

# 2013 Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management

May 2013



## Executive Summary

This Air Quality Action Plan (AQAP) sets out the measures that Oxford City Council and Oxfordshire County Council intend to take to improve air quality in Oxford. The whole of Oxford was declared as an Air Quality Management Area (AQMA) in 2010, highlighting that pollution hotspots were evident in a number of areas within the city. The AQMA was declared because assessments of air quality predicted that the annual mean objective for nitrogen dioxide of  $40 \mu\text{g}/\text{m}^3$ , would not be met in a number of areas, whilst the hourly mean objective of  $60 \mu\text{g}/\text{m}^3$  would not be met in specific streets in central Oxford.

The previous AQAP was issued in 2006, and proposed measures to address pollution within the central Oxford AQMA. The main action proposed was that a feasibility study should be carried out for the introduction of a Low Emission Zone (LEZ) for certain streets in the AQMA. This would ensure that only vehicles meeting minimum emission standards would be allowed to enter designated parts of the city centre.

A range of measures have been implemented since 2006, contributing to reducing the impact of vehicle emissions, notably:-

- Quality Bus Partnership – integrated ticketing, and reductions in bus numbers
- Transform Oxford –increased pedestrianisation, re-location of bus stops
- A bus based low emission zone from 2014 in central Oxford
- Bus operators investing in cleaner greener vehicles

An independent study has been carried out highlighting that the measures introduced have contributed to significant reductions in emissions of oxides of nitrogen, but there are some increases in carbon dioxide emissions. Despite this picture of emissions reductions, we still see levels of nitrogen dioxide above objective levels as set by the European Union and UK government, notably in central Oxford.

The problems we see in Oxford are common to all urban areas where significant levels of road traffic are evident. There are currently over 400 AQMA's for nitrogen dioxide in the UK. Road transport is the largest source of NO<sub>x</sub> emissions in the UK, with increased levels in urban areas. Road traffic pollution results in complex mixtures of pollutants that interact giving rise to secondary pollution. Nitrogen Dioxide levels are influenced by the current mix of engine and emissions control technologies. Direct emissions of nitrogen dioxide from diesel vehicles fitted with Continuously Regenerating Traps (CRT's) has been shown to increase, particularly in larger slow moving vehicles.

The interactions between pollutants highlights that an integrated approach to dealing with air pollution emissions alongside emissions that impact on climate change is needed. This approach is endorsed by UK Government Departments.

The City Council has developed a Sustainability Strategy and Low Emission Strategy that recognise an integrated approach to developing measures to address climate change and air quality issues.

The Air Quality Action Plan provides a focus for the delivery of air quality related transport measures in the city, and links to the Local Transport Plan (LTP) as the key delivery mechanism for wider transport measures and is managed and delivered by the County Council as the highways authority.

The range of policies and actions in the LTP supports the existing AQAP, and provides the basis for measures in a new AQAP, by contributing to the objective of reducing transport emissions, city-wide.

We recommend that the AQAP is:

- an integrated air quality and low carbon transport plan for Oxford;
- adopted by both the City and County Councils;
- formally a part of the LTP Oxford area strategy;
- primarily delivered through the LTP with supporting policy and actions by the city.

The key themes of the AQAP to reduce emissions across the city will be:

- A city-wide sustainable travel strategy
- Support for the uptake of low and zero emission vehicles
- Reducing freight emissions from Light Goods Vehicles and Heavy Goods Vehicles
- Planning for sustainable transport
- Managing the Council's transport emissions

The AQAP will provide a single focus on air quality and climate change with respect to transport developed and delivered jointly by the City and County Councils.

The success of the action plan recognises the significance of a partnership approach, particularly with the County Council as the Transport Authority, and other key stakeholders, notably District Councils, transport providers, and public health bodies.

We believe that there would be significant added value in working more closely together on:

- Assessing the potential of transport measures to reduce emissions across AQMAs in Oxfordshire.
- Developing tools and resources in a co-operative manner in order to monitor and assess air quality in a more efficient way.
- Potentially pooling resources for the monitoring and communication of air quality information.

We will seek to develop *a sub-regional approach to air quality monitoring and action planning*, working with closely with our County and District colleagues.

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# 1 Introduction

The City of Oxford, in common with urban areas throughout the United Kingdom and cities in Western Europe is subject to poor air quality particularly close to sources of road traffic. A picture has been established of localised air pollution hot-spots close to roads, firstly in central Oxford, then at locations near to high volumes of traffic, such as roundabouts on the ring road, or slow moving and congested traffic in locations such as district centres.

Under the Environment Act 1995 the City Council has a duty to designate an Air Quality Management Area (AQMA) where defined air quality standards and objectives are not being met. In addition they must prepare a written plan, an Air Quality Action Plan (AQAP), in pursuit of the achievement of these objectives.

The City Council declared an AQMA for central Oxford in 2003, which was expanded in 2005. In relation to this AQMA the Council produced and published its first Air Quality Action Plan (AQAP) in 2006 seeking to address pollution in central Oxford, by focussing on emissions from buses which were identified as the main source. The 2006 AQAP was developed alongside the 2006 Local Transport Plan (LTP) enabling the inclusion of an air quality target within the LTP.

Despite progress being made with the 2006 AQAP significant breaches of the national objectives still existed and additional hotspots were identified. Therefore following further detailed assessments of air quality, a city-wide AQMA was declared in September 2010. Therefore this new action plan meets the requirements of addressing air quality issues city-wide.

In moving forward with a new air quality action plan in response to the city-wide AQMA we recognise that there is no single solution to local air quality problems and a range of measures will be required to reduce emissions across the city. In addition we need to recognise the link between air quality and climate change. Therefore this new action plan will provide an integrated approach considering all transport related emissions that contribute to local air pollution and climate impacts.

This action plan must also be seen in the context of the Council's wider 'Sustainability Strategy' and the recently developed 'Low Emission Strategy'. This provides a set of top level objectives for the action plan in terms of reducing emissions related to transport activity across the city and improving air quality. In addition as a primarily transport based action plan a majority of the delivery will be integrated with delivery of the Local Transport Plan. As such the success of the action plan depends on close working between the City and County Councils.

Building on the work of the 2006 action plan, existing programmes and policies and the need to reduce emissions further, this action plan will tackle emissions across the city through a range of measures focusing on the following themes:

1. A city-wide sustainable travel strategy
2. Support for the uptake of low and zero emission vehicles

3. Reducing freight emissions
4. Planning for sustainable transport
5. Managing the Council's transport activities

The following sections set out the scale of the air quality problem in Oxford and its causes, the objectives and targets we have set ourselves to reduce emissions and improve air quality, the key actions we will pursue within each of the our delivery themes and how we will monitor and assess the action plan.

## 2 Background

### 2.1 The National Context

The City of Oxford, in common with urban areas throughout the United Kingdom and cities in Western Europe is subject to poor air quality particularly close to sources of emissions from road traffic. A picture has been established of localised air pollution hot-spots close to roads, firstly in central Oxford, then at locations near to high volumes of traffic, such as roundabouts on the ring road, or slow moving and congested traffic in locations such as district centres.

The main pollutants of concern in the UK are particulate matter (PM), oxides of nitrogen (NO<sub>x</sub>), ground level ozone and ammonia. Estimates indicate that air pollution reduces life expectancy in the UK by an average of six months. The most important air pollutant in terms of health effects is particulate matter – particles emitted from vehicle exhausts, chimneys or formed in the air from reactions between other pollutants. Road transport, large fuel-burning plants such as power stations, and agriculture are key sources for one or more of these pollutants.

Under the Environment Act 1995 the City Council has a duty to designate an Air Quality Management Area (AQMA) where defined air quality standards and objectives are not being met. In addition they must prepare a written plan, an Air Quality Action Plan (AQAP), in pursuit of the achievement of these objectives i.e. to detail the Council's proposals and actions to work towards the Government's air quality objectives in respect of the pollutants of concern.

The air quality standards and objectives applicable to Local Air Quality Management (LAQM) in England are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). A summary of the objectives for PM and nitrogen dioxide (NO<sub>2</sub>), the pollutants of most concern, are shown in Table 1 below.

**Table 1 Air Quality Objectives for NO<sub>2</sub> and PM<sub>10</sub>**

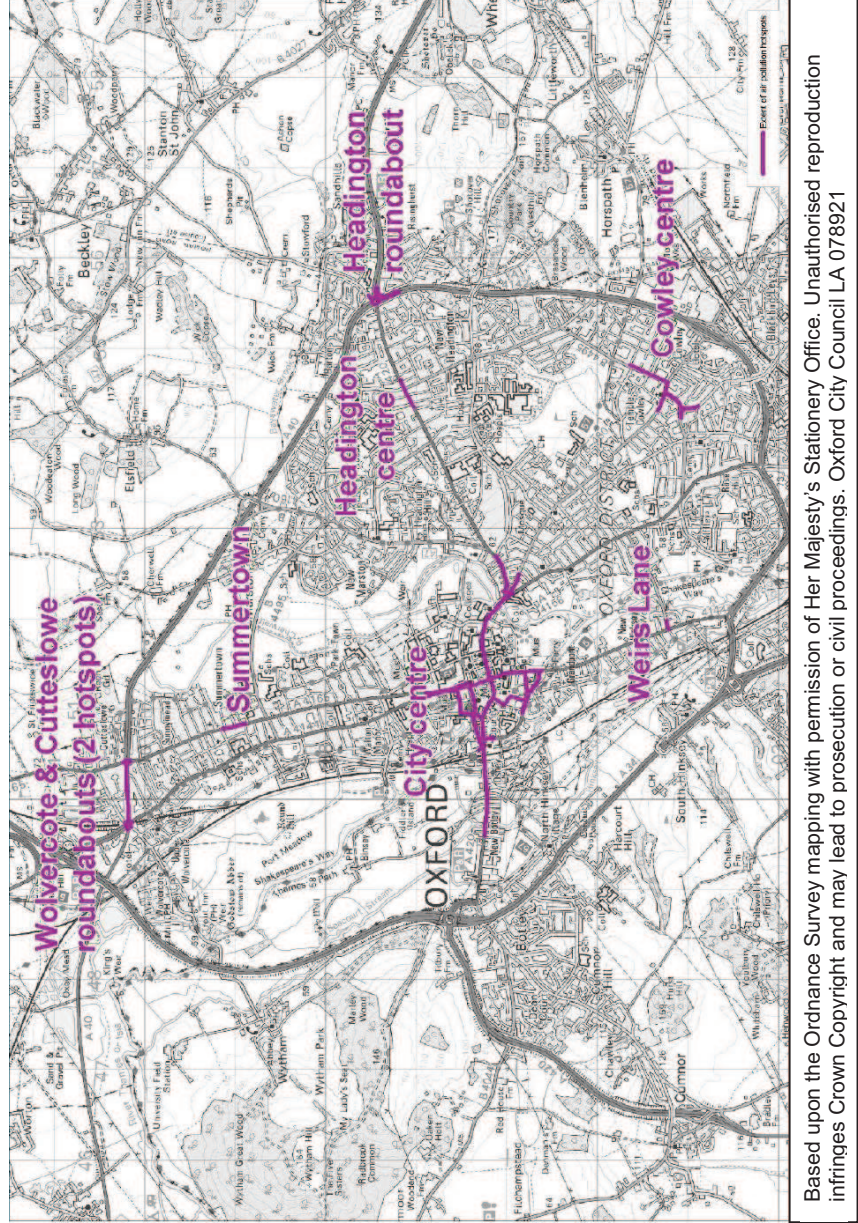
Pollutant	Concentration	Measured as
Nitrogen dioxide, NO <sub>2</sub>	40 µg/m <sup>3</sup>	Annual mean
	200 µg/m <sup>3</sup> not to be exceeded more than 18 times per year	1 - hour mean
Particles (PM <sub>10</sub> )	40 µg/m <sup>3</sup>	Annual mean
	50 µg/m <sup>3</sup> not to be exceeded more than 18 times per year	1 - hour mean

Within the UK, Oxford is one of 292 Local Authorities that have declared 455 Air Quality Management Areas (AQMA) based on failure to meet the air quality objective for NO<sub>2</sub>. An AQMA for the whole of Oxford was declared in 2010, incorporating local AQMA declared in 2003 and 2005.

## 2.2 Air Quality in Oxford

The air quality objectives are being exceeded near road side locations in Central Oxford and at locations near to high volumes of traffic, such as roundabouts on the ring road, or slow moving and congested traffic in district centres. Figure 1 shows the main air quality hot spots in the city and Figure 2 shows the measured NO<sub>2</sub> pollution concentrations in two central Oxford locations, illustrating how the objectives continue to be breached.

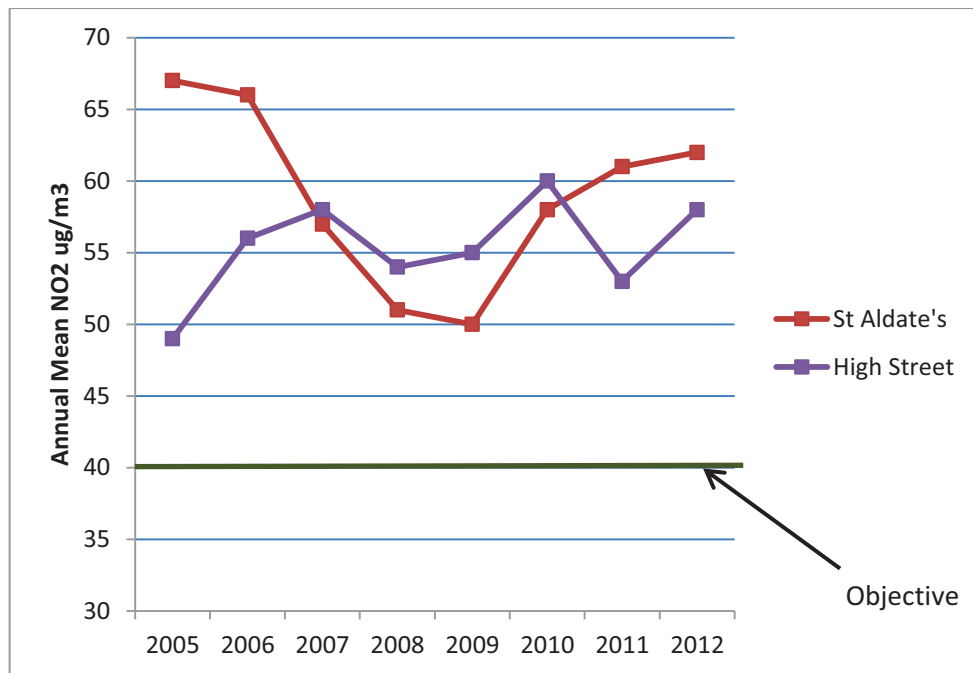
Figure 1 - Air Quality Hotspots in Oxford



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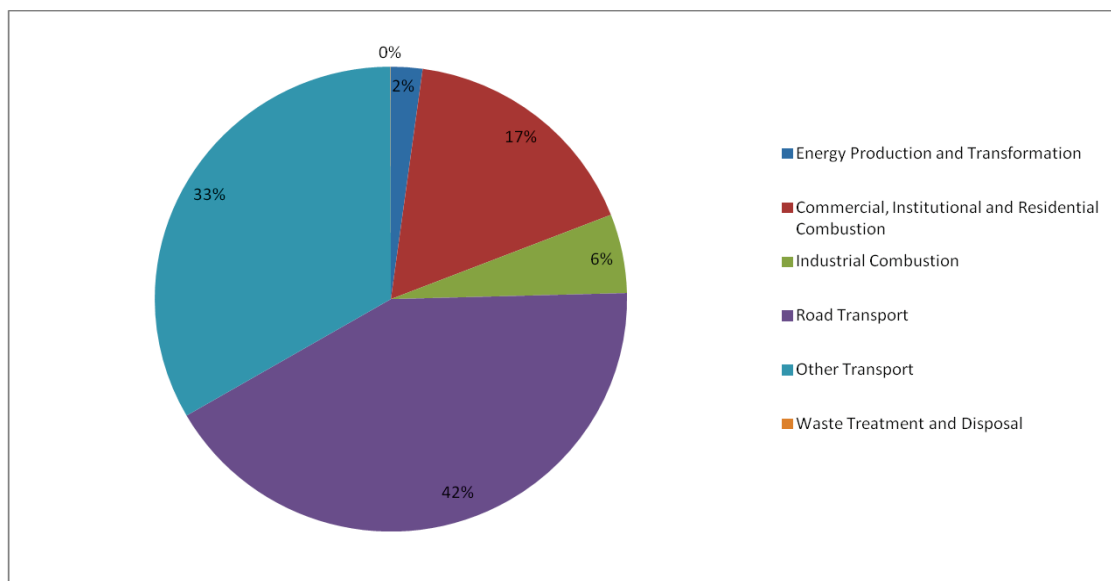


**Figure 2 Annual Mean NO<sub>2</sub> Concentration in Central Oxford**



NO<sub>2</sub> pollution is generated from combustion related NO<sub>x</sub> (NO and NO<sub>2</sub>) emissions across the city. The major source of NO<sub>x</sub> emissions in Oxford is transport activity as shown by the chart in Figure 3. In addition near road locations, where the objectives are being breached, transport is a far larger contributor to air pollution concentration than any other source.

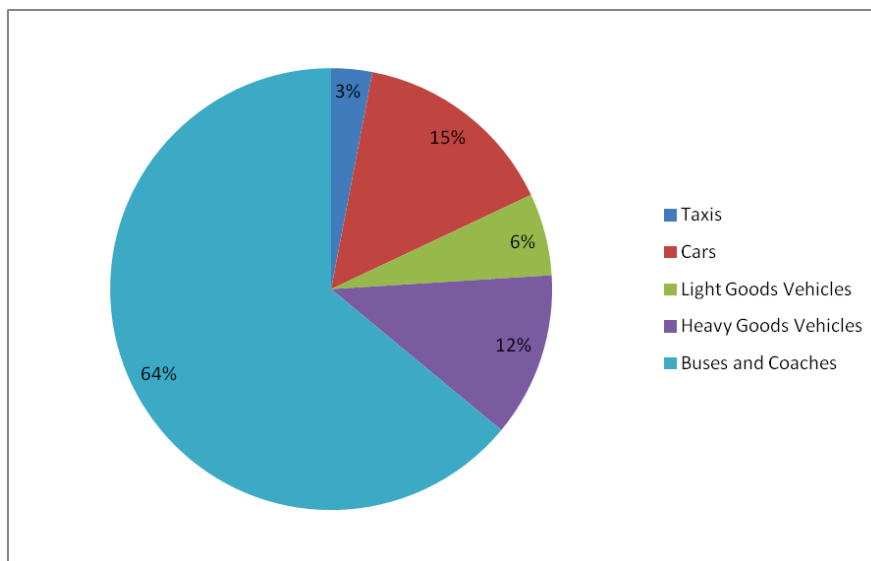
**Figure 3 Emissions of NO<sub>x</sub> by Source in Oxford**



Source: NAEI 2010

Under its duty in relation to the Environment Act 1995, the City Council declared an AQMA in central Oxford due to breaching the objectives in 2001. This initial assessment indicated that traffic emissions were the source of the problem and in particular emissions from buses and coaches. An estimate of the NOx emissions by vehicle type is shown in Figure 4 below, showing buses and coaches accounted for 65% of the emissions, with heavy and light duty goods vehicles accounting for a further 18% of emissions.

**Figure 4 Estimate of Transport Related NOx Emission in central Oxford AQMA**

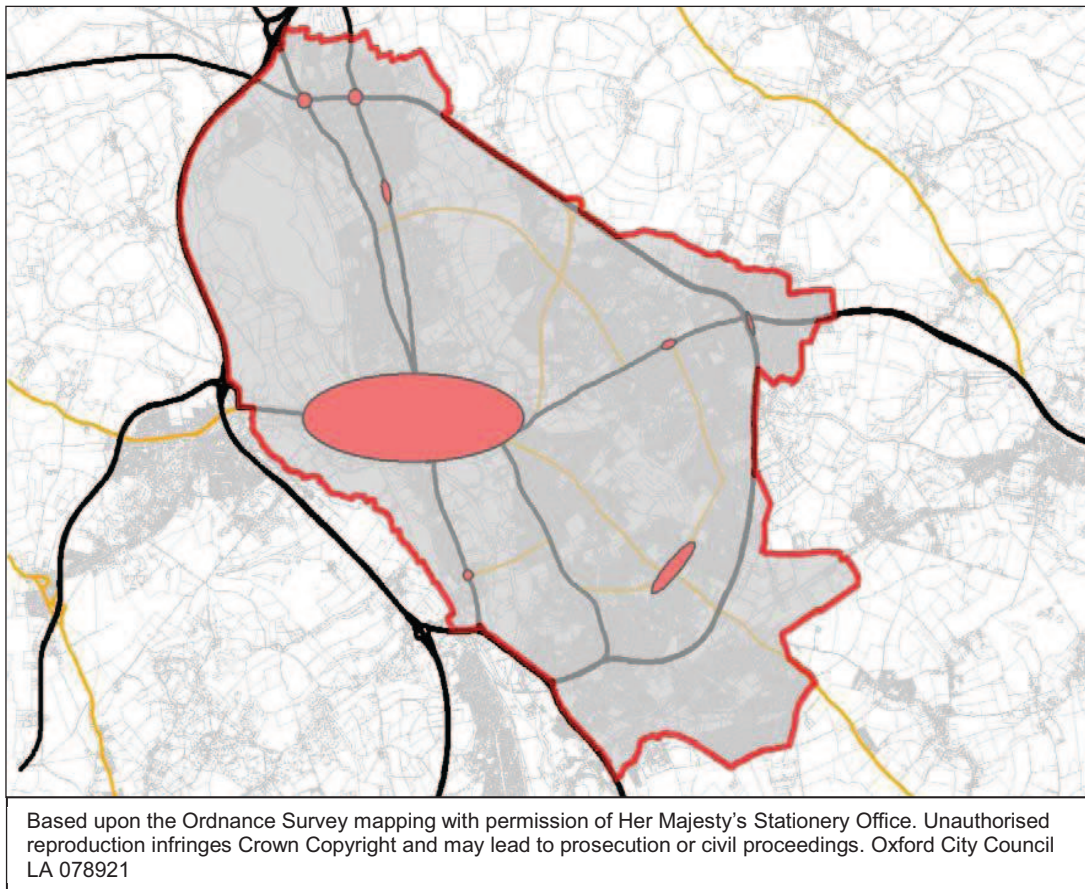


However, in common with other urban areas in the UK, air pollution levels are not reducing at the rates predicted from central government forecasts, due in part to the higher levels of direct NO<sub>2</sub> emitted from new diesel vehicles that were not predicted from new Euro engine emission standards.

Also emissions from road transport are specific to the vehicle fleet mix in any particular street. In St Aldate's, for example, over 90% of vehicle generated NO<sub>x</sub> emissions are from buses, with over half of these generated when vehicles are queuing or at bus stops. Whereas on streets not dominated by bus traffic (e.g. Parks Road), cars and taxis contribute 35%, light good vehicles 23%, and heavy goods vehicles 42% of total vehicle NO<sub>x</sub> emissions.

This highlights that there is further work to do to achieve the air quality objectives in some locations. Therefore following further detailed assessments of air quality, a city-wide AQMA was declared in September 2010 as shown in Figure 5 below. This city-wide AQMA requires a city-wide approach to reducing emissions.

**Figure 5 The Current Oxford City-wide AQMA**



The areas highlighted in red within the AQMA that exceed the air quality objective for nitrogen dioxide fall into two distinct categories:-

- Central Oxford - where buses and coaches remain the main source of emissions, but with an increasing proportion coming from goods vehicles, and with specific problems where traffic is congested in areas around bus stops, (e.g. St Aldate's).
- Localised air pollution hotspots - that coincide with high traffic volumes subject to congestion (e.g. busy roundabouts on the ring-road, and local district centres), with emissions being generated by a wider range of vehicle types.

## 2.3 Progress to date

The Council produced and published its first Air Quality Action Plan (AQAP) in 2006 seeking to address pollution in central Oxford, by focussing on emissions from buses which were identified as the main source. The 2006 AQAP was developed alongside the 2006 Local Transport Plan (LTP) enabling the inclusion of an air quality target within the LTP.

The emphasis of work to address improvements in air quality to date has focussed on measures within the city centre, targeting reductions in bus emissions and co-ordinating with transport policy measures to improve pedestrianisation and access to the city centre by public transport services. The introduction of controlled bus gates to restrain traffic in the city centre has been effective in maintaining the operation of a bus priority route.

The County Council endorsed the development of the Low Emission Zone (LEZ) as part of an integrated package of transport and bus quality improvements in central Oxford, all contributing to reducing road transport emissions, including the development of :-

- A Quality Bus Partnership Agreement, involving an integrated smartcard ticketing system, resulting in a reduction in bus numbers in central Oxford
- Transform Oxford – improving pedestrianisation, including removal of bus stops from Queen Street
- An application to the Traffic Commissioner to develop a Traffic Regulation Condition (TRC), requiring all Passenger Service Vehicles (PSVs) operating in Oxford city centre to comply with the requirements of the proposed LEZ.
- In response to the LEZ developments, local bus operators have been encouraged to invest in cleaner greener vehicles, that are more fuel efficient and emit lower levels of pollutants.

The phased introduction of these measures since 2006 is shown in Table 2 below, with the development and implementation of the LEZ still ongoing. In regards the bus-based LEZ an officer-member steering group was established between the City Council and the County Council in order to oversee a feasibility study to develop a LEZ in Oxford. The feasibility study was completed in late 2008 followed by reports to City Executive Board and County Cabinet Member for Transport during March/April 2009. Both Councils endorsed the development of an LEZ based upon a Euro V standard applying to public service vehicles from 2014.

A recent report commissioned by the City Council summarises the extent that these measures are contributing to reducing vehicle emissions in Oxford for NO<sub>x</sub>, PM and carbon dioxide (CO<sub>2</sub>) across the city.

The report concludes that each of these measures have contributed to significant reductions in total emissions from buses in the city centre. However, recent trends in monitored pollution levels in central Oxford highlights that there is further work to do to achieve the air quality objectives

for NO<sub>2</sub> in some locations. Most traffic bearing streets in central Oxford still experience roadside pollution levels above objective levels both for annual mean and hourly mean objectives for NO<sub>2</sub>, yet they meet objectives for PM, considered more harmful to health.

**Table 2 Introduction of measures in the 2006 AQAP**

Date	Measure introduced
April 2007	High Street Bus Gate Enforcement (up to 25% reductions in non-bus traffic)
July 2009	Transform Oxford, relocation of bus-stops from Queen Street
August 2009	20mph zones introduced
July 2010	First diesel electric hybrid buses introduced in Oxford
July 2011	Cross-operator ticketing introduced, reductions in bus numbers on key routes

Following the Transform Oxford programme, involving the removal of bus stops from Queen Street improved air quality has been seen in Queen Street and High Street. However, there has been increases in monitored roadside nitrogen dioxide pollution levels in St Aldate's which has been subject to some significant increases in bus movements. Thus we can see there may be trade-offs in relation to making improvements in some areas that can result in additional emissions in others, reflecting the conflicts between the priorities shown to different road users within a historical city centre.

In moving forward with a new air quality action plan in response to the city-wide AQMA we need to recognise that there is no single solution to local air quality problems and a range of measures will be required to reduce emissions across the city. In addition we need to recognise the link between air quality and climate change. This was highlighted in a 2010 DEFRA report that estimated "Optimising climate change policies for air pollution can yield additional benefits of some £24 billion (net present value) by 2050". Hence we need to focus on all emissions that contribute to local air pollution and climate impacts. However, policies that influence transport generated emissions are particularly significant due to their impact on local air quality and greenhouse gas emissions.

In order to be effective in taking an integrated approach, the AQAP is required to take a view on the situation across the whole of Oxford in relation to total transport generated emissions, their impact on not only air quality but climate impacts. This means we must continue to develop an integrated approach to the problem, following the last AQAP, building upon the strategies within the current Local Transport Plan (LTP3) for Oxfordshire, that are promoting the development of sustainable transport solutions.

### **3 Scope and Objectives of the AQAP**

Oxford City Council has a duty under the Environment Act 1995 to “prepare a written plan in pursuit of the achievement of the air quality standards and objectives in the designated Air Quality Management Area (AQMA)”; i.e. to detail the Council’s proposals and actions to work towards the Government’s air quality objectives in respect of the pollutants of concern.

The scope of this document is therefore to set out proposals that seek to meet the air quality objectives within the city-wide AQMA defined in 2010.

#### **3.1 Policy integration**

The City Council recognises that the quality of the local environment is a vital ingredient in contributing to the quality of life for residents and visitors to the city. As such the Council has developed a 'Sustainability Strategy' that pulls together the Council's existing policies relating to sustainability and sets out a longer term framework to deal with these issues. A core theme of this strategy is sustainable transport and air quality.

Within the theme on transport and air quality the Council recognises the benefits of and the need for an integrated approach to managing climate change and air quality and has developed an integrated Low Emission Strategy (LES) to provide a framework for integrating all of the Council's activities to reduce carbon and air quality related emissions across the city. The LES covers all emission generating sectors in the city including transport, domestic and commercial activity.

The Air Quality Action Plan provides a focus for the delivery of air quality related transport measures in the city. There is also the Local Transport Plan (LTP) which is the key delivery mechanism for wider transport measures and is managed and delivered by the County Council as the highways authority.

The current LTP3 has two relevant core objectives:

- Objective 6 - to reduce carbon emissions from transport;
- Objective 7 - to “Improve air quality, reduce other environmental impacts and enhance the street environment”

Within these two objectives in the LTP the key actions being pursued are:

- Promoting mode shift to low carbon transport through travel planning, behavioural change programmes and investment in supporting infrastructure;
- Supporting the uptake of low and zero emission vehicles mainly through supporting the relevant infrastructure such as electric vehicle (EV) charging points;
- Reducing bus emissions including an anti-idling policy and the bus LEZ in central Oxford;
- Managing emissions from the County's on transport activities.

In addition to these two core objectives the LTP has an Oxford area strategy pulling together activities in Oxford. The strategy seeks to support Oxford’s Community Strategy with regards economic development and quality of life in the city. Within the Oxford Area strategy the key actions are:

- Park and ride and bus development - aiming to reduce car borne trips into and around the city;
- Improving rail services - to encourage greater rail access to the city by travellers;
- Traffic management schemes - to help reduce congestion and improve traffic flow;
- Walking and cycling strategies - improving the environment for walking and cycling, and encouraging greater use of these modes for travel to work and education;
- Reducing vehicles emissions - focused mainly on the bus LEZ, but also committing to exploring measures to reduce emissions from freight vehicles;
- Promoting travel choice - through travel planning and behavioural change programmes.

This range of policies and actions in the LTP supports the existing AQAP, provides the basis for measures in a new AQAP and contributes to the objective of reducing transport emissions.

Therefore moving forward with a new AQAP to cover the whole of Oxford we recommend that the AQAP is:

- an integrated air quality and low carbon transport plan for Oxford;
- adopted by both the City and County Councils;
- formally a part of the LTP Oxford area strategy;
- primarily delivered through the LTP with supporting policy and actions by the city.

As such the AQAP will provide a single focus on air quality and climate change with respect to transport developed and delivered jointly by the City and County Councils.

### **3.2 Key Themes**

Taking this integrated approach the AQAP will provide a framework for pulling together existing activity at the City and County Councils for reducing transport emission, and developing new action, in order to meet air quality objectives across the city. Progress to date has focused on reducing bus emission and traffic management measures. Going forward the key themes of the AQAP to reduce emissions across the city will be:

1. A city-wide sustainable travel strategy - this is a commitment made in Oxford's Sustainability Strategy and builds on the work of the LTP. The focus will be on reducing car traffic through measures to promote and support mode shift to low emission transport modes including travel planning, behaviour change and investment in walking, cycling and public transport.
2. Support for the uptake of low and zero emission vehicles - building on the bus emission work and the LEZ. This will look at measures such as

EV infrastructure development to encourage the uptake of electric vehicles. This theme will also cover low emissions behaviours such as eco-driving and anti-idling policies.

3. Reducing freight emissions from Light Goods Vehicles and Heavy Goods Vehicles - which are the next biggest source of emissions in the central area after buses. This theme will consider the development of a freight LEZ and consolidation of freight activity in the city.
4. Planning for sustainable transport - new development provides a good opportunity to support sustainable transport both through the form of the development and new infrastructure. There is also the option of using the Community Infrastructure Levy (CIL) to support wider sustainable and low emission transport projects across the city.
5. Managing the Council's transport emissions - both the city and County Councils must lead by example by reducing emissions from their own transport activities with regards their own fleet vehicles, business travel and contracted transport services and deliveries.

These key themes are developed in more detail in section 4 below.

### **3.3 Objectives and Targets**

Oxford City Council has a duty to “prepare a written plan in pursuit of the achievement of the air quality standards and objectives in the designated Air Quality Management Area (AQMA)”. In addition, as recognised in the city's Low Emission Strategy, there is significant added value in integrating actions to reduce air quality related emissions with those for reducing carbon emissions in order to mitigate climate change. Therefore the overall objective of the integrated air quality and low carbon transport plan for the whole of the Oxford City area is to:

**"Pursue the achievement of air quality standards and objectives across the city, and reduce carbon emission from transport activity"**

#### ***Top level targets***

A top level target for CO<sub>2</sub> emissions, along with NO<sub>x</sub> and PM emissions, has already been set within the Low Emission Strategy and reflects the city's Sustainability Strategy and the need to meet air quality objectives. These top level targets are based on emissions from surface transport across the city and are as follows:

- a 35% reduction in transport CO<sub>2</sub> emission from 2005 to 2020;
- a 50% reduction in transport NO<sub>x</sub> and PM emissions from 2005 to 2020.



In addition to these emission-based targets we also propose a concentration – based air quality target for the AQAP in relation to the national air quality standards and objectives as follows:

- achieve mean NO<sub>2</sub> concentrations levels of 45 µg/m<sup>3</sup> by 2020 and 40 µg/m<sup>3</sup> by 2025.

### **Theme level targets**

In addition to the top level targets for emissions and air quality we propose activity-based theme level indicators and targets against which to measure progress within each of the main themes. These targets, set out in the table 3 below, are consistent with those previously set for priority actions in the Low Emission Strategy and other City Council policies.

**Table 3 Theme level targets**

<b>Theme</b>	<b>Indicator</b>	<b>Target</b>
A city-wide sustainable travel strategy	Car vehicle-km measured on key routes into the city.  (supporting indicators in bus patronage, and walking and cycling trips)	10% reduction in car vehicle-km by 2020
Support for the uptake of low and zero emission vehicles	% of EV's in the city's light duty fleet (based on DVLA data for vehicles registered in the city)	10% of light duty fleet in the city zero emission (electric) by 2020
Reducing freight emissions from Light Goods Vehicles and Heavy Goods Vehicles	Freight vehicle-km on key routes in the city.	10% reduction in freight vehicle-km in the city by 2020
Planning for sustainable transport	Estimated transport emissions from new developments	All significant new development to have zero net transport emissions contribution by 2020.
Managing the Council's transport emissions	Estimated CO <sub>2</sub> and NO <sub>x</sub> emission from the Council's own transport activities	An annual 5% reduction in CO <sub>2</sub> and NO <sub>x</sub> emissions

## 4 Action Plan Measures

The action plan will focus its effort across the five key themes identified above. The key measures being pursued under each of these themes are set out below.

### 4.1 A city-wide sustainable travel strategy

The City Council will work with the County Council and its partners across the city to reduce the level of car-based travel to and around the city. We will focus on supporting a shift to more sustainable and low emission modes of travel. Our core actions will be to:

- Support the County in the development and implementation of the *Oxford walking and cycling strategies* within the LTP.
- Support the *bus and park and ride strategies* within the LTP. In particular we will work with the County to promote low emission buses on the park and ride services, and the proposed 'rapid transit' service, and traffic management and routing measures to reduce bus emissions.
- Work with the County and our partners in Low Carbon Oxford to promote *travel plans* with all organisations across the city.
- Help co-ordinate the efforts of Oxford's Low Carbon Hub and the County's *travel information services* to support more sustainable travel choices by Oxford residents.

### 4.2 Support for the uptake of low and zero emission vehicles

Significant progress has already been made in developing measures to reduce emissions from buses. The development of the bus LEZ for central Oxford has encouraged operators to invest in new lower emissions buses including a number of hybrid electric buses. In addition the tendered bus services include vehicle emissions criteria and there is an anti-idling policy in operation. In moving forward with the new AQAP we will:

- Continue to work with the County and bus operators to *reduce bus emissions further*, supporting the tightening of emission standards in contracted services and enforcement of the anti-idling policy.
- Develop *low emission and zero emission vehicles in our own fleet*, including the potential development of an electric vehicle car-pool for the Council.
- Promote the uptake of electric vehicles by working with our partners to install *electric vehicle recharging infrastructure*.
- Investigate the potential to offer *reduced parking fees or preferential parking for low emission vehicles*.
- Promote the development of *low and zero emission car clubs* schemes in the city.

- Work with our Low Carbon Oxford partners to introduce *low emission vehicle into their fleets*.
- Support *eco-driving* through inclusion of eco-driving information in the Low Carbon Hub and other travel information services, and where possible look to support eco-driving schemes.

### 4.3 Reducing freight emissions

The second biggest source of NOx emission in central Oxford after buses is freight traffic (Light Goods Vehicles and Heavy Goods Vehicles). So far little has been done to tackle emissions from this sector. Therefore we will work with the County to explore and develop options to reduce emissions from freight including:

- Assessment of the potential for expanding the bus-based *Low Emission Zone* to cover freight vehicles.
- Exploring the options available for *freight consolidation* and other schemes to reduce the amount of freight vehicles operating in the city. We will also consider low and zero emission vehicles in relation to the final delivery leg of any such consolidation schemes.
- Work with the freight industry through the freight quality partnership to promote *Eco-driving and anti-idling policies* with operators in the city.
- Support the development of *Delivery and Servicing Plans (DSPs)* with business across the city to further reduce unnecessary freight movements. The development of such DSP's will need to consider integration with work emerging on freight consolidation.

### 4.4 Planning for sustainable transport

Land use planning has significant implications for transport emissions and the use of appropriate planning policies can support the development of sustainable transport options. Assessment of the transport implications of significant developments is required to demonstrate that net transport emissions will not increase as a result of the development. There are policies in place to try and reduce transport demand from these developments. However, we will seek to strengthen the use of the planning system to reduce transport emissions further as follows:

- Ensure that *stretching targets are set within travel plans* for new developments, and that all new developments are encouraged to adopt *Delivery and Servicing Plans* to reduce freight movements.
- Support the development of voluntary *area-wide travel plans for existing developments* and communities through the neighbourhood planning process.

- Explore the potential for using the *Community Infrastructure Levy* to contribute to funding of wider sustainable transport measures.
- Ensure that *development infrastructure plans* adequately account for walking, cycling, public transport and low emission vehicle infrastructure e.g. EV charging points.
- Promote the development of *car clubs* within new developments and the community planning process.

In addition as a member of the Low Emission Strategies Partnership (LESP) we will promote the use of LESP developed tools for new developments such as the Low Emission Toolkit and the emerging Low Emission Assessment Method (LESAM) rating scheme.

#### **4.5 Managing the Council's transport emissions**

In working with businesses across the city the Council must lead by example and take a proactive approach to managing emissions from its own transport activities. We have already been active in the area with an award winning programme on eco-driver training, the use of 30% biodiesel in our fleet vehicles and the trialling of other low emission vehicle technologies. In further working to reduce our own emissions we will:

- Develop a *low emission vehicle technology hierarchy* to guide the procurement of low emission vehicles within our fleet.
- Continue to assess our fleet operations in terms of *mileage management and efficient routing* of vehicle movements.
- Maintain and develop our *staff travel plan* and complement this with *Delivery and Servicing Plans* for key Council sites.
- Further develop options for *eco-driving* with our staff.
- Set *vehicle emission standards and targets within our procurement contracts* for the transport element of goods and services.

## 5 Monitoring and Assessment

The key to the success of the Air Quality Action Plan will be the ability to monitor and report the progress of measures and assess their impact. This will allow the AQAP to be developed and ensure transparency and accountability.

### 5.1 The integrated emissions database

The City Council has commissioned an integrated emissions database to allow the tracking of actions and impacts of its Low Emission Strategy. This database also provides the mechanism to track actions within the Air Quality Action Plan as the main delivery mechanism for transport measures within the LES. The database tracks three types of data:

1. **Measure data** - this is information describing each of the measures in the LES and AQAP. It will include the name of the measure, the indicator used to track the measure and who is responsible for the measure.
2. **Activity data** - this is the direct activity that a measure will influence for example reducing vehicle-kms or increasing the number of electric vehicles in the city. Any measure may have one or more activity data sets associated with it to track its progress.
3. **Emissions data** - this is actual emissions data in terms of CO<sub>2</sub>, NO<sub>x</sub> or PM emissions that are being collected and which the AQAP will influence.

The activity data should provide the link between the measure and its emissions impact. For example a reduction in car vkm can be used to estimate an emissions impact. These data sets and the relationships between them are illustrated in figure 6 below:

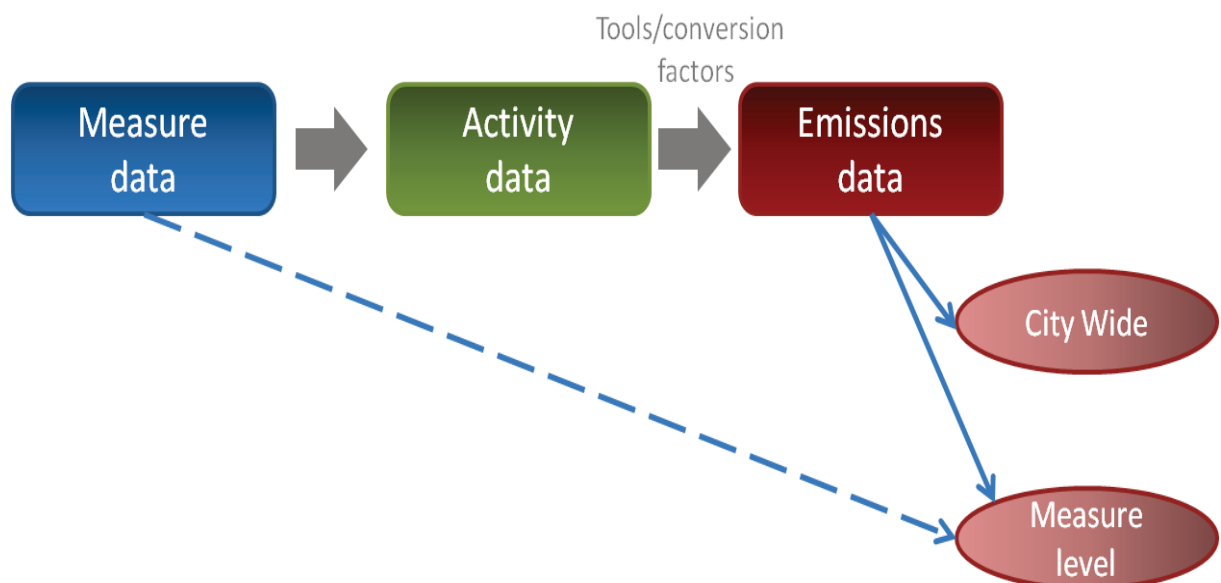


Figure 6 Data sets and their relationship in the integrated emissions database

The database will then provide the base information for monitoring and reporting progress of measures with the AQAP.

## 5.2 Modelling and assessment of transport emissions

The integrated database described above will allow the collection and tracking of information on individual measures. It will also hold available emissions information to track the emissions targets set within the AQAP. Since the AQAP covers the whole city the emissions indicators and targets are set at the city level. At present the data available at the city level to track the top level targets for CO<sub>2</sub> and NO<sub>x</sub> are as follows:

- City level CO<sub>2</sub> data – this is available from DECC's regional CO<sub>2</sub> statistics and gives a city level estimate of CO<sub>2</sub> emissions from transport as a whole for the city.
- City level NO<sub>x</sub> data – is available for the city from the National Atmospheric Emissions Inventory (NAEI) 1km X 1km grid data for Oxford, again giving a total figure for transport.

However, both these datasets do not disaggregate by vehicle type (car, van, HGV, etc.) and they do not necessarily account of all the available local data. These estimates can potentially be improved and provided at a more disaggregated level by using local data on road speeds, vehicle fleet composition and traffic data where it is available. This would require the development of a simplified emission inventory using aggregate data for background transport emissions and adding key zones or road networks where local data existed. This approach has been used by Devon<sup>1</sup> and the East of England Development Agency<sup>2</sup>.

Such a tool would be considerably simpler than a full emissions inventory used for pollution forecasting. It would be designed to take a simple set of traffic and fleet data each year in order to be updated and so allow annual tracking of city level emissions. Annual updating of a full emissions inventory is possible but would take a considerable amount of effort each year.

In addition to providing a simple method for tracking city wide emissions data this approach also provides a tool for simple assessment of emission reduction measures at the city level. Hence this tool could be used to screen measures and schemes to get an initial assessment of their impact.

Therefore as part of our monitoring and assessment work it is our intention to *develop a simplified transport and emissions tool for the city* which can be updated annually and used to report against our top level emissions target. It will also be used to provide disaggregated data by vehicle class and key area of the city (e.g. city centre). In addition the tool will be used to help assess and develop measures within the action plan.

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<sup>1</sup> 'Exeter and the Far South West DaSTS Carbon Study: Evidence base report', CEE, University of Exeter, 2010 and 'Carbon Modelling of Potential Round 3 Local Transport Measures', CEE, University of Exeter, 2010.

<sup>2</sup> 'East of England Transport and Carbon Study', Atkins, 2009

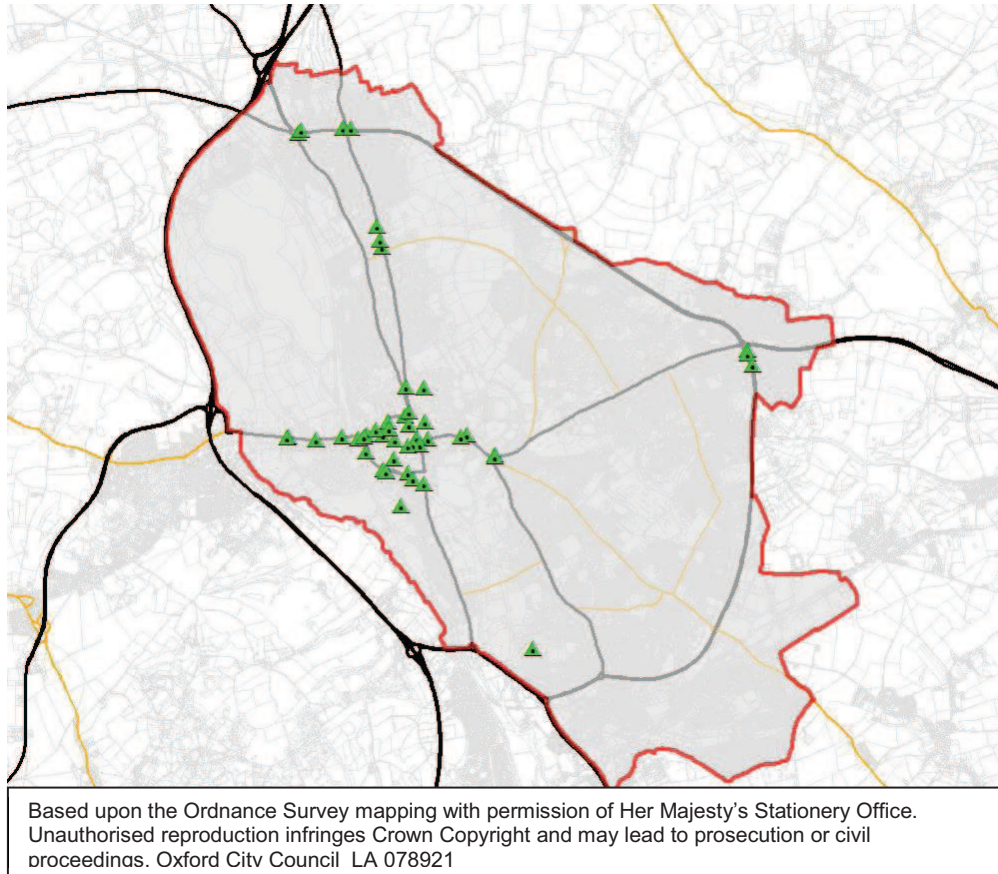
### 5.3 Air quality monitoring

The action plan needs to demonstrate progress towards achieving the national air quality objectives and standards. Therefore the city wide emissions targets are complemented with a pollution concentration target for the city centre. It is proposed that this target is related specifically to monitored data from the Council's automatic monitoring site on St Aldate's street.

In addition to the St Aldate's site there are a further two automatic monitoring stations in the city at High Street and St Ebbe's (a background site) and some 45 diffusion tube sites. Data from these sites will complement the specific indicator of concentration levels at the St Aldate's site.

Pollution concentration data have been collected in the city for many years as part of the required review and assessment process under the Local Air Quality Management regime. The diffusion tube sites are located in key areas of the AQMA to monitor compliance with the NO<sub>2</sub> objectives across the wider AQMA. A map showing the location of the diffusion tube sites is given figure 7 below.

As part of our monitoring and assessment work *we will review the extent and location of our monitoring sites to ensure that they are appropriate* for extent and scale of our AQMA, are fit for purpose and meet best practice approaches in line with other Councils and cities in the UK. To ensure this we intend to carry out a bench marking exercise against other similar authorities across the country. We will also consider the extent to which this information is communicated to Oxford residents and wider stakeholders.



**Figure 7 Diffusion tube sites within the city boundary 2011-12**

## 5.4 Partnership working

The success of the action plan will depend on close working relationships with our delivery partners in particular the County Council. We also recognise that other authorities will be working with the County Council through the LTP to deliver air quality solutions. We believe that there would be significant added value in working more closely together on:

- Assessing the potential of transport measures to reduce emissions across AQMAs in Oxfordshire.
- Developing tools and resources in a co-operative manner in order to monitor and assess air quality in a more efficient way.
- Potentially pooling resources for the monitoring and communication of air quality information.

As such we will seek to develop a *sub-regional approach to air quality monitoring and action planning*, working closely with our County and District colleagues. We will also consider the benefit of including wider stakeholders such as transport providers, public health organisations and research and consulting expertise.

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## 5.5 Reporting

Progress reporting of the AQAP will be carried out annually as required under the LAQM regime. The reporting will cover:

- top level emissions and concentrations indicators and targets, and associated data;
- theme level targets and associated data; and
- progress on measures within each of the themes.

The reporting will use the monitoring data as set out above and collated through the integrated emissions database.

It is also recognised that there will be related reporting for the programmes and policies that are delivering AQAP measures such as LTP and LES reporting. Where possible and appropriate we will consolidate this reporting effort. The use of the integrated emissions database will support the consolidation of this reporting effort as the data will be held in one place and accessible to all.

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