAs were declared. The assessment included modelling of pollutant concentrations and source apportionment.

As anticipated, the report identified that the main source of NO_2 was transport related and of the locally generated road component, buses made the most significant proportion of emissions, with 'other goods vehicles' having a greater proportion of emissions than cars. The report did not include an evaluation of improvement options, as at the time of the report there were no exceedences of the annual objectives. It was decided that due to a lack of continuous monitoring and potential impacts of the Tyne Tunnel 2 development both Air Quality Management Areas would remain in force.

Air Quality Progress Report, April 2008

The Air Quality Progress Report completed in April 2008 concluded that the Air Quality Management Areas continued to show exceedances for Nitrogen Dioxide. The Report also identified that a detailed assessment was required for Particulate Matter (PM10) at the Port of Tyne, Jarrow. No other exceedances of National Air Quality Objectives were identified as being likely.

Detailed Assessment, Port of Tyne, 2009

A detailed assessment has been carried out at the Port of Tyne where automatic monitoring of PM_{10} and $N0_2$ is taking place. The aim of this assessment was to identify any existing, or likely exceedances in the prescribed objectives for PM_{10} and has therefore focused mainly on detailed monitoring of this pollutant.

The monitoring station at Tyne Dock experienced a number of technical difficulties when it was first commissioned which largely affected data collection. As a consequence, PM_{10} data was only available from October 2008 to June 2009. Although there was insufficient data to calculate an annual mean PM_{10} concentration for the site, there was only one exceedance of the 24HrMean experienced during this period.

To have full confidence in the conclusion of the detailed assessment, further monitoring and subsequent analysis is considered necessary. Should this further monitoring show any exceedances or likely exceedances of the objective(s), dispersion modelling will be conducted where appropriate. Additionally, further particle analysis will be conducted to identify source contributions to any exceedances observed.

Detailed Assessment, Port of Tyne, 2009 – Addendum Report

The Addendum Report concluded that there were no exceedances of the annual or 24-hour objective values for Particulate Matter (PM_{10}).

Updating and Screening Assessment, 2009

The USA identifies that the two Air Quality Management Areas previously designated within the Borough should remain in force and that no new areas have been identified where exceedences of the objective values may be expected or where further detailed assessments are required.

Updating and Screening Assessment, 2009 – Supplementary Information

The Supplementary Information does not identify the need to proceed to a Detailed Assessment for any pollutants.

Progress Report 2010

This progress report identified that in 2009, there were a number of exceedances of the annual mean objective value for Nitrogen Dioxide which continues to be observed within the Air Quality Management Areas (AQMA) previously designated at Boldon Lane / Stanhope Road, South Shields and Lindisfarne Roundabout / Leam Lane, Jarrow. An exceedance of the mean annual objective value for Nitrogen Dioxide was observed outside of the current Lindisfarne Roundabout / Leam Lane AQMA boundary, subsequently a Detailed Assessment will be undertaken. A new exceedance of the annual Nitrogen Dioxide objective was observed at Western Approach, South Shields. It is believed that this exceedance is due to traffic and associated congestion at the entrance of the Port of Tyne, South Shields. A Detailed Assessment will be conducted to assess any likely exceedance of the annual mean Nitrogen Dioxide objective value in this area.

3.0 MONITORING

South Tyneside Council regularly monitors for nitrogen dioxide at various locations throughout the Borough. Continuous monitoring of nitrogen dioxide is carried out at Leam Lane / Lindisfarne Roundabout AQMA and Boldon Lane / Stanhope Road AQMA. Passive monitoring via diffusion tubes is utilised at approximately 60 locations throughout the Borough where there is relevant exposure to nitrogen dioxide, this monitoring also supplements the continuous monitoring conducted within the AQMAs.

Air Quality Objectives for Nitrogen Dioxide

Pollutant	Status	Time Period	Objective / Value	To be achieved by [a]
Nitrogen Dioxide	Statutory UK Objective	1-hour mean	200μg/m^3 not to be exceeded more than 18 times a year	2005
		Annual mean	40μg/m^3	2005

[a] The achievement dates for the UK objectives are the end of the specified year.

The declaration of the AQMAs within South Tyneside related to an exceedance of the annual mean objective value for nitrogen dioxide, therefore only this objective value will be further considered below.

3.1 Monitoring within the AQMAs

South Tyneside Council monitor air quality within the AQMAs at the following locations:

3.1.1 Leam Lane / Lindisfarne Roundabout AQMA (A19/A194)

The automatic monitoring location within the Leam Lane / Lindisfarne Roundabout AQMA is detailed within Table 3.1.1.a and identified in Figure 3.1.1.a. below.

Table 3.1.1.a: Automatic Monitoring Location Leam Lane / Lindisfarne Roundabout AQMA

Monitor Location	Edinburgh Road, Jarrow
Pollutants Monitored	Nitrogen Dioxide Particulate Matter Ozone
Grid Reference	x: 435,950 y: 564,480
Type	Roadside

Figure 3.1.1.a. Location of Automatic Monitoring Equipment Leam Lane / Lindisfarne Roundabout AQMA

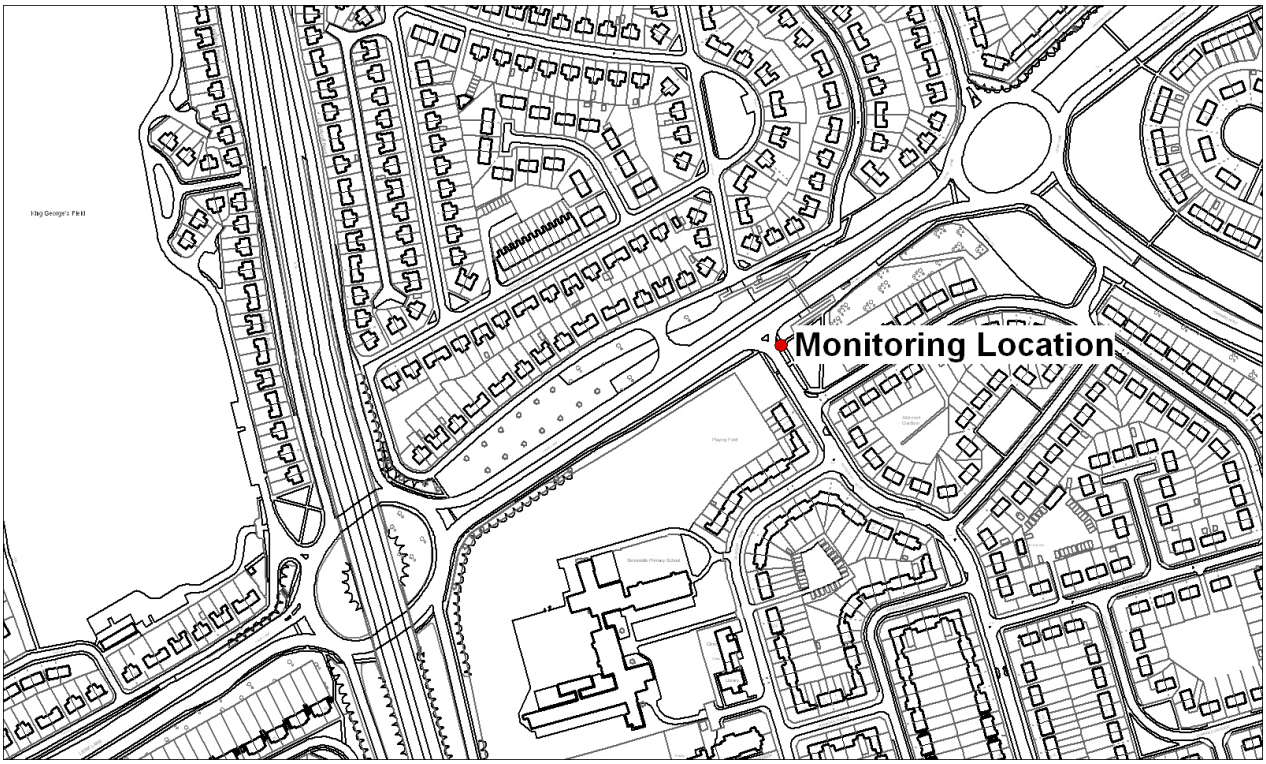


Table 3.1.1.b: Results of Automatic Monitoring for Nitrogen Dioxide, Lindisfarne Roundabout / Leam Lane AQMA (2009)

Location	Proportion of year with valid data 2009 (%)	Data Capture (%)	Sample Concentration (µg/m3) 2009	Annual mean concentration (µg/m3) 2009
Leam Lane / Lindisfarne AQMA	69.47[a]	96.35	22.74[b]	23.19[c]

Note: [a] Insufficient data to obtain a meaningful comparison with objective values
[b] Based on periods where monitoring data was obtained 01/01/2009 to 19/03/2010, 30/03/2009 to 06/05/2009, 09/05/2009 to 30/06/2009, 14/07/2009 to 28/09/2009, 06/10/2009 to23/10/2009 and 31/12/2009 to 31/12/2009.
[c] Short to long-term annual adjustment calculations contained in Appendix F

The annual mean Nitrogen Dioxide concentration observed at Leam Lane / Lindisfarne Roundabout AQMA for 2009 was 23.19µg/m^3. This value is however based on the adjustment of a short-term concentration. As can be seen in Table 3.1.1.b above, the proportion of the year with valid data is low, at 69.47%, this was due to a number of operational difficulties with the monitoring equipment. The adjusted annual mean concentration presented above must therefore be considered as indicative only.

Figure 3.1.1.b: Diffusion tube locations in Leam Lane / Lindisfarne Roundabout AQMA.

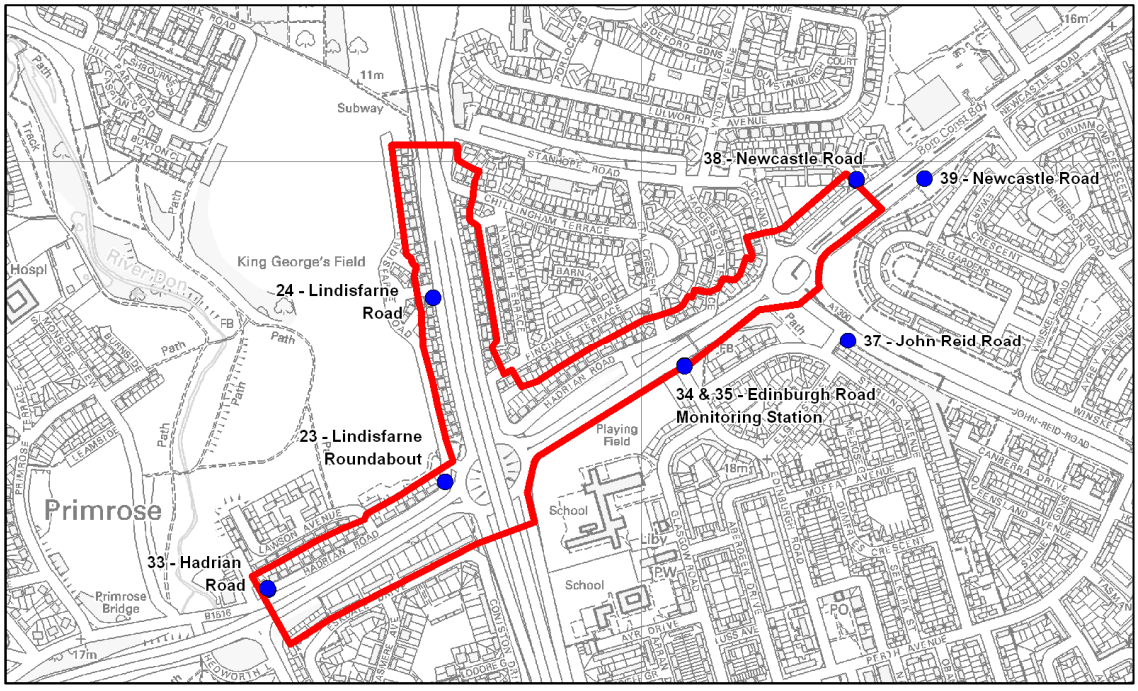


Figure 3.1.1.b above, identifies the location of passive diffusion tubes within and immediately adjacent to the Leam Lane / Lindisfarne Roundabout AQMA. Diffusion tubes are employed at 8 locations within the AQMA in support of the more accurate monitoring undertaken at the continuous analyser (as indicated in Table 3.1.1.b, above) and to provide a greater spatial indication of nitrogen dioxide concentrations across the AQMA.

Table 3.1.1.c: Results of Non-Continuous Monitoring for Nitrogen Dioxide, Lindisfarne Roundabout / Leam Lane AQMA (2008)

Tube No	Location	Within AQMA?	Data Capture for full calendar year 2009 [a] %	Data Capture for monitoring period [b] %	Annual mean concentration (µg/m^3) 2009
23	Lindisfarne Roundabout	Yes	42	n/a	**40.39 *[c]**
24	Lindisfarne Road (No 51)	Yes	42	n/a	38.95 *[c]
33	Hadrian Road (No 1)	Yes	75	n/a	28.83 *[c]
34	Edinburgh Road – Monitoring Station	Yes	58	n/a	28.04 *[c]
35	Edinburgh Road – Monitoring Station	Yes	58	n/a	27.11 *[c]
37	John Reid Road – adjacent to Stirling Ave	No (Adjacent)	83	n/a	30.01
38	Newcastle Road – nr John Reid Road, before Mc Donalds	No (Adjacent)	67	89	**41.93 *[c]**
39	Newcastle Road – nr John Reid Road	No (Adjacent)	67	89	36.16

Note: [a] data capture for the full calendar year
[b] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[c] Estimation of annual mean concentration using short to long-term adjustment *(See Appendix H)*

Table 3.1.1.c, above identifies the results of passive diffusion tube monitoring of nitrogen dioxide for 2009 within the Leam Lane / Lindisfarne Roundabout AQMA. Data have been adjusted using the relevant bias adjustment factor and where there is insufficient data to obtain a representative annual mean, short-term data has been adjusted to an annual mean using the procedure outlined in LAQM TG (09)[3].

[3] DEFRA (2009), Local Air Quality Management. Technical Guidance LAQM TG(09).

During 2009 the annual mean objective value for nitrogen dioxide was exceeded at two of the sites monitored by passive diffusion tubes, namely Lindisfarne Roundabout and Newcastle Road. The highest observed annual mean was achieved at Newcastle Road which is slightly outside of the AQMA, achieving a mean value of 41.93µg/m^3. The Lindisfarne Roundabout monitoring location is located at the junction of the A19 / A194, with a mean value of 40.39µg/m^3. The lowest mean value within the AQMA was observed at Edinburgh Road monitoring station where a mean concentration of 27.11µg/m^3 was identified. It must be noted however that a short-term adjustment was made for this site based on only a small number of months worth of data and therefore must be considered as indicative only. Short-term adjustments were made for 6 of the 8 tubes exposed within the AQMA.

Table 3.1.1.d Annual Mean NO2 concentrations within Leam Lane / Lindisfarne Roundabout AQMA. 2004 to 2008.

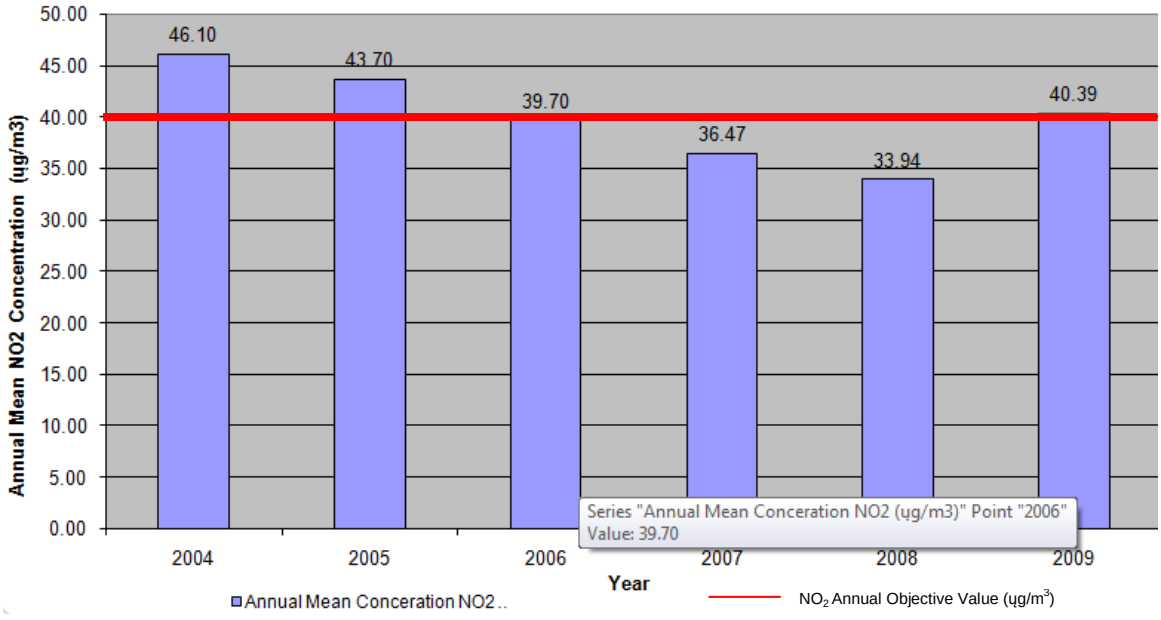
Site Name	2004 Annual Mean	2005 Annual Mean	2006 Annual Mean	2007 Annual Mean	2008 Annual Mean	2009 Annual Mean
John Reid Road, Jarrow	32.1*	30.4*	29.3	22.62	26.66	30.1
Lindisfarne Roundabout, Jarrow (Duplicate Tubes)	**42.9***	**40.7***	39.7	30.73	33.29*	**40.39***
Auckland Terrace	46.1*	43.7*	34.0	35.70*	32.92	Discontinued
1 Hadrian Road	n/a	n/a	24.7	25.14*	25.80	28.83*
95 Hadrian Road (Triplicate Tubes)	n/a	n/a	33.9	27.32	n/a	Discontinued
51 Eskdale Drive	n/a	n/a	23.1	23.39	23.71*	Discontinued
9 Haggerston Terrace	n/a	n/a	31.2	26.90*	20.25*	Discontinued
51 Lindisfarne Road	n/a	n/a	31.5	36.47*	33.94	38.95*

Notes: Data in bold print denotes exceedance of air quality objective.
* Seasonally adjusted (i.e. not enough data to estimate a robust annual mean)
Data adjusted as per bias adjustment spreadsheet available from Review and Assessment helpdesk (www.uwe.ac.uk/aqm/review)

Table 3.1.1.d above, identifies the Annual Mean NO_2 concentrations (µg/m^3) for Leam Lane / Lindisfarne Road AQMA from 2004 to 2009. The highest concentration of nitrogen dioxide was observed at Lindisfarne Roundabout recording values of 42.9µg/m^3, 40.7µg/m^3, 39.7µg/m^3 and 40.39 µg/m^3 for 2004, 2005, 2006 and 2009 respectively. Emission concentrations at the site subsided in the years 2007 and 2008 recording values of 30.73µg/m^3 and 33.29µg/m^3.

Figure 3.1.1.c below, shows the maximum recorded nitrogen dioxide concentration per year from 2004 to 2009 within the Leam Lane / Lindisfarne Roundabout AQMA. It should be noted that due to concerns over Quality Assurance and Quality Control procedures relating to continuous monitoring equipment, results have been derived from passive diffusion tube monitoring. The graph shows that the highest recorded concentration was observed in 2004 at 46.10µg/m^3, concentrations fall year on year following this date until 2009 where a further exceedance was observed. Figure 3.1.1.c identifies that the national objective value for annual mean nitrogen dioxide concentrations was exceeded in the years 2004, 2005 and 2009. The maximum monitored concentration for 2006 was slightly below the objective value at 39.70µg/m^3. The year with the lowest maximum recorded nitrogen dioxide concentration was observed in 2008, where a value of 33.94µg/m^3 was recorded.

Figure 3.1.1.c. Maximum Recorded Annual Mean Nitrogen Dioxide Concentration (µg/m^3) at Lindisfarne Roundabout / Leam Lane AQMA.



The results above indicate that the national mean annual objective value for nitrogen dioxide has been exceeded within the Leam Lane / Lindisfarne Roundabout in the years 2004, 2004 and 2009; it is therefore South Tyneside Councils intention to keep the AQMA in force. A significant highway development project is underway adjacent to the AQMA; this involves the construction of the

new Tyne Tunnel (TT2), which will complete the dualing of the A19 motorway. Whilst the project will ultimately improve the passage of traffic through the tunnel and reduce congestion on local approach roads within the AQMA, it is anticipated that there will be significant disruption to local traffic during the projects construction phase with possible adverse impacts on pollutant levels. Additionally, there have been a number of issues associated with data collection within the AQMA and therefore a conservative approach of maintaining the AQMA has been adopted.

Table 3.1.1.e - Three-year rolling average for maximum recorded concentrations, Leam Lane / Lindisfarne Roundabout AQMA

Time Period (Three year rolling average)	**Annualised Average Concentration** ($\mu g/m^3$)
2004 – 2006	**43.16**
2005 – 2007	39.96
2006 - 2008	36.70
2007 - 2009	36.93

Due to the variability of monitoring results with climatic conditions and the uncertainties associated with data collected within the AQMA a three-year rolling average of nitrogen dioxide concentrations has been provided in Table 3.1.1.e, above. Whilst this data has not been used for a direct comparison with national air quality objective value, it does provide a value for comparison. It is believed that a three-year averaging period will minimise some of the variability observed with the monitoring data.

3.1.2 Boldon Lane / Stanhope Road AQMA

The automatic monitoring location within the Boldon Lane / Stanhope Road AQMA is detailed in Table 3.1.2.a and identified in Figure 3.1.2.a.

Table 3.1.2.a Automatic Monitoring Location Boldon Lane / Stanhope Road AQMA

Monitor Location	Boldon Lane, South Shields
Pollutants Monitored	Nitrogen Dioxide
Grid Reference	x: 434,060 y: 563,700
Type	Roadside

Figure 3.1.2.a. Location of Automatic Monitoring Equipment Boldon Lane / Stanhope Road AQMA

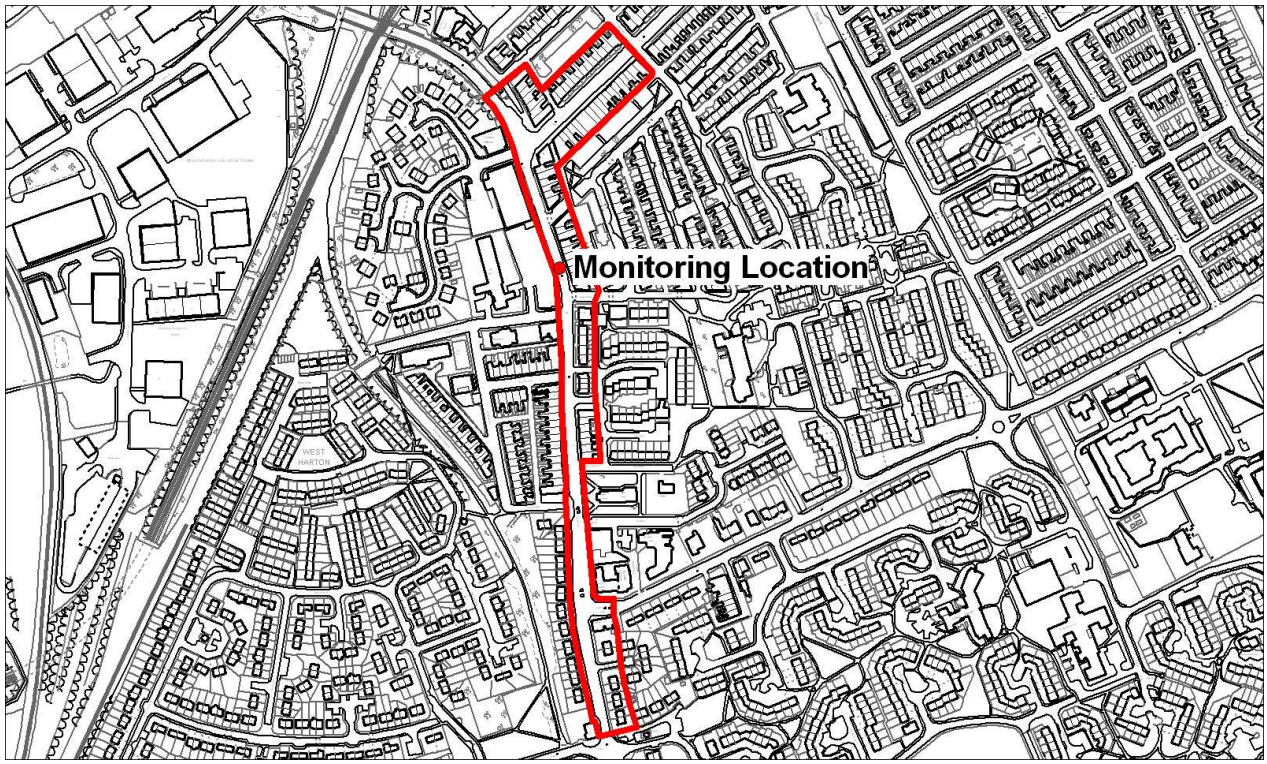


Table 3.1.2.b: Results of Automatic Monitoring for Nitrogen Dioxide, Boldon Lane / Stanhope Road AQMA (2008)

Location	Proportion of Year with Valid Data 2009 (%)	Data Capture 2009 (%)	Annual mean concentrations (µg/m^3) 2009
Boldon Lane / Stanhope Road AQMA	95	-	29.03

The annual mean Nitrogen Dioxide concentration observed at Boldon Lane / Stanhope Road AQMA in 2009 was 29.03µg/m^3. As can be seen in Table 3.1.2.b the data capture rate for this site was 95%. While the annual mean concentration has been subject to an adjustment of the short-term concentration, the relatively high data capture rate allows for confidence in the data.

Figure 3.1.2.b: Diffusion tube locations in Boldon Lane / Stanhope Road AQMA.

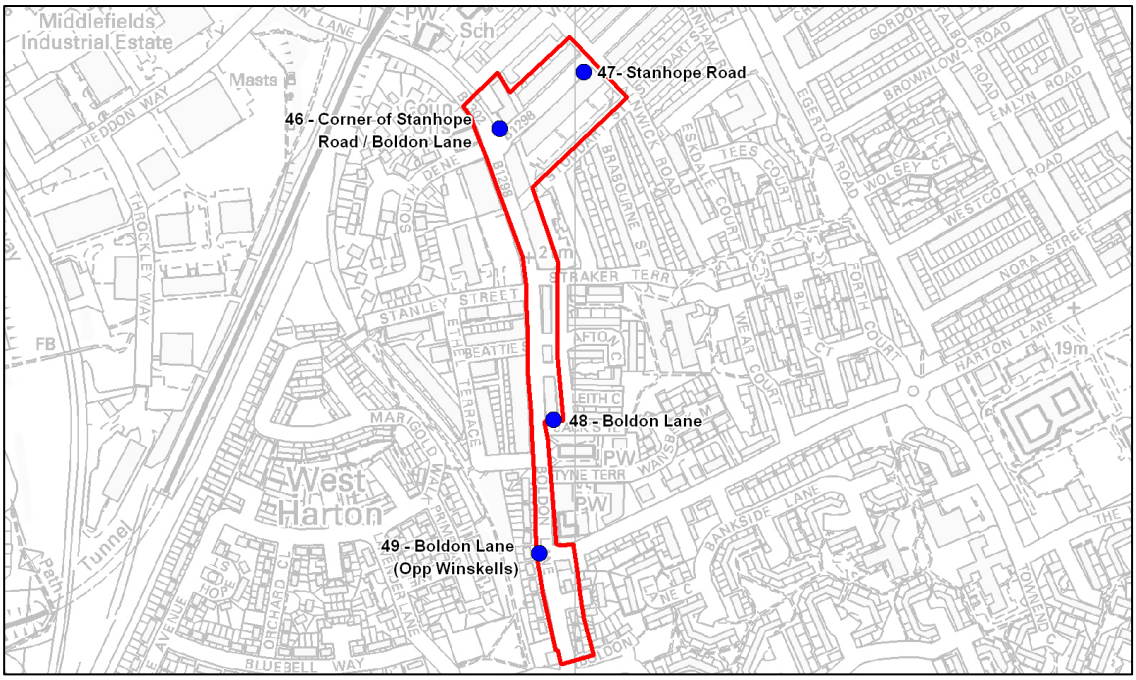


Figure 3.1.2.b above, identifies the proximity of diffusion tube monitoring locations within and immediately adjacent to the Boldon Lane / Stanhope Road AQMA. There are 4 diffusion tube locations within the AQMA to supplement the continuous monitoring data (as identified in Table 3.1.2.a, above).

Table 3.1.2.c: Results of Non-Continuous Monitoring for Nitrogen Dioxide, Boldon Lane / Stanhope Road AQMA (2008)

Tube No	Location	Within AQMA?	Data Capture for full calendar year 2009 [a] %	Data Capture for monitoring period [b] %	Annual mean concentration (µg/m^3) 2009
46	Corner of Stanhope Road / Boldon Lane	Yes	67	89	35.89 *[c]
47	Stanhope Road – Opposite Bakery	Yes	42	56	40.72 *[c]
48	Boldon Lane (Number 142)	Yes	83	n/a	36.40
49	Boldon Lane opposite Winskells	Yes	92	n/a	41.34

Note: [a] data capture for the full calendar year
[b] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[c] Estimation of annual mean concentration using short to long-term adjustment *(See Appendix H)*

Table 3.1.2.c above, shows the results of passive diffusion tube monitoring for the Boldon Lane / Stanhope Road AQMA in 2008. Data have been adjusted using the relevant bias adjustment factor and where there is insufficient data to obtain a representative annual mean, short-term data has been adjusted to an annual mean using the procedure outlined in LAQM TG (09)[3].

The highest observed annual mean nitrogen concentration was observed at Boldon Lane (Opposite Winskells) at 41.34µg/m^3, this value exceeds the national objective value. The second highest recorded value of 40.72µg/m^3 was observed at Stanhope Road, again in exceedance of the national objective value. It must also be noted that this value has been subject to a short to long term adjustment to derive the annual mean as only 5 months of data was attained for the site. The two additional diffusion tube located in the AQMA achieved values below the prescribed national objective value.

Table 3.1.2.d Annual Mean NO_2 concentrations within Boldon Lane / Stanhope Road AQMA. 2004 to 2008.

Site Name	2004 Annual Mean	2005 Annual Mean	2006 Annual Mean	2007 Annual Mean	2008 Annual Mean	2009 Annual Mean
Boldon Lane (Lidl)	**40.0**	38.6	30.0*	**41.38***	n/a	Discontinued
Boldon Lane (opposite Winskells)	**49.6***	**47.0***	32.8*	38.35*	33.58	**41.34**
Boldon Lane	**41.3**	n/a	31.5*	29.95	32.95	36.40
521A Stanhope Road	n/a	n/a	37.6*	n/a	38.00*	35.89*
372 Stanhope Road	n/a	n/a	30.9*	**41.10***	**45.07**	**40.72***

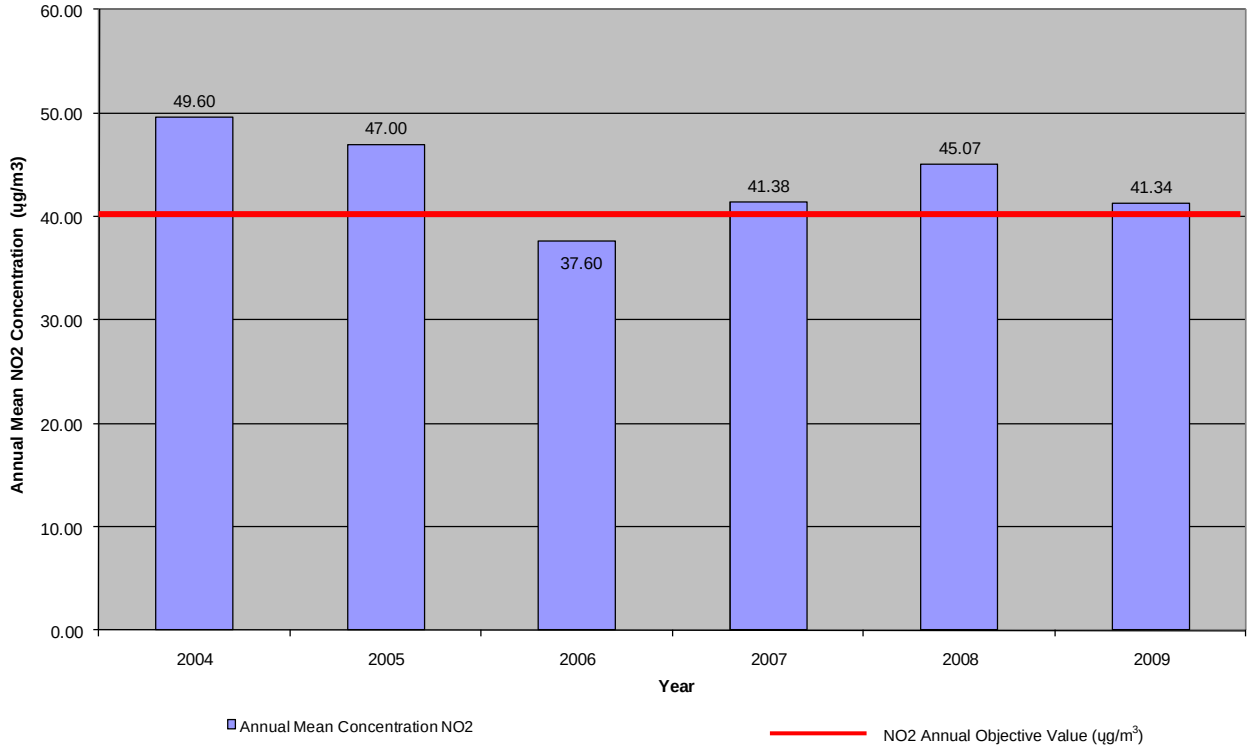
Notes: Data in bold print denotes exceedance of air quality objective.
* Seasonally adjusted (i.e. not enough data to estimate a robust annual mean)
Data adjusted as per bias adjustment spreadsheet available from Review and Assessment helpdesk (www.uwe.ac.uk/aqm/review)

Table 3.1.2.d identifies the Annual Mean NO2 concentration (µg/m^3) for Boldon Lane / Stanhope Road from 2004 to 2009. The highest concentration was obsered at Boldon Lane (Opposite Winskells) in 2004 where an annual mean objective of 49.6µg/m^3 was observed. Concentrations at this monitoring location fell in 2005 to 47.0µg/m^3, however results for both of these years were subject to an short to long-term adjustment calculation. This monitoring location went on to record results below objective value in 2006, 2007 and 2008, returning to an exceedance in 2009.

In 2009 two monitoring locations within the AQMA recorded levels above the national annual average objective value for nitrogen dioxide. These values were recorded at Boldon Lane (Opposite Winskells) with a value of 41.34 µg/m^3 and 372 Stanhope Road with a value of 40.72µg/m^3 being obsered.

Figure 3.1.2.c below, identifies the maximum recorded nitrogen dioxide concentration per year from 2004 to 2009 within the Boldon Lane / Stanhope Road AQMA. The data used for the assessment has been derived from passive diffusion tube monitoring within the AQMA and represents a worst case scenario. The highest concentration observed was in 2004 with an average of 49.60µg/m^3 being recorded. In 2006 the highest annual mean concentration recorded within the AQMA was below the national objective value at 37.60µg/m^3, however in subsequesnt years the recorded values exceeded the national obective value. The results for 2008 and 2009 identified a maximum annual average concentration of 45.07µg/m^3 and 41.34µg/m^3 respectively.

Figure 3.1.2.c Maximum Recorded Annual Mean Nitrogen Dioxide Concentration (µg/m^3) at Boldon Lane / Stanhope Road AQMA.



While the results indicated above are from passive diffusion tube monitoring and not the more accurate continuous analyser within the AQMA it is believed that the results are representative of nitrogen dioxide concentrations and therefore maintaining the AQMA is valid.

Table 3.1.2.e Three-year rolling average for maximum recorded concentrations, Boldon Lane / Stanhope Road AQMA

Time Period (Three year rolling average)	**Annualised Average Concentration** (µg/m^3)
2004 – 2006	44.73
2005 – 2007	41.99
2006 - 2008	41.35
2007 - 2009	42.60

A three-year rolling average of nitrogen dioxide concentrations has been provided in Table 3.1.2.e. Whilst this data has not been used for a direct comparison with

the national air quality objective values it allows for variations in pollutant levels due to climatic conditions to be minimised. This data is indicative only.

3.2 Source Apportionment

As identified above, a further assessment of air quality was conducted for the AQMAs within South Tyneside in April 2007, following their declaration. The purpose of the Further Assessment was to achieve the following:

- Confirm the AQMA declaration is justified;
- That the appropriate area has been declared;
- To ascertain sources contributing to the exceedance;
- Calculate the magnitude of the reduction in emissions required to achieve the objective.

The Source Apportionment identified six sites within the Boldon Lane AQMA, the locations of the site are shown in Figure 3.2.a, below. The locations represent worse case scenarios for nitrogen dioxide concentrations, as well as a geographical spread across the modelled area. Table 3.2.a, below shows the proportions of vehicles in the different categories. Although private cars are the dominant vehicles in South Tyneside, emissions from HGVs (identified as OGV's in the table) and buses were modelled as being greater than cars.

Figure 3.2.a Source apportionment locations in Boldon Lane / Stanhope Road AQMA

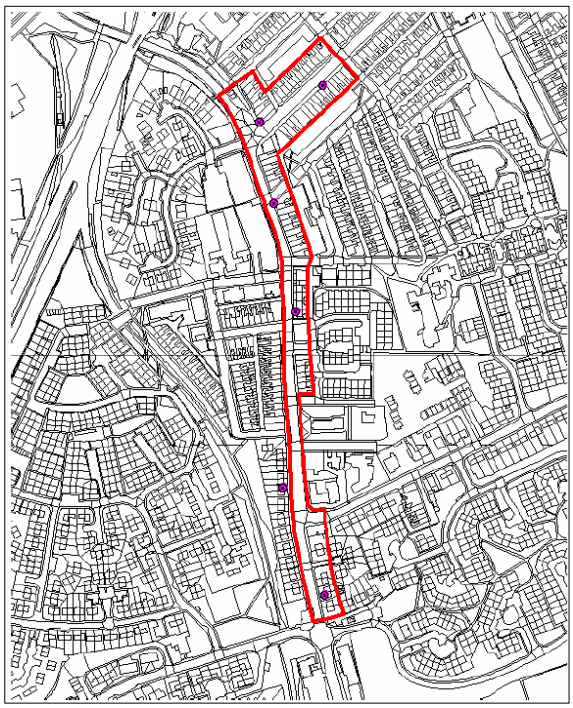


Table 3.2.a Source Apportionment Calculations						
	Annual mean concentrations					
Location	Background	Cars	LGVs	OGVs	Buses	**Total**
1	22.6	1.2	0.2	1.4	4.6	30.0
2	22.6	0.7	0.1	0.8	2.7	26.8
3	22.6	1.4	0.2	1.7	5.6	31.3
4	22.6	1.8	0.2	2.2	7.2	34.0
5	22.6	1.6	0.3	1.3	7.5	33.2
6	22.6	1.8	0.4	2.1	7.6	34.3
	% Contribution to the total					
Location	Background	Cars	LGVs	OGVs	Buses	**Total**
1	74.8%	4.2%	0.5%	4.8%	15.7%	100%
2	83.8%	2.5%	0.3%	3.2%	10.2%	100%
3	71.6%	4.4%	0.6%	5.4%	18.0%	100%
4	65.9%	5.3%	0.7%	6.6%	21.5%	100%
5	67.5%	4.8%	0.9%	3.9%	23.0%	100%
6	65.2%	5.3%	1.1%	6.1%	22.3%	100%

Of the locally-generated road component, buses make up a significant proportion of the emissions, with ‘Other Goods Vehicles’ (OGV’s) at most locations being a greater proportion of emissions than cars. Although HGVs and the Bus fleet in general make up between 10 to 20% of the vehicle fleet on most particular roads, they have a proportionally larger impact on air quality, as demonstrated above.

IMPORTANT NOTE - It must be noted that while buses have been identified as a large contributor to pollutant emissions, the contribution per passenger is believed to be significantly lower than the pollutant emission per passenger of other transport modes. The high percentage contribution may be due to the bus fleet being composed of old buses, which have higher emissions or due to the fact that buses can not flow freely throughout the AQMA. This is not adequately displayed in the results above. While it is appropriate to focus improvement actions on improving bus fleets, buses should not be deterred in the AQMA's and any increase in bus patronage would further decrease the contribution to nitrogen dioxide concentrations per passenger. While the results indicate that buses contribute to the pollutant levels experienced within the AQMA, along with other measures, buses can also be a significant part of the solution if people can be persuaded to change transport modes.

The Leam Lane AQMA has not been included in the source apportionment of the Further Assessment 2007; this recommended that the Leam Lane AQMA should be revoked due to a lack of exceedences above the national objective value. South Tyneside Council's view at the time was that there was not sufficient confidence to revoke the AQMA as the location would be impacted by construction traffic and subsequent highway disturbance caused by the construction of the second Tyne Tunnel. Further monitoring is being carried out within the AQMA to determine pollutant levels while works are undertaken on the construction of Tyne Tunnel 2 and for a short-period following completion of all works. Should monitoring data provide sufficient confidence that the national air quality objectives will not be exceeded once the new tunnel is operational, consideration will be given to revoking the Leam Lane / Lindisfarne Roundabout Air Quality Management Area.

3.3 Reduction Required

As can be seen from the information above, the exceedance of the Air Quality Objectives within South Tyneside's AQMAs are not significant.

Reduction Required – Leam Lane / Lindisfarne Road AQMA

The worst-case scenario has been adopted with regard to predicting a reduction in mean annual nitrogen dioxide values for the Leam Lane / Lindisfarne Roundabout AQMA. Figure 3.1.1.c shows the highest observed nitrogen dioxide concentration within the AQMA of 40.39µg/m^3 in 2009. Due to a number of uncertainties in the monitoring data this value will be used to predict the required reduction to achieve the national objective value. The reduction required is as calculated below:

Maximum observed annual average (µg/m^3)	-	National Objective Value (µg/m^3)	=	Reduction Required (µg/m^3)
40.39	-	40	=	**0.39**

As identified above the worst-case reduction required for the Leam Lane / Lindisfarne Roundabout AQMA is **0.39µg/m^3**.

Reduction Required – Boldon Lane / Stanhope Road AQMA

The worst-case scenario has been adopted in order to predict a required reduction for the Boldon Lane / Stanhope Road AQMA to achieve the national air quality objective values. Figure 3.1.2.c identifies that in 2009 a maximum value of 41.34µg/m^3. The reduction required is as calculated below:

Annual average NO_2 2009 (µg/m^3)	-	National Objective Value (µg/m^3)	=	Reduction Required (µg/m^3)
41.34	-	40	=	**1.34**

As identified above the worst-case reduction required for the Boldon Lane / Stanhope Road AQMA is **1.34µg/m^3**.

Additional to those areas that have been declared as AQMAs, there remain significant benefits to improving local air quality for the benefit of local health and to ensure that other areas of the Borough do not exceed national objectives values.

4.0 OPTIONS AVAILABLE TO SECURE AIR QUALITY IMPROVEMENTS

The following section of the action plan aims to provide an overview of the options available to secure air quality improvements. The appropriateness of these options to the AQMAs in South Tyneside will be assessed in more detail in further sections.

‘Do-nothing’ Scenario

Prior to commencing with the review of options available for improvement actions for the Air Quality Management Areas within South Tyneside it is important to consider the ‘do nothing’ scenario. The method outlined in Box 2.1 of LAQM TG(09) has been used to project the measured mean nitrogen dioxide concentration to future years. The worst-case scenario concentrations (Section 3.3) have been used to calculate the projected annual mean nitrogen concentration in future years. The projection of future nitrogen dioxide concentrations has been calculated to 2010.

As previously identified, the annual mean nitrogen dioxide concentrations for Leam Lane / Lindisfarne Roundabout AQMA have been based on a figure of 41.34µg/m^3 derived from 2009 monitoring results. A calculation to project the annual mean roadside concentration to 2010 has been conducted as below:

2009 Concentration Value	*	(2010 adjustment factor for ‘Rest of UK’	/	2009 adjustment factor for ‘Rest of UK’)	=	Predicted Annual Mean NO_2 Concentration (µg/m^3) 2010
40.39	*	(0.861	/	0.902)	=	38.35 µg/m^3

As identified above, the annual mean NO_2 concentration for the Leam Lane / Lindisfarne Roundabout AQMA has been predicted to be **38.55µg/m^3**

The measured annual mean nitrogen dioxide concentration for the Boldon Lane / Stanhope Road AQMA has been measured as 41.34µg/m^3 for 2009. A calculation to project the annual mean roadside concentration to 2010 has been conducted as below:

2009 Concentration Value	*	(2010 adjustment factor for 'Rest of UK'	/	2008 adjustment factor for 'Rest of UK')	=	Predicted Annual Mean NO_2 Concentration (µg/m^3) 2010
41.34	*	(0.861	/	0.902)	=	37.50 µg/m^3

As identified above, the annual mean NO_2 concentration for the Leam Lane / Lindisfarne Roundabout AQMA has been predicted to be **39.46µg/m^3**

While the 'Do-nothing scenario' identifies that the national air quality objective values would be met in the Air Quality Management Areas by the 2010 compliance deadline there are a number of factors that may significantly affect the achievement of the air quality objective value. The achievement of the national objective value assumes:

- That traffic flow will not increase, despite predictions to the contrary;
- It assumes a general mix of traffic in the area, however it is understood that a high proportion of Buses and HGV's operate in the AQMA's;
- That the vehicle composition for South Tyneside will gradually improve, however the current economic situation may prohibit this;
- That proposed changes within the area will not affect traffic flow; any improvements made within the area may attract further traffic volumes.

Due to the uncertainties associated with the achievement of the 'do-nothing' scenario it is proposed that South Tyneside should proceed with measures to improve air quality within the Air Quality Management Areas to ensure compliance with the 2010 compliance deadline.

Due to the similar nature of air quality problems across Tyne and Wear the suggested improvement options proposed for South Tyneside are similar to those measures outlined in the published Air Quality Action Plans for other areas of Tyne and Wear.

The available options have been divided into 5 distinct categories;

- Managing the Highway Network
- Emissions Management
- Land Use Planning
- Information and Education
- Promotion and Provision of Alternatives

4.1 MANAGING THE HIGHWAY NETWORK

4.1.1 By-passes

Air Quality Management Areas are designated where there is an exceedance of the national objective values, in areas where members of the public are likely to be regularly present. Where AQMAs exist because of traffic related emissions, bypassing the traffic around areas of public exposure (i.e. around housing estates) can remove those people who are exposed to the pollutants of concern. Due to the fact that South Tyneside is heavily built up this measure is not feasible and will not be considered further at the present time.

4.1.2 Congestion Charging

Charging for entering a defined area of the highway network to reduce congestion. To date congestion charging scheme was introduced in London in February 2003. A consultation was conducted for introducing a similar scheme in Manchester however voters overwhelmingly rejected the proposal. It is believed that there is little public will for congestion charging within South Tyneside at the present time, this action will not be considered further in this action plan.

4.1.3 Low Emission Zones

Low Emission Zones (LEZs) are a geographically defined area where the most polluting vehicles are restricted, determined or discouraged from access and use. The aim is to reduce the number of more polluting vehicles being used in a

particular area by setting particular emission standard or criteria with the aim of improving air quality.

4.1.4 Traffic Regulation Orders

The Environment Act (1995) confirmed that Traffic Regulation Orders (TRO's) could be used to ban specified classes of vehicles for air quality purposes. A TRO must not normally have the effect of preventing pedestrian access at any time, or preventing vehicular access for more than 8 hours in a day to premises on or adjacent to a road.

4.1.5 Road Tolls

Road tolling is different to congestion charging in that it is usually applies to specific roads with a set charge over the whole day (as opposed to congestion charging which aims to target the congested periods of the day). Currently road tolls apply at the Tyne Tunnel river crossing.

4.1.6 Residents Parking Permits

People are likely to be encouraged to drive if free parking in adjacent residential areas is readily available. Residential permits discourage access to uncontrolled parking and encourage patronage on alternative forms of transport. Residential parking permits may however be unpopular with local residents, depending on how and where they are implemented. A number of areas within South Tyneside already benefit from Residential parking permits; these are mainly located around the town centre in South Shields. It must be noted that it is the through traffic that is of greatest concern in South Tyneside.

4.1.7 High Occupancy Vehicle Lanes

High Occupancy Vehicle Lanes (HOV's) are reserved for buses, taxis and cars with multiple occupants. High Occupancy Vehicles may reduce traffic levels, and subsequently emissions, by encouraging people to car share rather than use separate vehicles. Any such schemes may involve relocating queuing traffic

outside the AQMA where there would be less impact and HOV's could be used to by-pass the stacked traffic.

4.1.8 Co-ordination of road works

Road works can be a significant cause of congestion and subsequent increased road emissions. The co-ordination and timing of road works could reduce the congestion and emissions caused. South Tyneside Council has a range of powers with respect to the highways network. These are as detailed in the Highways Act 1980, principally covering the structure of the network; the New Roads and Street Works Act 1991, covering utility street works; and the Road Traffic Regulation Act 1984, regulating the activities of road users. The Traffic Management Act 2004 has given all authorities in the UK additional powers. The Act adds to the network management duty, which requires local traffic authorities to do all that is reasonably practicable to manage the network effectively.

4.1.9 Major Schemes

Major transportation schemes are considered in the Tyne and Wear Local Transport Plan. The proposed major schemes identified in LTP2 are guided by the current transport and economic trends of the Tyne and Wear region. A number of major schemes, which may have a major impact on air quality in South Tyneside, are identified below:

- The new Tyne Crossing, Tyne Tunnel 2 aims to alleviate the congestion of the southernmost Tyne crossing, see case study below.
- Boldon Lane Route Assessment – As part of the Tyne & Wear Bus Corridor Major Scheme Bid, South Tyneside Council is proposing improvements to the South Shields Quality Bus Route at Boldon Lane / Stanhope Road. The bid will be submitted to the Department for Transport for financial backing, if successful the scheme will be expected to deliver bus, road safety and environmental enhancements. The scheme will also improve connectivity from outer lying neighbourhoods with the centre of South Shields and the riverside area.

- Metro ‘All Change’ Programme - The Metro mass transit system is approaching it’s theoretical 30 year design life and requires significant improvement if it is to encourage a modal shift from car to public transport. Reinvigoration of the Metro system will provide sustainable access to employment and other services.

4.2 EMISSIONS MANAGEMENT

4.2.1 Roadside Emission Testing

Poor vehicle maintenance can increase levels of emissions by ten times or more. A small number of poorly maintained vehicles can produce excessive emissions, the majority of which may be re-tuned with relative ease.

Roadside Emission Testing (RET) involves the testing of emissions directly from vehicle exhausts. In England the Vehicle Operator Standards Agency (VOSA) can carryout roadside testing to MOT standards. Additionally Local Authorities may apply for authorisation to conduct testing where Air Quality Management Areas have been declared. Other options may include the voluntary testing of emissions at strategic locations and offering advice to road users.

RET may help assist in raising public awareness of air quality issues, and determine if cars are in compliance with the Road Vehicle (Construction and Use) Regulations and are therefore road worthy. It is however important to note that these Regulations relate to emissions of CO, HC and smoke opacity whereas AQMAs in South Tyneside are declared on the basis of exceedance of Nitrogen Dioxide emissions, it is therefore unlikely that RET will make a measurable contribution to Air Quality improvements.

4.2.2 Car Maintenance

A programme to encourage the maintenance and servicing of vehicles is a simple and effective way of reducing vehicle emissions. People should be encouraged to carry out regular checks to tyre pressure, brakes and conduct regular services. Other good practice advice for road users include the removal of roof racks, the

removal of any unnecessary weight and limiting the use of air conditioning or on-board electrical devices.

4.2.3 Driving Style

Programmes and courses advising on economical driving styles can be an effective way of reducing emissions. In general gentle acceleration, breaking and sticking to steady speeds can reduce vehicle emissions; drivers should also be encouraged to switch off engines while stationary. The provision of information and courses may be at relatively little cost, however changing peoples driving style over the long term may be challenging.

4.2.4 Telematics / Route Planning

For van or fleet operators technology can help reduce emissions. Accurate route planning can find the most efficient route while telematic systems will identify potential areas of excess emissions, for example from speeding or engine idling for long periods of time.

4.2.5 Encourage Cleaner Vehicles

The provision of information can allow consumers to make an informed choice when purchasing a vehicle. The Department for Transport launched the ACT ON CO_2 campaign in March 2007 providing tips on ‘smarter’, more fuel-efficient driving and purchasing a more fuel-efficient vehicle, while these campaigns relate to conservation of CO_2 emissions the general principles of the campaign will also provide benefits for local air quality.

4.2.6 Cleaner Fuels

Converting vehicles to run on cleaner fuels can reduce impacts on local air pollution, noise and Carbon Dioxide emissions. There have been a number of developments in ‘green fuels’ such as: Liquified Petroleum Gas (LPG), Compressed Natural Gas, Hybrid / Electric Vehicles, Biodiesel and Hydrogen Fuel

Cells. Further information on the benefits of the aforementioned fuels can be obtained from www.energysavingtrust.org.uk

4.2.7 Emissions standards for buses

New European emission standards mean that new buses are increasingly cleaner. Improvements in bus emission standards can be encouraged through the use of voluntary schemes, or implemented through bus quality partnerships for commercial bus services. There are currently minimum standards set for bus 'Superoutes'. The imposition of higher emission standards for buses operating within the AQMA is a potential option that needs to be considered. The imposition of higher emission standards for buses operating within AQMAs may be beneficial.

4.2.8 Emission control of Council business fleet

South Tyneside Council's vehicles fleet is currently around 350 vehicles and as such is one of the largest fleets within the Borough. Currently there are a number of methods employed to control emissions from the council fleet, such as retro-fitting of Carbon Reduction Traps, gaining reduced fuel certificated, ensuring that the highest possible Euro standard vehicles are purchased and providing eco-driver training to business fleet drivers. While a number of efforts have been made to secure improvements further improvements may be possible.

4.2.9 Encourage the uptake of retro-fitted abatement on vehicles

The use of retrofitted abatement on vehicles can significantly reduce levels of certain air pollutants, particularly for HGV and Bus emissions. Diesel Particulate Filters (DPF) are expected to reduce PM by up to 95%. Catalytic action is often required to achieve the required carbon ignition point. Specialist maintenance will also be needed to periodically remove the ash residue from the filter.

4.2.10 Car Sharing

Car sharing may be formal, via an organised car share scheme, or informal, for example friends or colleagues travelling to work together. Formal schemes match people who register with others making the same trip. Alternatively there are schemes that help people find someone to share a one-off car journey. Informal schemes operate on a more ad hoc basis between friends, family members or colleagues, but can be very effective.

The best–developed schemes are targeted at the daily commute. Such schemes may operate within a single company or across a number of different employers in the same area. Companies may introduce schemes and promote them to their staff, for example as part of a workplace travel plan, to address parking restrictions or help employees to reduce their travel costs.

4.2.11 Delivery times outside peak hours

Delivery vehicles may cause congestion if parked in busy streets for any length of time and especially if this occurs during times of peak traffic flow. Delivery times outside of peak hours will avert any unnecessary congestion and subsequent build up of emissions. While this in itself may not have a significant effect on air quality emissions this combined with a number of other measures will aide a move towards meeting the air quality objectives.

4.2.12 Encouraging uptake of Euro Emission Standards

European emission standards define the acceptable limits for exhaust emissions of new vehicles sold in EU member states. The emission standards are defined in a series of European Union Directives staging the progressive introduction of increasingly stringent standards. Non-compliant vehicles cannot be sold in the EU, but new standards do not apply to vehicles already on the roads.

In 1993, exhaust emission limits (generally referred to as the Euro 1 standards) were introduced for new cars, which resulted in the adoption of advanced emission control techniques, such as catalysts. More stringent emission limits came into effect in 1997 (Euro 2), 2001 (Euro 3) and 1st January 2005 (Euro 4). Euro 4 came fully into force on 1st January 2007.

A general renewal of the UK car fleet will see the introduction of more stringent emission standards. The provision of information will allow emission standards to be considered when vehicles are renewed.

4.3 LAND USE PLANNING

4.3.1 Development Control

Development Management has an extremely important role to play in improving air quality in the Borough and reducing exposure to air pollutants. Development may increase air pollution emissions, increase public exposure to pollutants or increase public exposure due to their nature and location.

Air Quality issues for development management are not only restricted to Air Quality Management Areas. However, particular consideration will be required for development within or adjacent to these areas.

The Document 'Development Control: Planning for Air Quality' NSCA (2009) states that areas of poor air quality in the UK can be characterised in three ways –

- Areas that have been declared as an AQMA;
- Areas adjacent to, or which can affect, a declared AQMA; and
- Areas where air quality is poor enough to breach

4.3.2 Planning Policy and Guidance

The development management process is guided by national, regional and local planning policies and guidance. This includes the North East of England Plan (the regional spatial strategy) and South Tyneside Local Development Framework (LDF). The LDF comprises a portfolio of development plan documents and supplementary planning documents, which set out the Borough's land use policies, allocations and proposals.

Proposals for new development in South Tyneside are assessed against the LDF core strategy; three town centre-based Area Action Plans; Site-Specific

Allocations; and the Development Management Polices development plan documents. Matters of air quality are also considered within Supplementary Planning Document 1 on Sustainable Construction and Development.

4.3.3 Provision of Cycle Facilities in New Developments

Planning conditions could be used to encourage the provision of adequate cycling facilities for new developments. Such conditions may specify the requirement to install cycle lanes, safe and secure cycle parks or the upgrading of current conditions.

4.3.4 Suitable Landscaping

Suitable Landscaping has a positive impact on local environmental quality and amenity. Previous studies have identified that sheerbelt trees (a plantation of one or more rows of trees or shrubs) have an influence on pollutant levels through altering the dispersion of emissions by changing airflow patters, wind speed and surface roughness; encouraging the atmospheric mixing of pollutants. The precise benefits are dependent on the orientation of the barrier, proximity to residential property and prevailing wind direction.

4.4 INFORMATION AND EDUCATION

4.4.1 Eco-Friendly Driving Schemes

Where it is not possible to encourage people to use public transport, or where this is impractical, it will be beneficial for vehicle users to ensure that the vehicles are being driven as efficient as possible with the minimum amount of emissions. Promoting and encouraging participation on eco-friendly driving schemes will help to ensure the emissions of vehicles using the highway network are kept to a minimum. There is also a financial incentive for individuals and businesses to adopt eco-friendly driving as the resulting change in driving style will increase fuel economy and save on fuel bills.

4.4.2 Education Regarding Safety on Public Transport

A fear of crime or safety concerns regarding public transport may discourage public transport patronage. Education programmes may encourage people to use public transport where previously safety concerns existed; this may also be coupled with the installation of CCTV systems or increased security presence.

4.4.3 Cycling Proficiency Schemes

To encourage cycling in the Borough 'Bikeability cycle training' to national standard level 1, 2 and 3. Training promoting road safety, increasing awareness of other road users, and promoting the cycling provision already in place will help encourage a modal shift from vehicle use.

4.4.4 Encourage use of Rail Freight

Significant rail infrastructure is already in place across South Tyneside, this is already utilised at the coal terminal at the Port of Tyne. There may be the potential to increase the use of rail freight to take the pressure of the local road network.

4.5 PROMOTION AND PROVISION OF ALTERNATIVES

4.5.1 Increased Public Transport Provision

This option requires a number of improvements to be made to the public transport system; the 'image' of using public transport needs to be challenged and improved and the potential benefits of using public transport need to be communicated, both in terms of air quality / environmental improvements and financial benefits to individuals. Some of the barriers in using public transport include, overcrowding, price, old transport stock, and reliability

This option not only includes the provision of newer and additional public transport stock but also includes the provision of extra infrastructure to facilitate the additional public transport provision.

4.5.2 Travel Plans

Travel plans can be used as a measure to improve air quality and congestion issues, widening travel choices and reducing reliance on the car. South Tyneside Council has developed a travel plan for its offices at the Town Hall, South Shields and other satellite offices.

The LTP partners in Tyne and Wear are working toward a Workplace Transport Plan Strategy with objectives, and strategies that are applicable to the whole of Tyne and Wear. Transport Plan co-ordinators have been appointed for each of the partners, including Nexus.

A number of Business Travel Plans have been implemented within South Tyneside such as those for Asda Boldon, Asda South Shields, CJ Garland, in South Shields and Monkton Business Park in Hebburn.

4.5.3 Annual Travel Card Discounts

The provision of Annual Travel cards at a discounted rate can aid public transport patronage and discounts can overcome the barriers to public transport usage (such as the high costs of public transport). These are especially advantageous where tickets cover different operators and different modes of transport.

It is difficult to estimate the proportion of uptake of public transport from such measures however it is believed that such measures when combined with others may improve the patronage of public transport, potentially reducing the number of vehicles on the road therefore reducing emissions.

4.5.4 Bus Corridors / Bus Lanes

Where public transport is seen to be quicker and more efficient than commuting by car, more people are likely to make a permanent move to public transport. A way of improving the flow of buses is to dedicate road lanes specifically for use by buses. The disadvantage associated with these lanes is that the flow of HGV's and other goods vehicles are slowed in the other lanes, which may become

slower as a result of the higher number of vehicles in these lanes. Slowing of delivery vehicles may have an adverse impact on the local economy.

4.5.5 No-car Lanes

'No-car lanes' permit Buses, Taxis, HGV's and LGV's to use dedicated lanes, supporting sustainable transport modes whilst supporting the economy by also giving advantage to freight transport. It is thought that Buses, HGV's and LGV's will produce a greater proportion of emissions than cars at lower speeds and while idling. Allowing these vehicles to use lanes, which are free flowing will allow for a small reduction in emissions from these sources.

4.5.6 Quality Bus Partnerships

A Quality Partnership is a commitment between the Local Authority and Bus Operators, which can be either a statutory scheme or voluntary agreement. The Council must improve local bus infrastructure and maintain this throughout the life of the scheme; the bus operators are obliged to provide improvements to the service offered such as an improvement in the bus fleet. Operators benefit from increased patronage if services are fast and reliable. It is thought that if bus services are reliable and efficient the public will be more inclined to use the service; benefits to the Local Authority include a reduction in private travel and a reduction in congestion and vehicle emissions.

4.5.7 Create extra capacity on Trains, Metro and Buses

The 'All Change' Programme will involve reinvigoration of the Metro system allowing the continued use of the system that is approaching the end of its serviceable life. The plan to re-invigorate metro over the next 10 years includes an investment of £300 million and will see 45 stations and 90 trains modernised, millions spent on renewing track, overhead lines, communications and technology systems, bridges, tunnels and other structures.

4.5.8 Downsize Cars

The uptake of smaller engine cars when vehicles are replaced will provide lower pollutant emissions as compared to larger engine vehicles. The Government promotes the use of smaller more fuel-efficient vehicles through the Act on CO_2 campaign.

5.0 OPTIONS APPRAISAL

The identified options were evaluated against the following five criteria to determine the overall benefits of each option.

- **Air Quality Impacts** (i.e. Reduction in NO_2 levels)
- **Cost of Implementation**
- **Timeframe**
- **Non-air Quality Effects**
- **Feasibility / Practicability**

A breakdown of the requirements for each option is provided below:

AIR QUALITY IMPACTS

Air Quality impacts have been graded as 'low', 'medium' or 'high'. For each measure an estimation of the impacts of the option, the anticipated reduction in annual mean NO_2 concentrations have been evaluated. Anticipated reduction in NO_2 has been based on professional judgement and where available reductions have been based on experience gained from other studies.

The following classification scheme has been used:

Low – *Imperceptible.* Improvements are likely to be shown by monitoring due to the uncertainties associated with monitoring and modelling.

Medium – *Perceptible*. An improvement of up to 2μg/m^3 on the annual mean NO_2 concentration in the area, which could be shown by a modelling scenario. Improvements are not likely to be shown by monitoring due to confounding factors of the weather.

High - *Significant*. Improvement of more than 2μg/m^3 on the annual mean NO_2 concentration in the area. Can be clearly demonstrated by modelling or monitoring (a significant improvement is likely to be delivered by a package of options rather than by a single intervention).

COST OF IMPLEMENTATION

The cost of implementation refers to the initial outlay required to introduce an improvement option, information is also supplied on the annual running cost of the scheme following its implementation. The costing also takes into account any additional staff that may be required to deliver the option. In line with current government guidance, it is not necessary to carry out a detailed cost-benefit analysis but to provide a broad indication of costs so the proposed measures can be ranked.

The following classification of cost has been used:

Low - Less than £50,000

Medium - £50,000 to £150,000

High - £150,000 to £1,000 000

Very High - In excess of £1,000 000

TIMEFRAME

The timeframe for the implementation of options has also been considered. The following classification has been used:

Ongoing Relates to those measures which are currently being implemented or being implemented within 1 year.

Short-term - Relates to those measures that can be implemented within 1 to 2 years.

Medium-term - Relates to measures implemented within 3 to 5 years.

Long-term - Options which are likely to take in excess of 5 years.

NON-AIR QUALITY EFFECTS

This criteria aims to consider the non-air quality effects of each option on the local area and residents. It is important to acknowledge that the options may have beneficial and negative effects on the local area and local residents, these should be identified at this stage and where possible links should be made with other policy areas.

It is important that options should not have significant negative effects (For example, re-routing of traffic away from an area of poor air quality may cause pollution to be moved to other areas or may cause significant additional emissions which would have a negative impact on local efforts to minimise Climate Change).

FEASIBILITY / PRACTICABILITY

The feasibility of options will be assessed where possible. There are a number of considerations which may impact on how feasible each option may be in a particular location; additionally an option which may be feasible in one area may not be feasible in others. The following will be considered within this options appraisal:

- Stakeholder Acceptability;
- Availability of enabling legislation;
- Alignment with South Tyneside Council policies and strategies and other Tyne and Wear authorities' strategic initiatives, regional planning and Local Transport Plans;
- Socio-economic impacts;
- Wider environmental impacts (non-air quality, e.g. noise, climate change emissions, visual amenity);
- Source of funding available or possible;

The following categories have been used

++'ve - Very positive

+'ve - Positive

-'ve - Negative

--'ve - Very Negative

OVERALL RANKING

From the results of the assessment criteria outlined above an overall ranking of the options has been made of each of the potential actions, the ranking classification is outlined below:

Rankings

RANK	DESCRIPTION	COLOUR CODE
1	Action already in place (or possibly part of an ongoing programme).	
2	Action proposed to be taken forward within the first year of the action plan.	
3	Action proposed to be taken forward within 1 to 2 years of the implementation of the action plan.	
4	Action proposed to be taken forward between 3 to 5 years from the implementation of the action plan.	
5	Action proposed to be taken forward within 5 years from the implementation of the action plan.	
6	Not to be taken forward within this action plan	

Where possible modelling of the impacts of each of the proposals will be undertaken prior to commencement of works; this may be more applicable to 'hard' measures (such as change in road layout, speed restrictions, etc) whereas 'soft' measures (such as encouraging public transport patronage and changing attitudes) will be more subjective.

South Tyneside Council – External Interventions to Improve Air Quality

Measure	Description	Lead / Key Organisation	Air Quality Impact	Timescale	Cost	Non-air quality impact	Feasibility / Practicability	Ranking
Managing the Highway Network								
Traffic Regulation Orders	Investigate the potential of introducing Traffic Regulation Orders for the AQMA's and surrounding areas. Potentially limiting waiting and loading, speed limits and vehicle weight restrictions	South Tyneside Council	**Medium**	**Short**	**Low**	**Positive –** May reduce congestion and increase road safety. **Negative –** May potentially move problems elsewhere.	**++'ve**	**3**
Controlled Parking	Making areas surrounding AQMAs available for parking by residents only encouraging alternative modes of transport. (Not applicable for Leam Lane AQMA)	South Tyneside Council	**Low**	**Short**	**Medium**	**Positive –** Local Residents have priority of parking. **Negative –** Possible reduction in people visiting the area / reduction in business.	**-'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

High Occupancy Vehicle Lanes	Investigate the feasibility of introducing HOV lanes for vehicles with more than one passenger.	South Tyneside Council	**Low**	**Medium**	**Medium**	**Positive –** Encouraging resourceful use of vehicles. **Negative –** May cause congestion to worsen.	**--'ve** (Boldon Lane is a narrow one lane congested highway).	**5**
Traffic management schemes	Investigate the possibility of introducing traffic calming measures such as road humps etc to control traffic flow.	South Tyneside Council	**Low**	**Short**	**Medium**	**Positive –** May reduce congestion and increase road safety **Negative** – Certain measures may increase noise	**+'ve**	**4**
Co-ordination of Road Works	Road work co-ordination to limit congestion and air quality emissions	South Tyneside Council, Highways Agency	**Low**	**Short**	**Low**	**Positive –** Reduction in prolonged traffic disturbance **Negative –** Impact may be limited as traffic works are of short duration	**+'ve**	**3**
Re-routing of heavy traffic to parallel roads	Investigate the possibility of re-routing Heavy Traffic to parallel roads with a higher capacity and less exposed residential housing.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Potentially reduce congestion **Negative –** May move problems to other areas	**++'ve**	**4**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Cycle lanes and routes	Increase the provision of cycle lanes and routes giving higher priority to cyclists including advance cycle stop lines, installing toucan crossings etc.	South Tyneside Council	**Low**	**Short**	**Medium**	**Positive –** Contributes to health improvements, lowers congestion **Negative** – Measures may not be readily taken up by residents	**++'ve**	**3**
Bus Corridors / Lanes	Investigate the feasibility of introducing bus corridors / lanes within, and adjacent to the AQMAs.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Improved public transport, Increased patronage **Negative** – potential to increase congestion and may move traffic to other routes.	**++'ve**	**(Boldon Lane) 1** **(Leam Lane) 4**
No-car Lanes	Investigate the feasibility of introducing no-car lanes within or adjacent to AQMAs.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Improved public transport, allow flows of heavy goods vehicles through problem areas **Negative –** potential to increase congestion and may move traffic to other routes	**++'ve**	**4**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

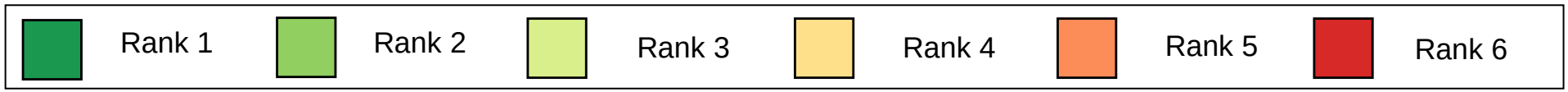
Major Schemes	**Tyne Tunnel 2** – See case study, Appendix F. This will allow duelling of the A19 from North Yorkshire to its junction with the A1	LTP2 / Highways Agency, South Tyneside Council, North Tyneside Council	**Medium –** Modelling shows improvements in air quality following implementation	**Medium**	**Very High** (Costs not funded through LTP2)	**Positive -** Reduced congestion on Tyne Tunnel approach roads **Negative –** Construction period may lead to congestion and limited duration increase in local air pollution	**++'ve –** Scheme due for completion 2011.	**1**
	Metro Reinvigoration – See section 4.1.8	NEXUS, Tyne & Wear Authorities	**Medium**	**Long**	**Very High** (Capital costs from Central Government funding)	**Positive –** Increased patronage, reduced congestion **Negative –** Long timescale for implementation	**++'ve**	**2**
Emissions Management								
Roadside Emission Testing	Stopping vehicles and testing tail pipe emissions, identifying those vehicles failing MOT standards	South Tyneside Council	**Low** (MOT standards do not correlate to pollutants in National AQS)	**Short**	**Low**	**Positive** – advice provision to public, pro-active appearance. **Negative –** MOT standards do not correlate to AQ emissions. May cause resentment in individuals involves	**-'ve**	**5**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Car Maintenance	Promoting basic car maintenance to improve vehicle efficiency	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Improves Road Safety of drivers, Lower wear and tear on cars. **Negative –** May not readily be taken up by residents, especially by those with the most polluting vehicles.	**++'ve**	**3**
Driving style	Promote eco-friendly driving to ensure those cars on the road are being driven in the most efficient manner.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** More fuel efficiency means financial savings, reduced carbon footprint, and improved road safety. **Negative** – Initial outlay on course, while there will be benefits in the long term initial expenditure may be prohibitive.	**++'ve**	**3**
Interactive Roadworks Map	Encourage further development of Roadworks Map and encourage its use by local businesses and residents.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – information provision to public **Negative** – does not include alternative routes	**+'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Telematics / Route Planning	Encourage local business fleets to use telematics and Route Planners to reduce driver	South Tyneside Council; Local Businesses	**Low**	**Short**	**Low**	**Positive** – Improve business efficiency **Negative** – Initial set up cost may be prohibitive	**++'ve**	**5**
Cleaner fuels	Promote the uptake of cleaner fuels throughout the Borough for private individuals and local businesses	South Tyneside Council; Local Businesses	**Low**	**Short**	**Low**	**Positive** – May reduce fuel costs over the long term. **Negative** – May not produce emission reduction required, implementation costs may be prohibitive.	**++'ve**	**3**
Variable Parking Fees	Investigate the possibility of introducing variable parking fees for different level emission cars to encourage more eco-friendly usage.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Financial incentive for those with low emission cars. **Negative** – Excludes owners of older vehicles which may already suffer financial hardship.	**++'ve**	**4**



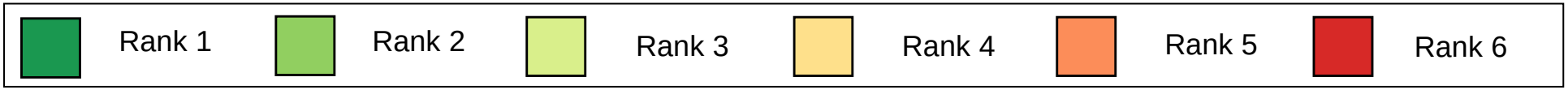
Emission standards for buses	Assess the possibility of Introducing Euro-engine standards on bus routes within AQMAs, possibly through Bus Quality Partnerships	South Tyneside Council; Nexus; Local Bus Operators	**Medium**	**Short to Medium**	**Medium**	**Positive –** Increased social inclusion, potential financial savings for passengers, improvements in accessibility, Improved public transport infrastructure, more reliable buses; Increased public transport patronage **Negative** – Potential high cost of implementation	**++'ve**	**3**
Eco-friendly driver training for bus drivers	Investigate the possibility of introducing eco-friendly driver training for local bus fleets in South Tyneside	South Tyneside Council; Local Transport Plan Partners; Local Bus Operators	**Low**	**Short**	**Medium**	**Positive –** Potential financial savings, increased road safety. **Negative** – potential cost of implementation	**++'ve**	**3**
Speed Restriction	Investigate the possibility, advantage and cost of introducing speed restrictions within the AQMAs	South Tyneside Council; Highways Agency	**Low**	**Short**	**Low**	**Positive –** Possible Road Safety benefits; **Negative –** Cost of implementing	**++'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Enforcement of Idling Legislation	Investigate the possibility of introducing enforcement of idling legislation	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Promotion of Environmental Considerations across South Tyneside. **Negative** – Enforcement action may not engender public will to make improvements.	**++'ve**	**4**
Retro-fitted abatement on vehicles	Encourage the uptake of end-of-pipe abatement to reduce vehicle emissions for larger vehicles and buses.	South Tyneside Council	**Low**	**Short**	**Medium**	**Positive –** Potential financial benefits from Reduced Pollution Certificates **Negative –** Initial outlay may be prohibitive	**++'ve**	**3**
HGV and Private Hire Vehicle Standards	Investigate the possibility of introducing a permit/award scheme for HGVs and Private Hire Vehicles to ensure Euro engine compliance.	South Tyneside Council; Local Businesses; Local Taxi Operators	**Low**	**Short**	**Low**	**Positive –** Improved fuel efficiency. **Negative –** Potential financial barriers to uptake	**++'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

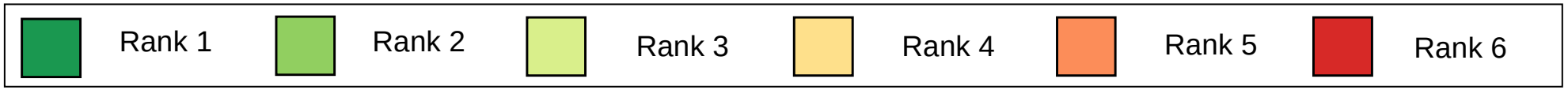
Land Use Planning								
Development Control	Environmental Health are consulted upon all 'Major' applications as well as some 'Minor' and 'Other' applications including: > Any development likely to impact on air quality in an Air Quality Management area; and > Proposals likely to generate emissions to air, including industrial activity, emissions from e.g. A3/A4/A5 use classes (restaurants, cafes or hot food takeaways) and development likely to generate significant dust during construction.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Promote sustainable development **Negative** – May add an extra burden on developers	**++'ve**	**1**



Information and Education								
Local Business Links	Set up local business links to promote best environmental practice, share inform about relevant legislation	South Tyneside Council; Local Businesses	**Low**	**Short**	**Low**	**Positive** – establish local business links, share best practice. **Negative** – May be reluctance to uptake actions	**++'ve**	**3**
Information to Schools and Parents	Target schools and parents with information regarding the benefits of using alternative modes of transport	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Promote alternative forms of transport, contribute to health improvements **Negative** – May be reluctance to uptake actions	**++'ve**	**3**
Road traffic data	Investigate the status of traffic data (speeds, traffic counts, vehicle splits) on specific links and the overall road network within South Tyneside	South Tyneside Council; Tyne and Wear Accident and Data Unit	**Low**	**Short**	**Low**	**Positive –** Ensure policy is based on sound data **Negative** – Potential gaps in data	**++'ve**	**2**
Eco-friendly driving schemes	Publicise the uptake of eco-friendly driving schemes for local business fleets	South Tyneside Council; Energy Saving Trust	**Low**	**Short**	**Low**	**Positive** – Financial savings, Improved Road Safety, Reduced Carbon emissions **Negative –** Initial cost of implementation may be prohibitive	**++'ve**	**3**

Travel plans	Encourage the uptake of Workplace and School Travel Plans, either voluntarily or through the development control process. See also LDF Supplementary Planning Document 7 on Travel Plans	South Tyneside Council, Local Businesses	**Low**	**Short to Medium**	**Low**	**Positive** – Encourages people to travel using methods other than single occupancy cars. **Negative –** Implementation of the plans may be difficult.	**++'ve**	**2**
Encourage cleaner vehicles	Promote the uptake of cleaner vehicles by encouraging people to include environmental decisions when buying new vehicles. This may include consideration of whole life costs.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Encourage residents and businesses to consider environmental issues **Negative –** People may be resentful to the Councils input on private matters	**++'ve**	**3**
Air Quality Awareness Raising	Participate in Tyne and Wear Air Quality Awareness Raising Programme	South Tyneside Council; T&W Air Quality Steering Group	**Low**	**Short**	**Low**	**Positive –** Raise awareness on a regional basis **Negative –** Costs of implementation may be high	**++'ve**	**1**
Joint Tyne and Wear Air Quality Website	Contribute to the regular updating of the Tyne and Wear Air Quality Website	T&W Air Quality Steering Group	**Low**	**Short**	**Low**	**Positive –** Easy access to regional information **Negative –** Costs of Implementation may be high	**++'ve**	**3**

Bonfires	Encourage composting, recycling and encourage bonfire controls on demolition sites. Publicity campaign to advise of negative effects.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Helps to minimise neighbourhood nuisance. **Negative** – It may be difficult to enforce compliance.	**++'ve**	**3**
Smoke Control	Enforce the requirements of the Smoke Control Areas in South Tyneside. Promotion of Smoke Control Area requirements.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Promote clean fuels in the home environment **Negative –** Does not relate directly to AQMAs	**++'ve**	**3**
Control of industrial emissions	Ensure full compliance with the Environmental Permitting Regulations (2007) to control relevant industrial emissions. Liaise with the Environment Agency.	South Tyneside Council, Environment Agency	**Low**	**Short**	**Low**	**Positive –** Encourages environmental improvements / considerations to be made in local businesses. **Negative –** Only reaches those businesses covered by the regulations	**++'ve**	**3**



Promotion and Provision of Alternatives								
Increased public transport provision	Increased public transport provision to encourage a modal transport shift from single use vehicles	Nexus, South Tyneside Council	**Low / Medium**	**Short**	**Low**	**Positive** – Increased public transport patronage, improves accessibility, encourages social inclusion **Negative** – Costs of implementation	++'ve	**3**
Car sharing	Promotion of car sharing and setting up of car sharing schemes will decrease the number of cars on the road	South Tyneside Council, Local Businesses	**Low**	**Short**	**Low**	**Positive** – Reduced levels of congestion **Negative** – Possible reluctance of individuals to take part	**++'ve**	**3**
Solid fuel uptake	Investigate the effects on air quality of increased trend in solid fuel and wood fuel biomass used in South Tyneside	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Sustainable fuel use. Financial savings **Negative –** Potential poor AQ and possible health effects	**++'ve**	**3**
Improved public transport links	Investigate the opportunity for promoting better public transport links in AQMAs	South Tyneside Council; NEXUS; Local Bus Providers	**Low**	**Short**	**Low**	**Positive –** Improved social inclusion, reduced congestion, improved accessibility **Negative** – Potential costs of implementing	**++'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Re-routing of Buses	Investigate the possibility of re-routing buses to provide alternative routes depending on passenger needs	South Tyneside Council; Nexus; Local Bus Providers	**Low**	**Short**	**Low**	**Positive –** Reduced congestion in AQMAs **Negative –** Reduced access, poor public transport provision	+'ve	**4**
Real time information at bus stops	Investigate the possibility of providing real time information at bus stops	South Tyneside Council; Nexus; Local Bus Providers	**Low**	**Medium**	**Medium / High**	**Positive** – Increased public transport patronage, improves accessibility, encourages social inclusion **Negative** – Costs of implementation	**++'ve**	**4**
Freight consolidation	Investigate the possibility of freight consolidation within South Tyneside and promotion of increased use of rail network	South Tyneside Council; Port of Tyne; Local Businesses	**Low**	**Medium**	**Medium**	**Positive –** potential financial savings to be made by local businesses. **Negative –** initial set up costs, may lack business support.	**+'ve**	**4**
Business Travel Plans	Investigate the possibility of establishing business travel plans for strategic sites in South Tyneside.	South Tyneside Council; Local Businesses	**Low**	**Short**	**Low**	**Positive –** encourages modal transport shift, potential savings for the individual **Negative** – May not be adopted in practice	**++'ve**	**1**

Quality Bus Partnerships	To ensure that buses operating within the AQMA do not adversely contribute to local air quality.	NEXUS, Local Bus Operators, South Tyneside Council	**High**	**Short**	**Medium to High**	**Positive –** Encourages access to public transport, improves access opportunities across Tyne and Wear, Encourages improvements in local bus infrastructure **Negative –** Significant investment needed from Local Authority and Bus Operators	**++'ve**	**2**

Key

Timescale: Long = 5 to 20 years, Medium = 2 to 5 years, Low = Less than 2 years.

Cost: Very High = Greater than £1million, High = £500k to £1million, Medium = £100k to £500k, Low = < £100k.

Air Quality Impact (shown as a reduction in annual mean NO_2) High = 2µg/m^3, Moderate = 1 to 2µg/m^3, Low = 0.2 to 1µg/m^3, and Negligible = Less than 0.2µg/m^3.

Rankings: 1 = Ongoing, 2 = Planning Stages, 3 = 6 months following AP, 4 = 6 to 24 months following AP, 5 = 2 to 5 years following AP, 6 = Not to be taken forward in AP.

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

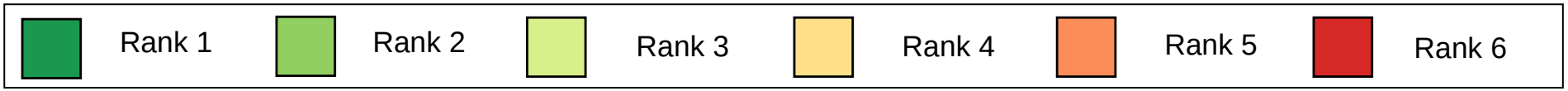
South Tyneside Council – Internal interventions to improve air quality

Measure	Description	Lead / Key Organisation	Air Quality Impact	Timescale	Cost	Non-air quality impact	Feasibility / Practicability	Ranking
STC Workplace Travel Plan	To reduce the impact of South Tyneside Council's business and staff travel by promoting and providing alternative transport methods.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Reduce pressure on highways, potential financial savings to employees, possible health benefits to employees. **Negative** – Potential reluctance from employees to change transport modes, potentially impractical for some employees.	**++'ve**	**1**
Review Tyne & Wear Air Quality Strategy	Review the strategy through the Tyne and Wear Air Quality Steering Group	Tyne and Wear Air Quality Steering Group; Tyne and Wear Authorities	**Low**	**Medium** *(current strategy runs to 2011)*	**Low to Medium**	**Positive -** Ensures latest information is included in documentation. **Negative** – Requires regional consistency	**+'ve**	**3**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Review Tyne and Wear Local Transport Plan and Air Quality Delivery Plan	Review the Air Quality section of the LTP and AQ Delivery Plan through the Tyne and Wear Air Quality Steering Group	Tyne and Wear Air Quality Steering Group; Tyne and Wear Local Authorities; Local Transport Plan Core Team	**Low**	**Medium** *(current strategy runs to 2011)*	**Low**	**Positive -** Ensures latest information is included in documentation. **Negative** – Requires regional consistency	**+'ve**	**5**
STC's Local Air Quality Strategy	Review the strategy.	South Tyneside Council	**Low**	**Medium** *(current strategy runs to 2011)*	**Low**	**Positive -** Ensures latest information is included in documentation. **Negative** – n/a	**+'ve**	**5**
Remote / Home working	Investigate the feasibility of a remote / home working scheme.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** allows greater flexibility for employees **Negative** – May lead to isolation of staff and barriers to sharing information	**++'ve**	**1**
Promotion of virtual meetings	Promote teleconferencing / video-conferencing / online meetings.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Potentially quicker and less cost than face-to-face meetings. **Negative** – Less personal contact in meetings.	**++'ve**	**4**
Promote use of short-loan vehicles	Promote use of short loan vehicles encouraging council staff to use more energy efficient vehicles.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Means employees do not rely on their own vehicles. **Negative** – Availability problems may limit uptake.	**++'ve**	**3**

STC Procurement	Implement a green corporate procurement strategy to reduce emissions.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Ensure environmental considerations are made up the supply chain. **Negative** – May be difficult to ascertain if how emissions are affected.	**++'ve**	**2**
Vehicle Maintenance	Ensure a full programme of vehicle maintenance is adhered to ensure the business fleet is running efficiently	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** More fuel efficiency means financial savings, reduced carbon footprint, and improved road safety. **Negative** – Initial outlay on course, while there will be benefits in the long term initial expenditure may be prohibitive.	**++'ve**	**1**
Telematics / Route Planning	Investigate the possibility and benefits of extending the use of telematics and Route Planners in the Council's business fleet.	South Tyneside Council	**Low**	**Medium**	**Medium** ***(exact costs unknown)***	**Positive** – Improvement in worker Health and Safety. **Negative** – Relatively high cost of implementing.	**--'ve**	**6**



Cleaner fuels	Review the current arrangements regarding the use of cleaner fuels within the business vehicle fleet.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Potential whole of life cost savings to be achieved. **Negative** – Potential increased cost in implementation.	**++'ve**	**3**
Retro-fitted abatement on vehicles	Review the uptake of retrofitting end of pipe abatement for those that have not been fitted.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Potential financial savings, for example through Reduced Pollution Certificates. **Negative** – Possible up front costs in fitting the abatement	**++'ve**	**3**
Review Council Staff Car Parking Arrangements	Review current staff parking arrangements to encourage alternative travel modes.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Encourage a modal shift for work travel **Negative** – Possible reluctance to change	**++'ve**	**2**
Car sharing	Promotion of car sharing and setting up of car sharing schemes to decrease the number of cars on the road	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Reduced levels of congestion, financial savings. **Negative** – Possible reluctance of individuals to take part.	**++'ve**	**1**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Delivery times outside of peak hours	Encourage deliveries outside of peak traffic flow times	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – help to reduce congestion. **Negative** – May be difficult in enforcing	**--'ve**	**6**
Eco-friendly driving schemes	Implement a scheme of eco-friendly driver training for the Councils business fleet drivers	South Tyneside Council	**Low**	**Short**	**Low**	**Positive** – Possible financial savings from fuel economy. Lowered Carbon emissions. **Negative** – Initial financial outlay may be high	**++'ve**	**1**
Travel plans	Encourage the development and use of Workplace and School Travel Plans for STC. See also LDF Supplementary Planning Document 7 ON Travel Plans.	South Tyneside Council, Local Businesses	**Low**	**Short to Medium**	**Low**	**Positive** – Alternative transport modes, financial savings, reduced congestion **Negative –** May be reluctant uptake by staff.	**++'ve**	**1**
Section 106 Developer Contributions	Continue to monitor procedures for applicants and developers to mitigate the negative effects of air quality development through Section 106 Agreements.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Promotes sustainable development **Negative** – May place an additional burden on developers	**++'ve**	**3**

Green Fleet Policy	Investigate the feasibility of introducing a green fleet policy to encourage green vehicle across the vehicles whole life.	South Tyneside Council	**Low**	**Short to Medium**	**Low**	**Positive –** Provide financial savings, aligns fleet management activities with environmental improvements **Negative -**	**++'ve**	**4**
Energy Efficiency	Reduce emissions of greenhouse gases and nitrogen dioxide from STC premises.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Potential financial savings. **Negative –** May require initial financial outlay.	**++'ve**	**3**
Investigate the feasibility of adopting transport fuel target	Investigate the feasibility of adopting a central government target for road transport with amendments: Aim for 20% of all council transport fleet fuels to be from a renewable source by 2010.	South Tyneside Council	**Low**	**Medium**	**Low to Medium** *(exact cost unknown)*	**Positive –** Relates to STC sustainable development **Negative –** May be additional costs associated with this	**++'ve**	**5**
Review car mileage expense scheme / Grey business fleet arrangements	Review the current car mileage scheme and investigate the feasibility of introducing alternative travel arrangements	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Help to ensure that appropriate Duty of Care is considered. **Negative** – May lead to additional costs.	**++'ve**	**3**

Cycle to work scheme	Scheme to help employees to buy cycles and safety equipment to use in their travel to work	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Improves employee health, reduces congestion, financial savings. **Negative** – May be limited uptake by employees.	**++'ve**	**1**
Investigate the possibility of low emission car leasing scheme	Investigate the establishment of a low emission car leasing scheme	Tyne and Wear Local Authorities	**Low**	**Medium**	**Medium** *(Costs unknown at present)*	**Positive –** Additional work benefit for employees. **Negative** – May be financial costs.	**+'ve**	**4**
Showers and additional cycling facilities at the town hall	Investigate the possibility of installing / upgrading showers and additional cycling facilities at the town hall.	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Encourages healthy lifestyles **Negative** – May be limited use by employees	**++'ve**	**1**
Implement a business mileage allowance for cyclists	Implement a business mileage allowance for cyclists to encourage the use of bicycles on council business	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Encourages healthy lifestyles **Negative** – May be limited uptake by employees	**++'ve**	**1**

Rank 1 Rank 2 Rank 3 Rank 4 Rank 5 Rank 6

Storage facilities for Motorbikes / Scooters	Investigate the potential of installing secure storage facilities for Motorbikes / Scooters	South Tyneside Council	**Low**	**Short**	**Low**	**Positive –** Encourage the use of alternative modes of transport, ease parking problems **Negative** – May be limited uptake by employees	**++'ve**	**3**

Key
Timescale: Long = 5 to 20 years, Medium = 2 to 5 years, Low = Less than 2 years.
Cost: Very High = Greater than £1million, High = £500k to £1million, Medium = £100k to £500k, Low = < £100k.
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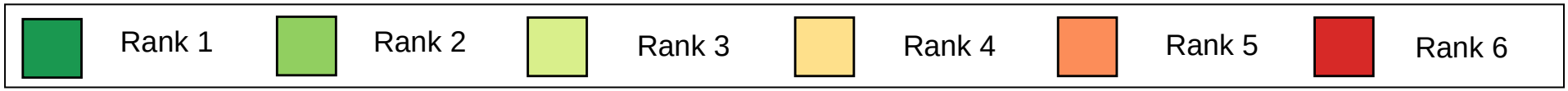

6.0 FINANCING

As shown above the implementation of this Action Plan will have a number of financial implications. For the purposes of this action plan the costs of proposed measures have been estimated. Sources of funding to be explored include:

Local Transport Plan – Air Quality is embedded as a core theme of the current Local Transport Plan for Tyne and Wear (LTP2). The Air Quality Delivery Plan contains actions that will deliver the policy objectives of LTP2.

Developer Contributions – through Section 106 Agreements and similar arrangements developers may be able to contribute to improvements in air quality. South Tyneside Council have previously secured resources for the monitoring of NO_2 further to a large residential development at Hedgeley Road, Hebburn.
See also adopted LDF Supplementary Planning Document 5 on Planning Obligations & Agreements.

European projects – European funding is often may be available for transport planning and may be available to South Tyneside Council or the Tyne and Wear authorities through the LTP.

Direct Charging – through road pricing, workplace charging, off-street and on-street parking charges.

Government / Government funded bodies – For example, Energy Saving Trust, which provides free consultancy on fleet management (in terms of cutting emissions) for any organisation running a minimum of 50 vehicles.

7.0 CONSTRAINTS TO SUCCESS

Although the action plan aims to reduce air pollution within South Tyneside's AQMAs, and generally across the whole of the Borough, it is important to recognise the inherent constraints that may affect the success of this plan. While these measures are being tackled within the plan and within other relevant plans and programmes in Tyne and Wear, there is no guarantee of reversing trends and therefore the aims of this action plan may not be fully realised. The main constraints to the success of the action plan are identified below:

- The current economic downturn may result in less investment by government, businesses and individuals in measures to improve air quality as competing demands take priority.

- Increased car ownership. While there is a low base level of car ownership in Tyne and Wear compared to other areas, it is anticipated that there will be a significant future increase in levels of car ownership in Tyne and Wear. The increased volume of cars will mean a potential increase in air quality emissions.

- Growth in jobs around the major centres in Tyne and Wear, meaning an increase in car commuting, potential worsening of congestion and therefore an increase in associated air quality emissions.

- It is believed that there will be an increase in public transport fares in the future; this may prove to be a disincentive for public transport patronage.

- Public acceptance of the proposals. It is important that the proposals outlined in the action plan are acceptable to members of the public and therefore be unusable even if it likely these may provide an appropriate reduction in emissions.

- Uncertainty of outcomes and data. Because of the significant variations that can be experienced in monitoring levels of air pollution with variation in climatic conditions it may be difficult to attribute improvement or worsening of pollution

levels to measures implemented. While there is always a need for more accurate and reliable data there is a cost element, which needs to be taken into account.

- Risks associated with major development, such as the New Tyne Crossing. There are a number of uncertainties regarding the travel patterns in the local area during the construction of the New Tyne Crossing. While measures are in place to re-route traffic and limit any associated congestion, it is unknown how these arrangements will affect motorists. It is believed there will be a general slowing of traffic, increase in congestion and an associated increase in traffic related pollutant emissions.

- Some of the proposed actions contained within the plan can only be taken forward following securing of appropriate funding.

8.0 CONSULTATION

Policy Guidance Note LAQM.PG(03) details the statutory basis for consultation and liaison in respect of Air Quality Action Plans. With regard to consultations, Schedule 11 of the Environment Act (1995) requires the Council to consult:

- The Secretary of State (DEFRA)
- The Environment Agency
- The Highways Agency
- Neighbouring local authorities
- Other public authorities and local organisations as appropriate
- The public as appropriate

In carrying out its functions in respect of an air quality action plan the South Tyneside Council will consult:

- The Secretary of State
- The Environment Agency
- The Highways Authority
- The Government Office North East
- Neighbouring Local Authorities
- South Tyneside Primary Care Trust
- The Tyne and Wear Local Transport Plan Core Team

South Tyneside Council have undertaken an external public consultation on the proposals contained in the draft Air Quality Action Plan (AQAP). The consultation process initially involved an internal consultation with all appropriate stakeholders, comments were received and amendments were made prior to the production of a final draft of the Air Quality Action Plan for South Tyneside.

A full public consultation was undertaken between February and March 2010 inviting comments on the draft Air Quality Action Plan. The consultation document involved the Action Plan being published on the Council's website, publications in the local press and presentations to Local Community Area Forums (CAFs) where elected members, community representatives and residents were in attendance.

Thirteen responses were received in connection to the consultation exercise undertaken. These responses were considered and where appropriate comments were included in the final Air Quality Action Plan for South Tyneside. A number of consultation responses were received that did not directly relate to air quality issues in the Air Quality Management Areas, these responses were followed up outside of the Action Planning process.

9.0 IMPLEMENTATION AND MONITORING

It is important that the measures outlined in this action plan are implemented to achieve the suggested improvements in local air quality and progress towards the Air Quality objectives within South Tyneside's AQMAs.

Monitoring of the action plan measures are also required to ensure progression of the plan and improvements within the designated AQMAs. Indicators embedded within LTP2 will be used to provide an update regarding the progression of the Air Quality Action Plan; other Tyne and Wear authorities also use these indicators. Examples of indicators include:

- Changes in area wide traffic mileage;
- Peak period traffic flow to urban centres;
- Congestion, and
- Modal splits (Including information on travel plans)

South Tyneside Council will also continue to monitor air quality through a series of automatic and passive samplers. Pollutant concentrations will be monitored using a three year rolling mean to avoid the effects of changing weather conditions. The monitoring network will be reviewed on an ongoing basis and extended where gaps in coverage exist.

Actions already proposed for air quality improvements in Tyne and Wear, as contained in the LTP2 Air Quality Delivery Plan are outlined in Appendix D. This action plan will help ensure the objectives of the delivery plan are supported; these actions have been included in the action plan where relevant.

Definitions

Air Dispersion Modelling -mathematical modelling calculations using emissions data from an emissions inventory.

AQAP - Air Quality Action Plan -

AQS - Air Quality Standard– these standards represent minimal/no risk health based standards, for ambient concentrations of pollutants. They are based purely on medical evidence, taking no account of costs, benefits or technical feasibility.

AQO - Air Quality Objective – these objectives take account of both costs and benefits, forming benchmarks in time, against which "Air Quality Standards" can be achieved.

Annual mean – The average of the concentrations measured or calculated for each pollutant for one calendar year.

AQAP – Air Quality Action Plan

AQMA – Air Quality Management Area

Background concentration – Concentration of a particular pollutant thought to be present in an area, which cannot be accounted for by dispersion modelling from local emissions. It is generally caused by transportation of pollutants over long distances.

Data Capture – The percentage of all the possible measurements for a given period that were validly measured

DA - Detailed Assessment

DEFRA – Department for Environment, Food and Rural Affairs

DETR – Department for the Environment and the Regions (Now DEFRA)

DfT – Department for Transport

DMRB – Design Manual for Roads and Bridges

EPAQS – Expert Panel on Air Quality Standards, an independent panel of experts providing advice to the government on the health effects of air pollution

EST - Energy Saving Trust

Exceedence – A period of time where the concentration of a pollutant is greater than, or equal to, the appropriate air quality objective.

FQP - Freight Quality Partnership

GONE - Government Office North East

HGV's - Heavy Goods Vehicles

HOV – High Occupancy Vehicle Lane

IPPC – Integrated Pollution, Prevention and Control Act 2000

LDF – Local Development Framework

LGV's - Light Goods Vehicles

Maximum hourly average – The highest hourly reading of air pollution obtained during the time period under study.

NAQS – National Air Quality Strategy

NETCEN – National Environmental Technology Centre

NO_2 – Nitrogen dioxide

NO_x – Nitrogen oxides

Percentile – A value found by listing a set of numbers in order and calculating the number below which a certain percent of the data set lies. For example, the 99^{th} percentile of values in a data set is the value below which 99% of the data falls.

QA/QC – Quality Assurance/Quality Control.

SCOOT – Split cycle and offset optimisation technique

SEA – Strategic environmental assessment

USA - Updating and Screening Assessment

SO_2 – Sulphur dioxide

VOSA – Vehicle and Operator Services Agency

$\mu g/m^3$ – Microgrammes per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of $1\mu g/m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

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Tyne and Wear Local Transport Plan 2

Tyne and Wear Local Transport Plan 2: Air Quality Delivery Plan

Tyne and Wear Local Transport Plan 2: Congestion Reduction Plan

APPENDIX A: NATIONAL AIR QUALITY OBJECTIVES

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25μg/m^3	Running annual mean	31/12/2003
	5μg/m^3	Annual mean	31/12/2010
1,3 Butadiene	2.25μg/m^3	Running annual mean	31/12/2003
Carbon Monoxide	10.0μg/m^3	Maximum daily running 8-hour mean	31/12/2003
Lead	0.5μg/m^3	Annual mean	31/12/2004
	0.25μg/m^3	Annual mean	31/12/2008
Nitrogen dioxide	200μg/m^3 not to be exceeded more than 18 times a year	1 hour mean	31/12/2005
	40μg/m^3	Annual mean	31/12/2005
Particles (PM10) (gravimetric)	50μg/m^3 not to be exceeded more than 35 times a year	1 hour mean	31/12/2004
	40μg/m^3	Annual mean	31/12/2004
Sulphur dioxide	350μg/m^3 not to be exceeded more than 24 times a year	1 hour mean	31/12/2004
	125μg/m^3 not to be exceeded more than 3 times a year	24 hour mean	31/12/2004
	266μg/m^3 not to be exceeded more than 35 times a year	15 minute mean	31/12/2005

APPENDIX B: CONSULTATION

South Tyneside Council have undertaken an external public consultation on the proposals contained in the draft Air Quality Action Plan (AQAP). The consultation process initially involved an internal consultation with all appropriate stakeholders, comments were received and amendments were made prior to the production of a final draft of the Air Quality Action Plan for South Tyneside.

A full public consultation was undertaken between February and March 2010 inviting comments on the draft Air Quality Action Plan. The consultation document involved the Action Plan being published on the Council's website, publications in the local press and presentations to Local Community Area Forums (CAFs) where elected members, community representatives and residents were in attendance.

Thirteen responses were received in connection to the consultation exercise undertaken. These responses were considered and where appropriate comments were included in the final Air Quality Action Plan for South Tyneside. A number of consultation responses were received that did not directly relate to air quality issues in the Air Quality Management Areas, these responses were followed up outside of the Action Planning process.

APPENDIX C: MODEL METHODOLOGY / INPUT DATA

A2.1 Pollutant concentrations were assessed by modelling using the ADMS-Roads model. Model input parameters are described below.

Meteorological data:

A2.2 Meteorological data came from measurements made at Newcastle Airport meteorological station during 2006. This site has been used in previous Review and Assessment work undertaken by Newcastle City Council.

Horizontal Road Alignment:

A2.3 Road alignment was based around Ordnance Survey road centreline data. Those roads that were not explicitly included have been accounted for via the background component of the modeled results.

Traffic data:

A2.4 Annual Average Daily Traffic flows obtained from the STM traffic model for Tyne and Wear (as used within the Local Transport Plan 2006). This model provided traffic data for 2005, which were then factored forward to 2006 using a combination of the national NRTF and local Tempro factors as advised on the Review and Assessment Helpdesk Website.

A2.5 Speeds were also utilised from the STM model and within 30m of junctions it was assumed that the speed would be a third that of the average over the whole road link.

Background Concentrations:

A2.6 These have been taken from the national maps supplied by Defra and the Devolved Administrations (2007). Background concentrations used in the modelling were 33.58 μg/m3 NOx and 22.55 μg/m3 NO_2 for Boldon Lane and 34.92 μg/m3 NOx and 23.23 μg/m3 NO_2 for Leam Lane.

Model Verification:

A2.7 The ADMS-Roads dispersion model has undergone extensive international validation. This validation has not, however, been performed for this specific geographical area and these specific input data. It is thus important to verify the model results by comparing them with local measurements. By adjusting the model to agree closely with the measured data, any inherent uncertainties can be minimised. Verification and adjustment was undertaken in each of the areas seperately.

A2.8 Most nitrogen dioxide (NO_2) is produced in the atmosphere by reaction from the primary pollutant, nitrogen oxides (NOx), with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emissions. The model has been run to predict annual mean concentrations of NOx during 2006 at the diffusion tube monitoring sites within each study area.

Step 1 The diffusion tubes measured NO_2, and so the total measured NOx was calculated from the measured NO_2 concentrations at each of the monitoring locations using the NOx to NO_2 calculator available on the Air Quality Archive website[4].

Step 2 The contribution of the road to this total concentration was then calculated as the difference between the total and the background value for the 1 x 1 km square in which the measurement was made (Defra and DAs, 2007).

Step 3 A primary adjustment factor was then calculated using the best fit line between the calculated road contribution and the model derived road contribution.

[4] www.airquality.co.uk/archieve/laqm/tools/Nox_from_NO2_Calculator_v3_1.xls

Step 4 The road contribution to the total annual mean nitrogen dioxide concentration was then calculated using the following relationship, specified by the Review and Assessment helpdesk (available from Defra, 2007): NO_2 (road) = NO_x (road) x (-0.719 x Ln(NO_x(total))+0.6248)

Step 5 The total nitrogen dioxide concentration was then determined by adding the background NO_2 concentration for the area (Defra and DAs, 2007) to this calculated road contribution. A secondary adjustment factor was then calculated using the best-fit line applied to the adjusted concentration data.

Step 6 Primary and secondary adjustment factors were applied to all modelled data.

	Boldon Lane	**Leam Lane**
Primary adjustment factor:	**1.0008**	**1.6319**
Secondary adjustment factor:	**0.9803**	**0.9973**

A2.9 Comparisons of the modelled nitrogen dioxide concentrations with the actual measured diffusion tube concentrations at the monitoring locations, once both adjustment factors have been applied, are shown in Figure A1 and A2.

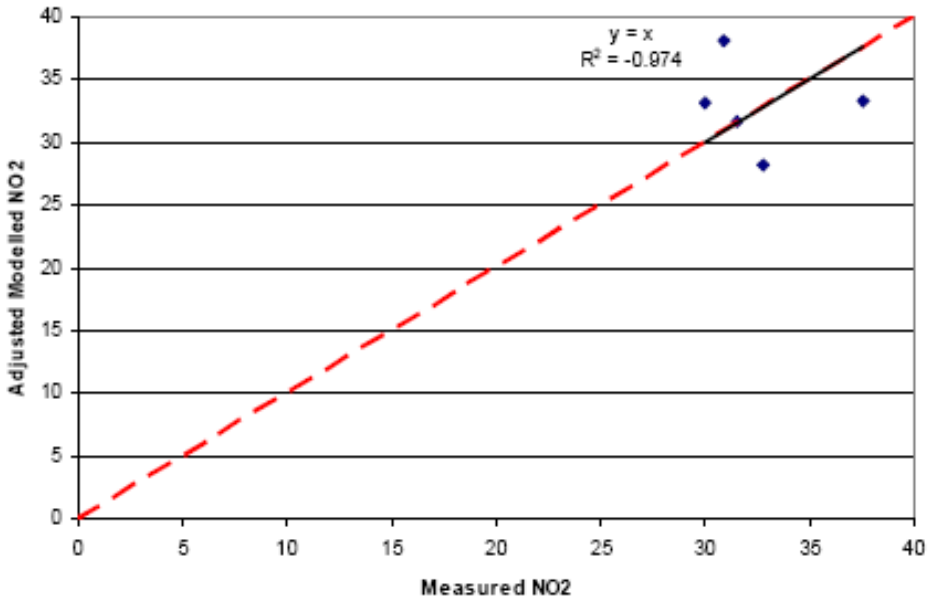


Figure A1: Comparison of measured nitrogen dioxide concentrations to fully adjusted modeled concentrations at each of the monitoring locations, within the Boldon Lane study area.

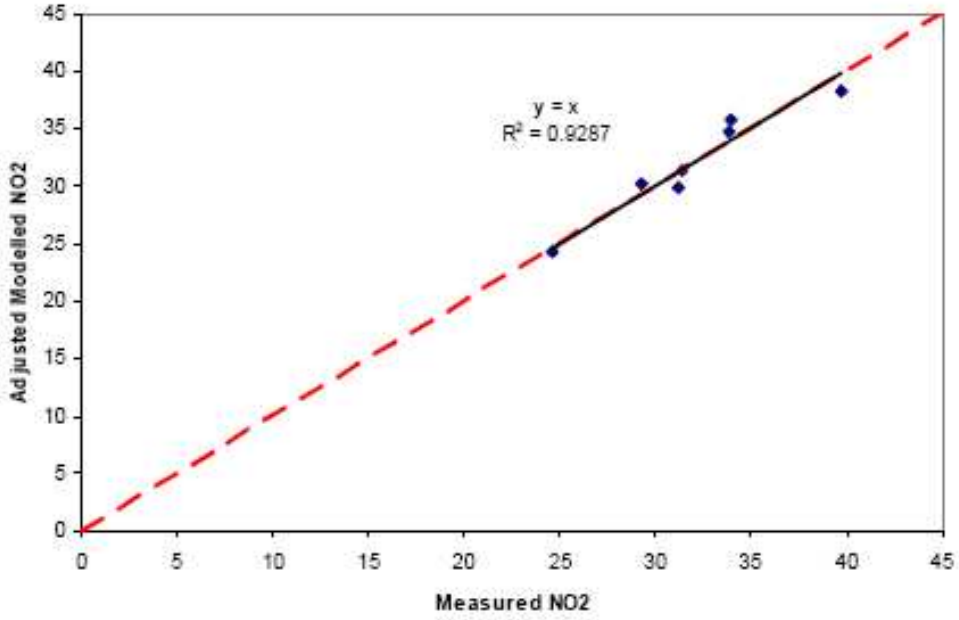


Figure A2: Comparison of measured nitrogen dioxide concentrations to fully adjusted modeled concentrations at each of the monitoring locations, within the Leam Lane study area.

Source Apportionment

A2.10 The model has been used to determine the proportion of emissions at 6 lcoations within the Boldon Lane AQMA for each of the vehicle categories listed below. The categories assessed are:

- Cars
- Light Goods Vehicles (LGV)
- Other Goods Vehicles (OGV) (Rigid and Artic HGVs)
- Buses and Coaches

A2.11 Concentrations at each receptor have been modelled for each vehicle category independently. The total NO_2 concentration was initially apportioned to background and road components. The road NO_2 component was then further apportioned into source categories according to the relative contribution of each source to the total road NOx.

APPENDIX D: ACTION POINTS FROM LTP2 AIR QUALITY DELIVERY PLAN

Actions	Responsibility	Timeline
Relationship between Air Quality and Development Control		
• Enhance guidelines to ensure the following: 1. Assurance that Development Control are certain of what developments should be consulted on by Air Quality officers and Environmental Control. 2. Standardise the conditions and thresholds, which have to be present to justify Environmental Health to comment upon a development. This includes standardisation of factors such as size, amount of employers / residents, trips generated per day and resulting traffic levels. 3. Create a framework whereby Development Control is familiar with this guidance and accustomed to employing it.	South Tyneside Council Environmental Health, Planning Policy and the Area Planning Group.	Completion of LTP2 process (expected 2010)
• Create a framework whereby the developer must carry out real time monitoring (or fund this process) before the development goes ahead.	STC Environmental Health, Planning Policy and the Area Planning group	Completion of LTP2 process (expected 2010)
• Ensure that developers allocate part of their budget to mitigating measures, should there be concerns about the impact of development on air quality issues	STC Environmental Health, Planning Policy and the Area Planning group	Completion of LTP2 process (expected 2010)
Number of Euro engine buses operating in AQMA / future AQMAs in Tyne and Wear		
• Use powers of the forthcoming Transport Bill to improve the quality of local bus services including modernising the fleet to reduce harmful operations from bus operations.	LTP Plan Partners, Superoute board and bus operators	Ongoing. Using improvements of existing mechanisms
• Encourage eco-friendly driving courses for bus drivers to prevent bus idling.	Plan Partners, bus operators and PHEP officers. Energy saving Trust currently looking into providing this service to bus operators.	Ongoing. Using improvements of existing mechanisms
• Better enforcement mechanisms preventing idling in city centres.	Plan Partners, bus operators and PHEP officers.	Ongoing. Using improvements of existing mechanisms
Effective use of awareness and marketing campaigns		
• Employ the services of the Smarter Choices Team to orchestrate a comprehensive and area wide marketing campaign to spread awareness of sustainable modes and air quality problems. Such campaigns may include: - Co-operation with local newspapers to ensure media coverage on daily levels of air quality in AQMAs and suggestion of alternative routes. - Offer personalised journey planning. - Offer days with free public transport to encourage people to familiarise themselves with these modes. - Update the Tyne and Wear joint Air Quality website and make this accessible for the public.	Smarter Choices Team, Tyne and Wear Councils in-house PR teams and JTWG	Up to 2011

• Use in-house PR teams or social marketing to raise awareness about travel offices or alternative services for business travel in Councils	Tyne and Wear in-house PR teams	Ongoing
• Gateshead is currently carrying out an internal consultation in areas with poor air quality in order to write an action plan. Information could through this process be spread to household in affected area, informing them of current conditions and related actions. This is a statutory requirement prior to declaring an AQMA.	Tyne and Wear Councils and PHEPS officers	Ongoing
Council own vehicle fleets and business travel arrangements		
• Develop consultation on improvements for travel planning in each authority	Tyne and Wear Councils	By 2009
• Move towards setting up Travel Offices in each local authority, as this is vital to the operation of in-house travel plans.	Tyne and Wear Councils	By 2010
• Include targets for low emission council fleets in the next LTP, LA21 Strategies and Carbon Management Plans to assure more cooperation between policy makers and fleet managers.	JTWG	Commence 2011
• Ensure that Council Staff Travel Plans are mandatory and operational.	JTWG, LTP Steering group and Tyne and Wear Travel Planners Group	By 2009
• Introduce low emission car leasing schemes throughout Tyne and Wear local authorities.	Travel Offices	By 2010
Business Travel Plans		
• Standardise guidelines for thresholds, trips generated per day and size of developments demanding travel plans for both old and new developments.	Planning Officers, Development Control and JTWG	The LDF is an ongoing process
• Achieve the above through SPD 7 on Travel Plans • Standardise transport assessments for Tyne and Wear.	Planning Officers, Development Control and JTWG	The LDF is an ongoing process
• Investigate the opportunity for city wide differential parking fees to give an incentive to use public transport / car sharing schemes / low emission cars.	Tyne and Wear Councils, TIF investigations and parking managers	Requires scoping by 2009.
Other Actions		
• Work in partnership with Newcastle University to contribute to work in linking SCOOT systems to air quality management processes. Tyne and Wear is a Transport Innovation Fund area, and is in accordance to this carrying out a pilot study for the usage of UTMC with elements of air quality. Should this pilot study prove successful there might be scope to investigate the opportunity to roll out this study to all parts of Tyne and Wear.	JTWG and LTP Core Team	Commence 2008
• Create a designated Air Quality Management Theme group in order to ascribe formal ownership of the plan and its monitoring process to a specific group. Meeting dates for this group must also be formalised.	JTWG, LTP Core Team and EHPs	Commence 2008

• Gateshead Council is, in cooperation with Newcastle University, working on a project called 'Message', which develops traffic sensors calculating levels of emissions. These small sensors can count traffic as well as communicate with each other using ultrasound. They can also be placed on moving vehicles in order to monitor and measure a wider area and build up a database of information. There is currently a pilot study being carried out for these sensors on certain Gateshead networks to collect initial information and determine the success of the sensors. We propose an action whereby this pilot study is duplicated to the other Tyne and Wear authorities, subject to satisfactory results from the Gateshead trial.	JTWG and TORG	Commence 2008
• Continuing investment in the Metro, such as the Metro Reinvigoration Project, will retain and encourage rising metro use and provide a non-emission quality travel alternative to car use in AQMAs and hotspot areas.	Nexus	Ongoing

APPENDIX E: AIR POLLUTION INFORMATION BANDS

Air Pollution Information Bands are based on a numerical index (1 to 10) to enable the general public to interpret pollution warnings with ease.

Band / Index	**Nitrogen Dioxide NO_2** (Hourly Mean)	
	µg/m3	**ppb**
Low		
1	0 –95	0 – 49
2	96 – 190	50 – 99
3	191 – 286	100 – 149
Medium		
4	287 – 381	150 – 199
5	382 – 476	200 – 249
6	477 – 572	250 – 299
High		
7	573 – 635	300 – 332
8	636 – 700	333 – 366
9	701 – 763	367 – 399
Very High		
10	764 or more	400 or more

APPENDIX F: AIR QUALITY IMPROVEMENT CASE STUDIES

Air Quality Improvements / Interventions within South Tyneside

CASE STUDY 1 - Leam Lane AQMA

Lindisfarne Roundabout Signalisation

SCHEME IMPLEMENTATION DATE
Jan 2008 - April 2008

BACKGROUND INFORMATION

- Relates to LTP Air Quality, Accessibility, Congestion Relief and Road Safety Themes
- A194 Congestion Relief / Local Safety Scheme (Designated High Impact route on Highways Hierarchy)
- Location – Lindisfarne Roundabout – A194 & A19 connection
- Aims – Congestion Relief, Air Quality Issues, Accident Reduction
- Duration – One Year Approach

RELATED COSTS

- £186,016 – Financial Year 2007/2008

PROBLEMS

- Accident Problems at the Roundabout;
- Freight Access to major corridors;
- Congestion Levels;
- Air Quality Problems at junction;
- Vehicle Speeds on approach to junction.

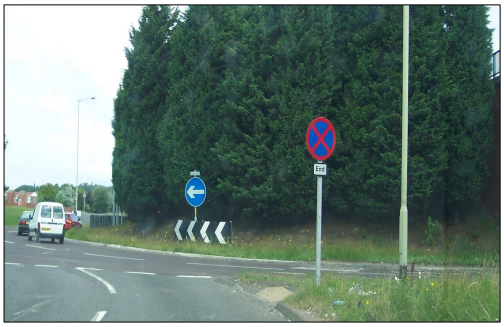
SOLUTIONS

- Improved traffic management with signalised junction;
- Regular traffic flow reaching roundabout thus improving Air Quality;
- Road Safety Improvements to reduce the potential of accidents occurring.

BEFORE MONITORING	AFTER MONITORING
- Large Amount of congestion in rush hour periods - High Number of Accidents	- Scheme was only completed in March 2008. No After Monitoring has been completed. Initial indications show improved flows

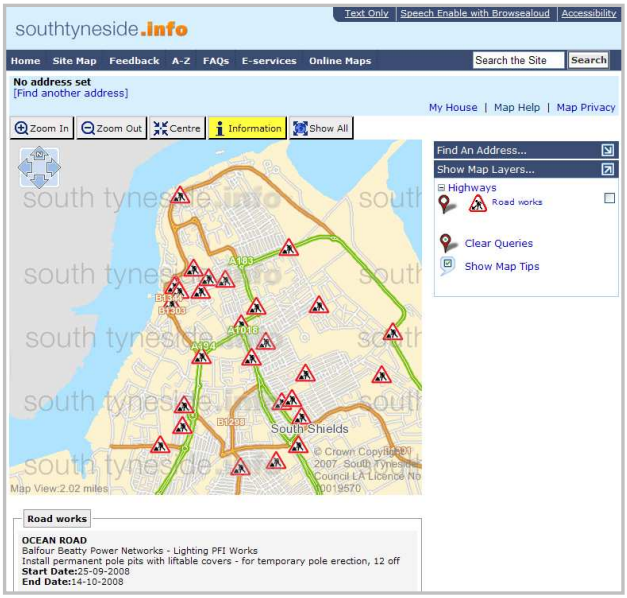
PHOTOS
(BEFORE AND AFTER)

- Picture before implementation / start of scheme



- Picture after completion of scheme.

CASE STUDY 2 – Interactive Roadwork's Map



The interactive map can be accessed through www.southtyneside.info the map displays notices of works on the public highway in South Tyneside including major and minor road works.

Searches can be carried out on addresses within the Borough. The map allows residents, businesses and visitors to the Borough to plan journeys and avoid potential congestion. While this measure alone may not improve air quality within South Tyneside, when included as a package of measures improvements in air quality may be realised.

CASE STUDY 3: The New Tyne Crossing

The proposed New Tyne Crossing is being built next to the existing Tyne Tunnel, allowing the A19 to be dual carriageway all the way from its junction with the A1 in Northumberland all the way to Yorkshire. At present the existing vehicle tunnel is a bottleneck and suffers serious congestion at peak times.

This congestion coupled with the high traffic volumes travelling into and out of South Shields has resulted in an AQMA being declared at the confluence of the A19 and A184. The congestion on the Tyne Tunnel Approach has a knock-on effect on the other crossings of the river Tyne, and lead in roadways, as motorists seek to find alternative crossing routes.

The crossing will be approximately 2.6km long, with a main carriageway typically 7.3m wide and a speed limit of 30mph.

The new crossing will cost £180million to build. Other major works associated with the scheme on the south of the river include a new road interchange; the new scheme also includes enhancements for public transport.

It is proposed that the tunnel will reduce congestion on all existing river crossings. Dispersion modelling also suggests that air quality will be improved for residents living near the river crossing, this will be confirmed by continued monitoring of pollutant levels.

As with the current tunnel, the new tunnel will have a number of toll-booths at it's entrance, this results in an overall slowing down of traffic flows and congestion at peak time. Improvements at the tolls will hopefully improve the flow of traffic.

CASE STUDY 4: South Tyneside Council's Business Fleet

South Tyneside Council has a business fleet in excess of 350 vehicles ranging in size from small vans and cars to large refuse collection wagons. The following measures have been implemented with in the fleet that will have air quality benefits.

- Using 5% Bio-diesel blend as an alternative to diesel.
- Limiting all new vehicles to a maximum of 56 mph.
- Selecting vehicles based on the highest possible EURO standards.
- Introduction of CRT and Reduced Pollution Certificates on larger vehicles with the highest emissions.
- Energy Saving Trust Review of Fleet
- Transport fleet garage covered by ISO 14001 Environmental Management System.
- Implementing an eco-friendly driver-training programme to reduce fuel consumption and locally generated traffic pollutants.
- Implementing vehicle tracking to improve efficiency.

CASE STUDY 5: South Tyneside Council Major Scheme Bid

South Tyneside Council are currently developing a business case for a package of integrated transport measures on one of the Council's most important public transport corridors – Boldon Lane. The business case will seek to demonstrate:

This route has been selected for review to determine the scope for improvements to bus journey times along the route and the potential to increase public transport patronage in the forthcoming years. The business case will develop:

- Suitable ideas to improve Bus journey times;
- Increase bus patronage figures of the services that are in operation along the route;
- Provide the conditions for a more reliable and punctual bus service;
- Remove the barriers to integration between travel modes and services;
- Ensure that all existing and new developments of significance along the route are easily accessible by the bus service;
- To improve air quality within the area;
- To reduce the number of road collisions / casualties occurring along the route;
- To improve pedestrian movement within the identified corridor; and
- To support the local retail development along the route.

Interventions across Tyne and Wear that will have benefits within South Tyneside

CASE STUDY 6: Smarter Choices Team

Smarter Choices aims to engage with the population across Tyne and Wear, to promote behavioural change in travel towards more sustainable modes such as public transport, cycling, walking and car sharing. While focusing on the benefits of reduced road congestion, further consequential benefits will occur in improved air quality, social inclusion, public health, and public transport usage. Three key work streams include:

- A Tyne and Wear-wide marketing campaign to target existing car drivers and encourage them to make the first step in considering alternative options; this campaign will include a website providing a wide range of useful information, and an e-marketing database;
- A programme of Individualised Travel Marketing, which targets individual households with information and incentives to change their travel behaviour;
- The identification and addressing of strategic issues in Travel Planning, and the support of existing school and workplace Travel Planning Officers in each local authority.

CASE STUDY 7: Tyne and Wear Air Quality Awareness Campaign

The Tyne and Wear authorities aim to implement an air quality awareness raising campaign. The campaign will be administered through the LTP Core Team, it is proposed that a three year rollout promotion of this campaign, incorporating the help of a hired PR agency will assist in delivering the area wide marketing campaign.

The main focus of this campaign is to achieve increased levels of modal shift, informing the public about alternative modes and encouraging a rise in sustainable modes such as cycling, walking and public transport. This campaign, although primarily aimed at the priority of air quality, will therefore also have an undoubtedly positive impact on other priorities such as congestion, due to its main objective of achieving fewer cars on the road.

The strength of this campaign is its strong regional focus, and emphasis on every day actions that we can adopt to do 'our bit' for improved air quality. This project is progressing, with the procurement of external creative, PR and website support secured in October 2008 and the creation of a strong brand and an established award scheme to reward local air quality champignons. The first six months of the campaign will focus on building awareness of the campaign and its key messages, with this initial period then being followed by local news stories outlining the positive effects of the campaign across each of the Tyne and Wear authorities.

CASE STUDY 8: Tyne and Wear Accessibility Delivery Plan

Good levels of accessibility are crucial to enable people to participate fully in modern society - whether this involves access to shops or healthcare, schools or employment sites, community centres or Post Offices. Improving accessibility for non-motorists also encourages more walking and cycling, benefiting health and air quality.

Accessibility is about ensuring services are provided locally, are convenient for users and are in the right places. It also means ensuring that new developments have good accessibility built in from day one to assure that use of private car is not the easiest way to access a site – improving air quality conditions.

Accessibility is one of the four shared priorities for transport identified by the Local Government Association and central government. The others are congestion, air quality and road safety. Accessibility if the theme of one of LTP2's four action plans outlining how we are addressing these shared priorities across Tyne and Wear.

One key theme of the plan is the need for a holistic approach, recognising that accessibility is about more than bus stops or public transport timetables. This is also reflected in the concrete actions suggested by the plan, clearly showing environmental benefits and a strengthened approach to joint working between both priorities and districts.

CASE STUDY 9: Further Monitoring

Further and more advanced monitoring opportunities have been identified through the actions chapter of the Tyne and Wear Air Quality Delivery Plan, outlining initiatives such as the 'Message' project currently lead by Newcastle University and Instrumented Cities to link existing SCOOT system data to air quality levels. The MESSAGE (Mobile Environmental Sensing System across a Grid Environment) project develops traffic sensors calculating levels of emissions. These small sensors can count traffic flows and measure road traffic pollutants and noise levels, as well as communicate with each other using ultrasound. They can also be placed on moving vehicles in order to monitor and measure a wider area and build up a database of information. The project, jointly funded by the Department for Transport and Engineering and Physical Sciences Research Council (EPSRC), began in October 2006 and is envisaged to last for 3 years.

The project is organised in a series of parallel research and development activities, such as communication and positioning and sensor technologies, which are interweaved with a series of diverse demonstration activities such as traveller behavioural responses. The MESSAGE consortium (led by Imperial College) brings together internationally leading specialist research groups in the fields of e-Science, transport, sensors, communications and positioning technologies across five universities, together with a number of major industrial partners and transport authorities.

Gateshead Council is in a position to update the rest of the Tyne & Wear partners on outcomes and results of the current pilot study by sharing relevant data, and is able to advise them on the potential of rolling out the project across Tyne and Wear. The ambition is, should the Gateshead trial of these sensors prove successful, to roll this monitoring system out across Tyne and Wear.

Appendix F: Automatic Monitoring Data – Short to long term adjustments

The procedural guidance contained in Box 3.2 LAQM TG(09) was followed to calculate an estimated annual mean for comparison with the objective values.

Where:

M – Measured Local Period Mean Concentration

Am – AURN site long-term annual mean (2009)

Pm – AURN short-term period mean (2009)

R – Ratio of the Annual mean to Period Mean (Am/Pm)

Ra – Average Ratio

Best estimate annual mean is **M** * **Ra**

Lindisfarne Roundabout, Jarrow

Nitrogen Dioxide was measured at the site in 2009; a number of intermittent faults (electrical and air conditioning) caused the loss of data and valid data for only 69.47% of the year. It was possible to undertake an adjustment of the short-term period mean to an estimated annual mean as detailed below:

Long term site	Annual Mean 2009 (Am) µg/m^3	Period Mean 2009 (Pm) µg/m^3	Ratio (Am / Pm)
Newcastle Centre	33.73	33.27	1.01
Newcastle Cradlewell	39.47	38.87	1.02
Middlesbrough	18.73	18.08	1.04
		Average (Ra)	**1.02**

Measured mean concentration = 22.74µg/m^3

Estimated Annual Mean = Measured Mean Conc * Adjustment Factor

= 22.74 * 1.02

= <u>23.19µg/m^3</u>

Appendix G: Diffusion Tube Bias Adjustment Factor

The following information was obtained from http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube310310.xls

Spreadsheet Version Number: 03/10

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

This spreadsheet will be updated in late September 2010 on the R&A website

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Acetone	2009	R	Boston BC	11	45	33	35.2%	G	**0.74**
Gradko	50% TEA in Acetone	2009	R	East Hampshire DC	12	27	25	8.5%	G	**0.92**
Gradko	50% TEA in Acetone	2009	B	LB Brent	10	32	31	2.7%	G	**0.97**
Gradko	50% TEA in Acetone	2009	R	LB Richmond	12	43	43	-0.3%	G	**1.00**
Gradko	50% TEA in Acetone	2009	S	LB Richmond	12	27	28	-2.4%	G	**1.02**
Gradko	50% TEA in Acetone	2009	R	Reading BC	11	41	44	-7.8%	G	**1.09**
Gradko	50% TEA in Acetone	2009	R	Stevenage BC	12	38	29	32.0%	G	**0.76**
Gradko	50% TEA in Acetone	2009	R	Sandwell MBC	12	45	44	3.0%	G	**0.97**
Gradko	50% TEA in Acetone	2009	UB	Sandwell MBC	11	17	17	-1.6%	S	**1.02**
Gradko	50% TEA in Acetone	2009	UB	Sandwell MBC	11	27	28	-6.6%	G	**1.07**
Gradko	50% TEA in Acetone	2009	R	Sandwell MBC	12	38	40	-3.6%	S	**1.04**
Gradko	50% TEA in Acetone	2009	UB	Sheffield CC	10	33	38	-12.9%	G	**1.15**
Gradko	50% TEA in Acetone	2009	UC	Uttlesford DC	9	24	25	-1.7%	G	**1.02**
Gradko	50% TEA in Acetone	2009	R	West Berkshire Council	12	45	54	-15.9%	P	**1.19**
Gradko	50% TEA in Acetone	2009	K	AEA Tech Intercomparison	12	106	107	-0.9%	G	**1.01**
Gradko	50% TEA in Acetone	2009		**Overall Factor[3] (15 studies)**				**Use**		**0.99**

Appendix H: Non-Automatic Monitoring Data Summary

2009 NO2 Diffusion Tube Exposure

Addresses	New Tube No	Old Tube No	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Uncorrected Annual Mean	Months of Available Data	Bias Adjustment Factor [a]	Bias Adjusted Annual Mean	Annul Mean Adjustment Ratio (Ra) [b]	Estimated Annual Mean 2008 (ug/m3) [c]	Final Annual Mean 2008 (ug/m3)
Sunderland Road Jolly Sailor - Whitburn	1	34	**41.78**	36.02		31.63	22.04	26.76	24.07	24.78	25.37	30.74	32.71	**43.60**	30.86	11	0.99	30.56	1	n/a	30.56
Sunderland Road South of the Jolly Sailor Whitburn	2		Site Commenced May				22.89	25.12	31.07	27.39	33.39		30.95	39.27	30.01	7	0.99	29.71	1.12	33.28	33.28 [c]
Lamppost on sunderland road - Cleadon opposite church	3	17	**50.34**	38.43	24.56	28.53	22.15	30.40	31.21	24.33	29.83	35.22	**40.47**	**44.35**	33.32	12	0.99	32.99	1	n/a	32.99
Front Street - Cleadon drainpipe	4	35	32.64	23.73	22.21	25.67	15.07	18.74	17.92	15.33	20.59	21.67	25.34	35.44	22.86	12	0.99	22.63	1	n/a	22.63
Station Road - East Boldon - Lamppost outside sainsbury	5	30	24.83	22.43	20.55	30.24	16.57	20.83	19.37	15.43	20.01	27.02	29.95	36.49	23.64	12	0.99	23.41	1	n/a	23.41
Grange Terrace/ Front Street East Boldon - sign on corner	6	5	39.42	27.91	27.11	21.14		22.98	20.85	19.55	21.38	30.99	31.93	37.37	27.33	11	0.99	27.06	1	n/a	27.06
Boker Lane - lamppost down from traffic lights	7	50	**51.59**	29.11		43.22	19.81	18.54		22.35			37.60		31.75	7	0.99	31.43	0.99	31.11	31.11 [c]
Henley Way - lamppost opposite Asda	8	38	**47.27**	13.77	13.36		20.80	25.05	22.26	22.31			32.62	33.47	25.66	9	0.99	25.40	1.01	25.65	25.65 [c]
55 Cheltenham Drive on Lamppost	9	12	36.30	26.22	22.00	25.65	15.71	15.66	17.30	17.52	19.96		31.11	**45.59**	24.82	11	0.99	24.57	1	n/a	24.57
Mill Lane - On corner opposite fire station - on sign	10		Site Commenced May				22.39	25.64	24.13	21.69	24.02	32.34	32.72		26.13	7	0.99	25.87	1.18	30.53	30.53 [c]
Monitoring station on Hall Road	11		Site Commenced May				19.34	24.24	22.87	16.30	26.49	31.43	31.87	**41.56**	26.76	8	0.99	26.49	1.11	29.41	29.41 [c]
Monitoring station on Hall Road	12		Site Commenced May				21.24	24.00	21.01	17.14	26.31	28.67	28.48	**42.60**	26.18	8	0.99	25.92	1.11	28.77	28.77 [c]
Monitoring station on Hall Road	13		Site Commenced May				20.25	23.08	19.70		25.35	27.70	30.99	36.55	26.23	7	0.99	25.97	1.07	27.79	27.79 [c]
Station Road -Hebburn on drainpipe outside PJ's	14	48	36.67	22.25	22.72	35.41	21.98	34.65	24.35	14.86	21.30	29.50	29.22	36.15	27.42	12	0.99	27.15	1	n/a	27.15
Hedgley Road - outside new flats	15		Site Commenced May				15.12	21.16	14.75	14.41	19.92	25.48	28.74	**41.17**	22.59	8	0.99	22.37	1.11	24.83	24.83 [c]
Swimming Baths Hebburn outside entrance	16		Site Commenced May										24.85		24.85	1	0.99	24.60	Not Calculated - Less than 3 months data		
Victoria Road East - cross roads before bus stop	17	6					24.47	29.19	24.08	23.40	26.94	34.13	33.78	**44.24**	30.03	8	0.99	29.73	1.11	33.00	33.00 [c]
Durham Drive - third lamppost on left	18	27	**43.05**	36.74	25.31				21.79	20.00			31.08	**41.46**	31.35	4	0.99	31.03	0.97	30.10	30.10 [c]
Fellgate Estate A19- end of Southerlands	19		Site Commenced May				15.62								15.62	1	0.99	15.46	Not Calculated - Less than 3 months data		
Fellgate Estate A19- next to number 33	20		Site Commenced May					19.11	10.69	14.62	16.60	25.88	27.55	34.98	21.35	7	0.99	21.13	1.09	23.04	23.04 [c]
Coronation Cottages - next to number 74	21		Site Commenced May				14.60						31.43	39.13	28.39	3	0.99	28.10	0.96	26.98	26.98 [c]
Folinsbury Terrace No 1	22	68	**41.41**	35.41	26.55		19.64	29.07	19.60	18.49	30.61	30.15	32.23	**45.43**	29.87	11	0.99	29.57	1	n/a	29.57
Lindisfarne Roundabout - On Sign	23	33					32.65		23.79	31.39			**46.39**	**47.90**	36.42	5	0.99	36.06	1.12	**40.39**	**40.39** [c]
Lindisfarne Road No 51	24	59					19.55	**43.31**			27.57	39.52	**47.27**		35.44	5	0.99	35.09	1.11	38.95	38.95 [c]
Jarrow Bus station	25		Site Commenced May					31.46		21.01		33.27	38.76	39.46	32.79	5	0.99	32.46	1.05	34.09	34.09 [c]
Priory Road - near roundabout Ro & H - plc 6110	26	13	**44.71**	28.02	27.03	26.29	20.49	24.78	14.24	20.37	23.23	32.53	33.99	38.31	27.83	12	0.99	27.55	1	n/a	27.55
on sign at the end of stothard street	27	46						27.60		24.32			34.96	39.46	31.59	4	0.99	31.27	1.03	32.21	32.21 [c]
Randolph street at back near tunnel	28		Site Commenced May										28.91	37.47	33.19	2	0.99	32.86	Not Calculated - Less than 3 months data		
Epiphany Walk No 16	29		Site Commenced May				27.66	36.44	15.58	19.93	33.09	36.17	36.02	**52.73**	32.20	8	0.99	31.88	1.11	35.39	35.39 [c]
York Ave - Giveway sign	30	75	**41.67**	26.53			16.77	19.72		18.14	18.76	27.25	30.10	34.35	25.92	9	0.99	25.66	0.97	24.89	24.89 [c]
Conston Drive opposite No 35	31		Site Commenced May										29.57	**41.13**	35.35	2	0.99	35.00	Not Calculated - Less than 3 months data		
A19 footbridge Jarrow - lamp s464	32		Site Commenced May				16.57		10.12				25.16		17.28	3	0.99	17.11	1.24	21.22	21.22 [c]
Hadrian Road No1 - lamppost	33	54	**40.35**		**44.89**			22.82	15.45	20.68	19.97	27.23	30.10	**40.57**	29.12	9	0.99	28.83	1	28.83	28.83 [c]
Edinburgh Road - Monitoring Station	34	65	37.46	32.79	25.36		21.08	22.22					31.77	**42.47**	30.45	7	0.99	30.15	0.93	28.04	28.04 [c]
Edinburgh Road - Monitoring Station	35	66	34.45	31.80	25.83		18.70	21.53					33.14	**40.64**	29.44	7	0.99	29.15	0.93	27.11	27.11 [c]
Henley Way - lamppost opposite Asda	36	67	37.61	30.36	29.04		20.92	22.70					36.30	**41.29**	31.17	7	0.99	30.86	0.93	28.70	28.70 [c]
John Reid Road - lamppost to the right as leave stirling ave	37	19	**42.48**		**55.82**		21.62	26.52	14.54	16.74	25.08	30.32	36.50	33.51	30.31	10	0.99	30.01	1	n/a	30.01
Newcastle road - near John R Road roundabout before Mcdonalds	38		Site Commenced May				30.47	34.79	22.70	34.59	34.23	**44.54**	**47.17**	**56.78**	38.16	8	0.99	37.78	1.11	**41.93**	**41.93** [c]
Newcastle road - near john reid road roundabout	39		Site Commenced May				29.26	29.22	28.91	23.18	30.75	37.26	37.61	**47.02**	32.90	8	0.99	32.57	1.11	36.16	36.16
westen approach near port of tyne - near bus stop - H1676	40		Site Commenced May				38.99	38.10	30.03	32.78	33.63	38.58	**44.18**	**51.10**	38.42	8	0.99	38.04	1.11	**42.22**	**42.22** [c]
Port of Tyne - Monitoring Station	41	69	**49.31**	32.44	32.26		34.95	25.84	22.14	27.57	30.94	36.34	**40.47**	**44.48**	34.25	11	0.99	33.91	1	n/a	33.91
Port of Tyne - Monitoring Station	42	70	**45.15**	34.19	32.43		27.21	23.91	20.28	27.57	26.75	37.44	**42.59**	**42.13**	32.70	11	0.99	32.37	1	n/a	32.37
Port of Tyne - Monitoring Station	43	71	**52.50**	32.61	28.70		27.73	24.09	20.68	30.91	26.38	35.10	**44.31**	**40.85**	33.95	11	0.99	32.92	1	n/a	32.92
Commercial Road - House near Anchor near No 29	44		Site Commenced May				24.84	28.65	17.44		23.75	35.54	34.63	**45.63**	30.07	7	0.99	29.77	1.07	31.85	31.85 [c]
Flats opposite Tyne Dock - plc HLC6322	45		Site Commenced May				28.65	23.12	14.71	17.84	24.19	33.26	31.66	39.27	26.59	8	0.99	26.32	1.11	29.22	29.22 [c]
Corner of Stanhope Road and Boldon Lane - opp furniture den	46		Site Commenced May				18.58	38.41	23.31	26.57	33.85	37.04	37.06	**46.43**	32.66	8	0.99	32.33	1.11	35.89	35.89 [c]
Stanhope Road opposite bakery	47		Site Commenced May				28.48			26.96	35.73	39.71	**44.89**		35.15	5	0.99	34.80	1.17	**40.72**	**40.72** [c]
Boldon lane No142 on lamppost	48	51	**53.44**	36.41	31.88			39.89	23.50	26.71	32.44	**41.22**	38.65	**43.57**	36.77	10	0.99	36.40	1	n/a	36.40
Boldon Lane opposite the Winskells	49	44	**46.83**		**71.68**	37.35	28.67	**40.92**	26.79	34.15	35.79	**45.60**	**44.01**	**47.49**	**41.75**	11	0.99	**41.34**	1	n/a	**41.34**
Harton Grange - new flats on corner of john reid rd/boldon lane	50		Site Commenced May				35.25	18.52	17.14	22.86	23.77	33.45	38.16	**46.60**	29.47	8	0.99	29.17	1.11	32.38	32.38 [c]
John Reid Road - corner opposite crem	51		Site Commenced May				20.28	20.00		21.45	25.93	38.93	**43.15**	**40.99**	30.10	7	0.99	29.80	1.07	31.89	31.89 [c]
Cleadon Vale - corner lamppost - prince george rd	52		Site Commenced May				20.55	16.33	15.22	20.25	22.13	31.08	32.72	36.20	24.31	8	0.99	24.07	1.11	26.71	26.71 [c]
Roundabout opposite The Cranny - near roundabout	53		Site Commenced May					21.17	19.97	26.44	27.03	32.62	36.07	**43.97**	29.90	7	0.99	29.60	1.09	32.26	32.26 [c]
Horsley Hill square Near care Home	54	31					23.42		10.39	13.39	19.03	24.37			18.12	5	0.99	17.94	1.24	22.24	22.24 [c]
Dean Rd - main roundabout near metro	55		Site Commenced May					30.74	20.34	22.39	26.64	34.18	**41.91**		29.37	6	0.99	29.07	1.17	34.02	34.02 [c]
South Shields Bus Station	56		Site Commenced May				35.53				26.86	32.60	**40.19**		33.80	4	0.99	33.46	1.1	36.80	36.80 [c]
Anderson Street (near town hall)	57		Site Commenced May					19.11	19.62	23.51	27.44	32.68	34.22	36.76	27.62	7	0.99	27.34	1.09	29.80	29.80 [c]
South Shields Bus Stop behind McDonalds	58		Site Commenced May				23.61	29.06		28.51	**46.16**	**46.12**	**45.71**	**46.93**	38.01	7	0.99	37.63	1.14	**42.90**	**42.90** [c]
The Glebe - new flats on westoe rd	59		Site Commenced May				35.32	23.83	16.79	18.91	25.36	28.65	37.27	**40.63**	28.35	8	0.99	28.06	1.11	31.15	31.15 [c]
Westoe Road Roundabout near The County Pub	60		Site Commenced May				15.17	28.09		33.34	37.53	**43.29**	**48.23**		34.28	6	0.99	33.93	1.16	39.36	39.36 [c]
	Count						**47**	**49**	**42**	**47**	**45**	**44**	**58**	**49**							
	Count Blank						**13**	**11**	**18**	**13**	**15**	**16**	**2**	**11**							
	Total						**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**							

[a] - See appendix C for Bias Adjustment Factor

[b] - See Appendix x for Annual Mean Ajustment Ratio Calculations

[c] - Estimated Annual Mean (Using Procedure descibed in Box 2.3 of LAQM TG(09))

2009 NO2 Diffusion Tube Exposure - Tubes only exposed Jan - April

Addresses	New Tube No	Old Tube No	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Uncorrected Annual Mean	Months of Available Data	Bias Adjustment Factor [*a]	Bias Adjusted Annual Mean	Annul Mean Adjustment Ratio (Ra) [*b]	Estimated Annual Mean 2008 (ug/m3) [*c]	Final Annual Mean 2008 (ug/m3)
Westoe Road (Unison Office)		1	39.44	22.93	27.87		Tube ditinued - May 2009								30.08	3	0.99	29.78	0.85	25.31	25.31 [*c]
5 Broughton Road		2	27.3	21.46	17.63	26.88	Tube ditinued - May 2009								23.32	4	0.99	23.08	0.86	19.85	19.85 [*c]
13 Thirlwell Grove		3				23.96	Tube ditinued - May 2009									1					
Coleridge Square		4				18.88	Tube ditinued - May 2009									1					
42 Marine Approach		7	32.73	25.66	21.79	23.47	Tube ditinued - May 2009								25.91	4	0.99	25.65	0.86	22.06	22.06 [*c]
Market Place		8	37.17	23.92	21.42	26.77	Tube ditinued - May 2009								27.32	4	0.99	27.05	0.86	23.26	23.26 [*c]
Front Street, Whitburn		9	**45.44**	30.45	35.19	24.58	Tube ditinued - May 2009								33.92	4	0.99	33.58	0.86	28.88	28.88 [*c]
Follingsby Lane		10	30	15.96		29.27	Tube ditinued - May 2009								25.08	3	0.99	24.83	0.8	19.86	19.86 [*c]
Follingsby Terrace		11				25.54	Tube ditinued - May 2009									1					
Salcombe Avenue		14	**40.01**		**50.75**	33.32	Tube ditinued - May 2009								41.36	3	0.99	40.95	0.85	34.80	34.80 [*c]
Mill Lane, Hebburn		15	33.21	28.89	28.21		Tube ditinued - May 2009								30.10	3	0.99	29.80	0.85	25.33	25.33 [*c]
Howard Street		16	**50.51**	39.45	32.02	19.15	Tube ditinued - May 2009								35.28	4	0.99	34.93	0.86	30.04	30.04 [*c]
Henley Way		18	**46.01**	27.73	23.82	29.29	Tube ditinued - May 2009								31.71	4	0.99	31.40	0.86	27.00	27.00 [*c]
Dean Road / Dacre Street		20				28.55	Tube ditinued - May 2009									1					
Boldon Lane (Lidl)		21					Tube ditinued - May 2009									0					
Whitehead Street / Commercial Road		22	**42**		25.71	28.59	Tube ditinued - May 2009								32.10	3	0.99	31.78	0.85	27.01	27.01 [*c]
Victoria Road West		23	33.51	23.9		43.84	Tube ditinued - May 2009								33.75	3	0.99	33.41	0.8	26.73	26.73 [*c]
Centenary Avenue		26			7.86		Tube ditinued - May 2009									1					
The Nook		28	**40.73**	25.02			Tube ditinued - May 2009									2					
Lindisfarne Roundabout		29				35.71	Tube ditinued - May 2009									1					
Sunderland Road, Westoe		32	36.42				Tube ditinued - May 2009									1					
Henley Way		38	**47.27**	13.77	13.36		Tube ditinued - May 2009								24.80	3	0.99	24.55	0.85	20.87	20.87 [*c]
Boldon Lane (Lidl)		40					Tube ditinued - May 2009									0					
Prince Edward Road (Safeway)		41	**47.99**	**51.44**	36.78		Tube ditinued - May 2009								45.40	3	0.99	44.95	0.85	38.21	38.21 [*c]
Prince Edward Road (end of King George Rd)		42	**41.92**			35.98	Tube ditinued - May 2009									2					
Dean Road		43				32.85	Tube ditinued - May 2009									1					
Fowler Street		45		19.7	35.99	35.47	Tube ditinued - May 2009								30.39	3	0.99	30.08	0.93	27.98	27.98 [*c]
Imeary Street		47	34.79	27.86			Tube ditinued - May 2009									2					
Auckland Terrace		49				**45.22**	Tube ditinued - May 2009									1					
521A Stanhope Road		52					Tube ditinued - May 2009									0					
372 Stanhope Road		53			**119.62**		Tube ditinued - May 2009									1					
95 Hadrian Road		55					Tube ditinued - May 2009									0					
95 Hadrian Road		56					Tube ditinued - May 2009									0					
51 Eskdale Drive		57					Tube ditinued - May 2009									0					
9 Haggerston Terrace		58					Tube ditinued - May 2009									0					
Glen Street / Corner of Glen Court		60					Tube ditinued - May 2009									0					
3 Hedgely Road		61				**98.09**	Tube ditinued - May 2009									1					
6 Percy Terrace, Whitburn		62					Tube ditinued - May 2009									0					
Boldon Lane (Lidl)		63					Tube ditinued - May 2009									0					
95 Hadrian Road		64		**60.83**	13.04		Tube ditinued - May 2009									2					
	Count		**18**	**16**	**16**	**20**															
	Count Blank		**22**	**24**	**24**	**20**															
	Total		**40**	**40**	**40**	**40**															

[*a] - See appendix C for Bias Adjustment Factor

[*b] - See Appendix x for Annual Mean Ajustment Ratio Calculations

[*c] - Estimated Annual Mean (Using Procedure descibed in Box 2.3 of LAQM TG(09))