

Air Quality Action Plan 2013-2020

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

December 2013



Executive Summary

Oxford City Council has a duty under Part IV of the Environment Act, 1995 to periodically review and assess the air quality within the city. Where it appears that air quality objectives will not be met by designated target dates, Oxford City Council must declare an Air Quality Management Area (AQMA) and develop an action plan in pursuit of those objectives.

The whole of Oxford was declared an AQMA in 2010. 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.

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)”. This document is developed in response to the above requirement and seeks to address the issue of poor air quality in Oxford.

Air pollution can cause both short term and long term effects on health and many people are concerned about pollution in the air that they breathe.

In the past, the main source of air pollution in the UK was the burning of fossil fuels, such as coal, in homes and factories. This produced high levels of smoke and sulphur dioxide, which were usually visible. However, following the Clean Air Acts brought in during the last century, this has greatly improved.

Today we have a complex mixture of pollutants, most of which we cannot see. They are a mixture of gases and fine particles, largely resulting from processes of fuel combustion. They originate from a combination of domestic, commercial, industrial and transport sources.

With changes in manufacturing and power generation over the past 50 years industrial and domestic emissions have greatly reduced.

However, traffic pollution has become worse and is now the major threat to lung health and contributor to climate impacts. In the UK, transport sources contribute 21% of total greenhouse gas (GHG) emissions, representing the fastest growing source of GHG emissions.

The most troublesome pollutants are:

- oxides of nitrogen;
- particles;
- volatile organic compounds; and
- carbon monoxide

In comparison to many other countries, air pollution levels in the UK are low, although in parts of major cities, including parts of central Oxford, particularly near busy roads, they are high enough to be of concern.

The local pollution picture reflects a complex mixture of sources and distribution of pollutants. They contribute not only to local air pollution impacts, but also to increasing ground levels of ozone, adding to local and global climate impacts.

As recognised in the City's Low Emission Strategy, there is significant added value in integrated action to reduce air quality related emissions with those for reducing carbon emissions in order to mitigate climate change.

Hence, this Air Quality Action Plan (AQAP) sets out the key themes, highlighting measures that Oxford City Council needs to take to improve air quality in Oxford, and contribute to reducing carbon emissions. The AQAP addresses the integrated approach to air quality and carbon emissions by setting reduction targets for air pollution and carbon emissions from road transport.

The overall objective of the integrated AQAP 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"

The AQAP recognises that the City Council should not act in isolation in order to deliver a comprehensive package of measures, involving engagement and delivery from a wide set of stakeholders.

Air pollution results from activities we all contribute to, it is a shared problem and therefore the solutions need to be equally shared.

We have identified transport emissions as the source requiring most attention, highlighting the links to the Local Transport Plan (LTP), which has priorities for delivering sustainable transport, reducing congestion and pollution. The LTP is required to support the objectives set out in this plan in order to tackle air pollution. Further measures will be developed with Oxfordshire County Council, through the updated Oxford Area Strategy, due in 2014.

Effective measures require co-operation from all sectors including transport policy and management, the Council's priorities for new developments, freight management for business and commerce, and daily choices made by all transport users.

Thus the AQAP not only focusses on measures the City Council needs to address, but looks to measures the City Council can influence, or work in partnership with others to address.

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1 Introduction

- 1.1 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. It must prepare a written plan, an Air Quality Action Plan (AQAP), in pursuit of the achievement of these objectives.
- 1.2 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 city and district centres.
- 1.3 Oxford has a growing population, above the national average, with 24% of the city's adult population as full-time students. The city receives large numbers of visitors throughout the year. It is estimated that 40,000 commute into the city for work, and an estimated 9 million visit each year for tourism.
- 1.4 Economic development to encourage business growth, with associated housing development adds to the pressure on local infrastructure. This is particularly so in relation to transport, where increased demand from all modes of transport results in competition for limited available space. Space is further restricted in the city centre by limitations imposed due to heritage and conservation.
- 1.5 The new Public Health Outcome Framework includes an indicator for air quality which local authorities will be expected to show progress on through, for example, traffic congestion reduction, which will directly affect health outcomes by reducing risks to health.
- 1.6 The Framework details that in Oxford, 5.6 % of all mortality (the same as the UK average) is attributable to long term exposure to fine particulate matter (PM_{2.5}). Road traffic can make substantial contributions to PM_{2.5} concentrations at the kerbside (within 1 m of the kerb), but at the roadside (a few metres from the kerb) the contributions are relatively limited.
- 1.7 In Oxford, the air quality objectives are exceeded for annual mean concentrations of nitrogen dioxide (NO₂), close to major roads, and at busy junctions across the city. In the city centre, we also exceed the hourly mean objective in streets such as St Aldate's, High Street, George Street, Frideswide Square, Worcester Street and St Clement's.
- 1.8 We are in consultation with DEFRA on the requirement to declare a separate AQMA for exceedences of the hourly mean objective for NO₂.

The actions contained within this action plan will help achieve objectives for the hourly mean and on-going research is seeking to identify further actions. It should therefore be noted that if an AQMA is declared for hourly mean exceedences, reporting on this action plan will be extended to include progress in this area.

- 1.9 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 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.
- 1.10 Despite good 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. This new AQAP proposes to meet the requirement of addressing air quality issues city-wide.
- 1.11 In developing a new AQAP in response to the city-wide AQMA, we recognise that there is no single solution to local air quality problems. A range of measures will be required to reduce emissions across the city. This suggests a further development of programmes to deliver sustainable low carbon transport minimising the need to travel, especially by private car.
- 1.12 In addition, we need to recognise the link between air quality and climate change. Therefore this new AQAP will provide an integrated approach considering all transport related emissions that contribute to local air pollution and climate impacts.
- 1.13 This AQAP must also be seen in the context of the Council's wider 'Sustainability Strategy' and the recently adopted 'Low Emission Strategy'. These strategies provide a set of high level objectives for the AQAP in terms of improving air quality and reducing emissions related to transport activity across the city.
- 1.14 In addition, as a primarily transport based action plan, the majority of the delivery will be integrated with delivery of the Local Transport Plan, particularly through the Oxford Area Strategy. As such, the success of the AQAP depends on close working between the City and County Councils, and wider stakeholder groups.
- 1.15 Building on the work of the 2006 AQAP, existing programmes and policies and the need to reduce emissions further, this AQAP will tackle emissions across the city through a range of measures focusing on the following themes:

- Support for development of sustainable transport measures
- Support for the uptake of low and zero emission vehicles
- Reducing freight emissions
- Planning for sustainable transport
- Managing the Council's transport activities
- Partnership working and education

1.16 The following sections set out the scale of the air quality problem in Oxford and its causes. They outline 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 delivery themes and how we will monitor and assess the action plan.

2 Background

The National Context

- 2.1 Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management. The EU ambient air quality directives set limits and targets for concentrations of various pollutants in outdoor air for the protection of health and ecosystems.
- 2.2 The Air Quality (Standards) Regulations 2010 transpose into English law the requirements of Directives 2008/50/EC and 2004/107/EC on ambient air quality. The Air Quality (England) Regulations 2000 set national objectives for local authorities in England.
- 2.3 A summary of the objectives for Particulate Matter (PM) and nitrogen dioxide (NO₂), the pollutants of most concern, are shown in Table 1 below.

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

Table 1 Air Quality Objectives for NO₂ and PM₁₀

- 2.4 Within the UK, Oxford is one of over 200 Local Authorities that have declared 467 Air Quality Management Areas (AQMAs) based on failure to meet the air quality objectives for NO₂.
- 2.5 The UK meets European air quality standards for the majority of pollutants except for NO₂ and PM. The main challenge is in meeting NO₂ limits alongside roads in cities and towns. This picture is reflected in Oxford, where the air quality objectives for NO₂ are not met in areas close to busy congested roads. This applies to 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.

Air Quality in Oxford

2.6 Figure 1 shows the AQMA, outlined in black, declared in 2010 and the main air quality hot spots in the city.

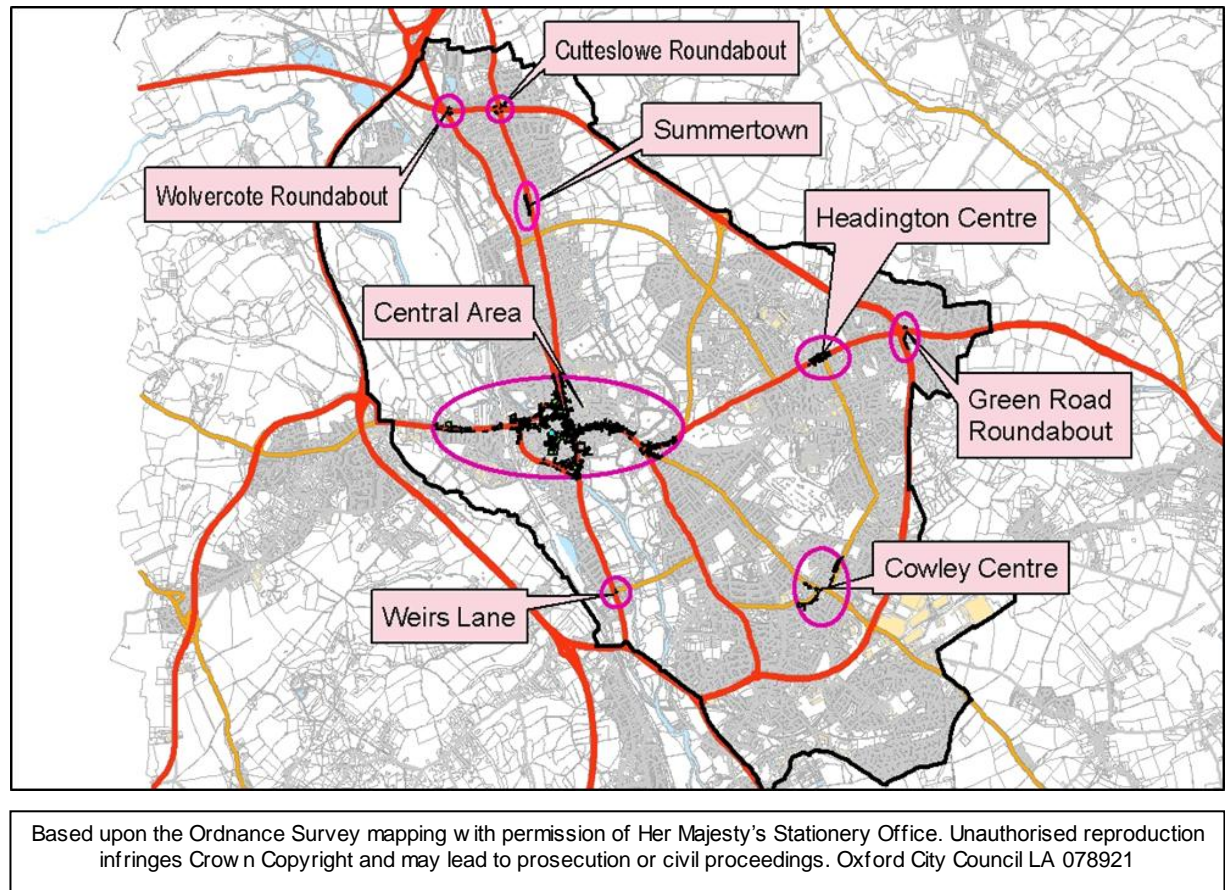


Figure 1 – The Air Quality Management Area and Air Quality Hotspots in Oxford

Sources of air pollution in Oxford

2.7 The major source of NO_x (NO and NO₂) emissions in Oxford is transport activity as shown by the chart in Figure 2 below. In addition, for near road locations, where the objectives are being breached, transport is a far larger contributor to air pollution concentration than any other source.

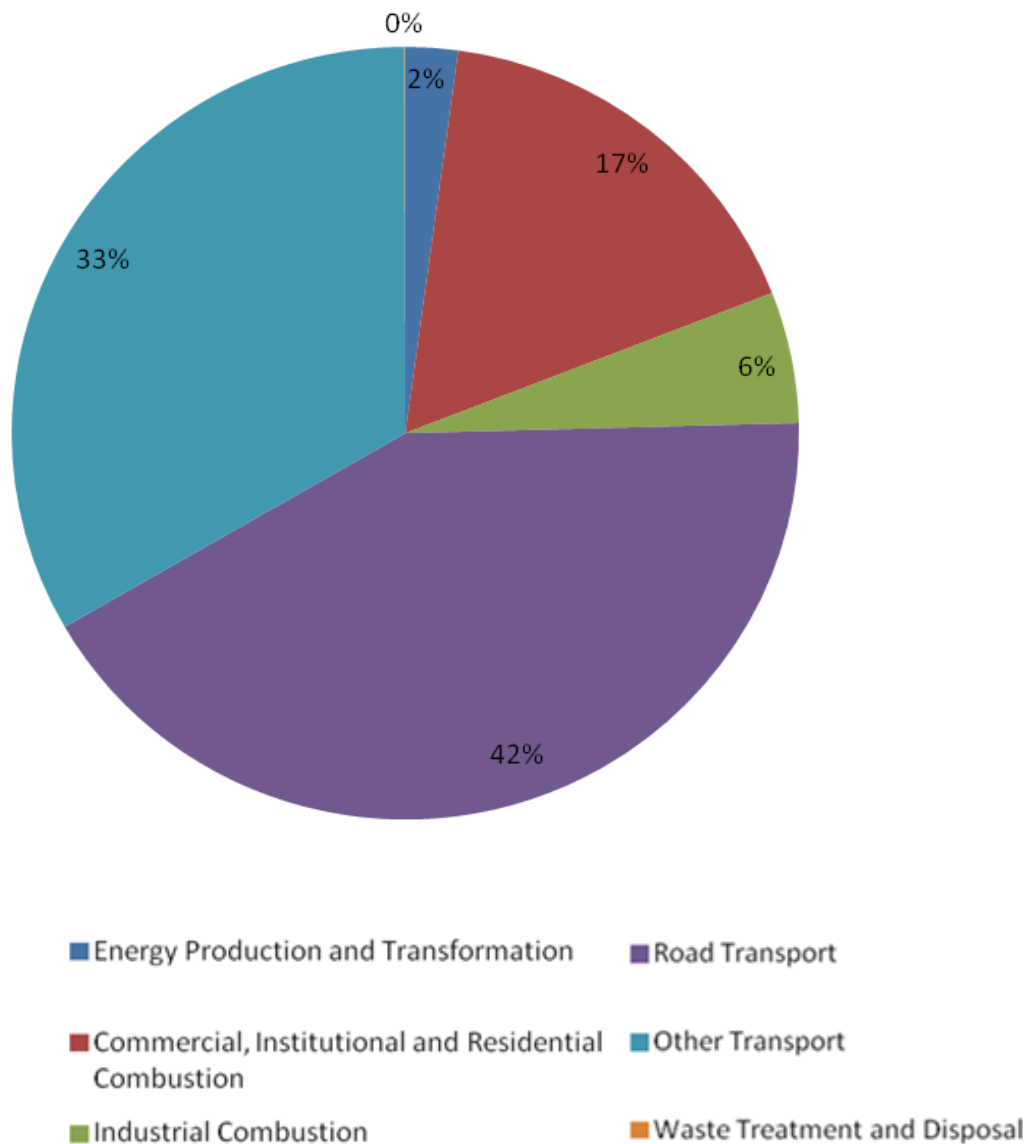


Figure 2 Emissions of NO_x by Source in Oxford. Source: NAEI 2010

2.8 An estimate of the NO_x emissions by vehicle type is shown in Figure 3 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.

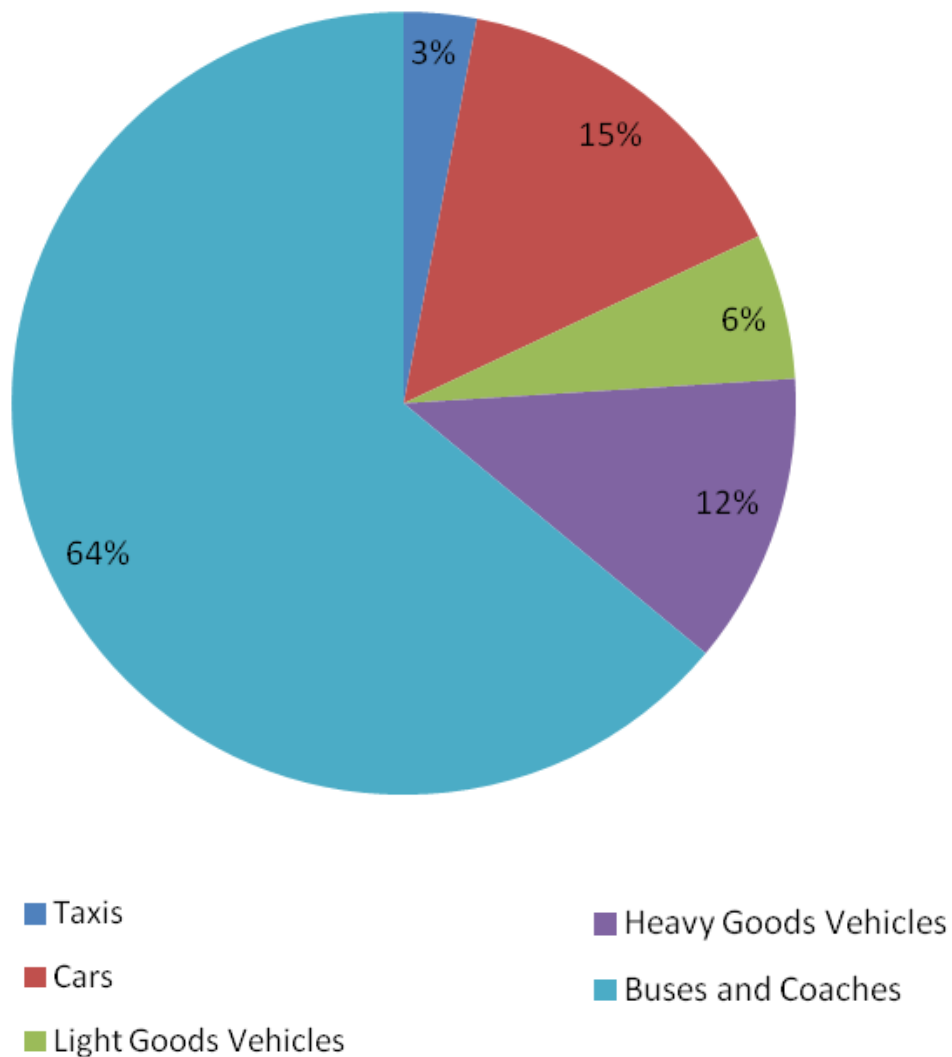


Figure 3 Estimate of Transport Related NO_x Emission in central Oxford AQMA

The influence of Oxford City Council on sectoral emissions

2.9 Oxford City Council's range of influence can be categorised into three main groups:

- Own estate – measures to reduce emissions from the Council's own estate defined as the Council's own operational buildings, council owned housing and the Council's vehicle fleet;
- Direct influence – measures that will have a direct impact on the emissions of others through regulations, planning policies and procurement practices;
- Wider influence – through partnerships, advice and leadership.

The charts below, (Figures 4 and 5) indicate the relative contributions to NO_x and CO₂ emissions by source sector and the sphere of influence of the City Council. For NO_x emissions, transport is the major contributor.

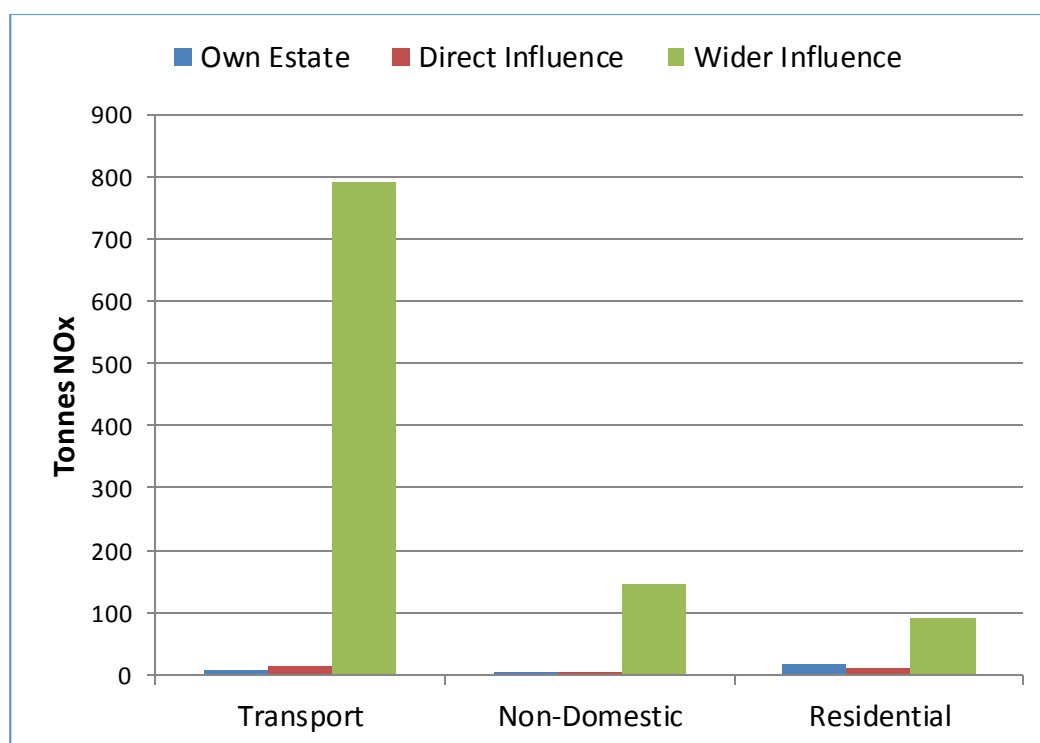


Figure 4 NO_x emissions in Oxford by source sector and sphere of influence

2.10 Figure 5, below, shows that the industrial and commercial sectors (mostly emissions from power generation) provide the highest contribution to CO₂.

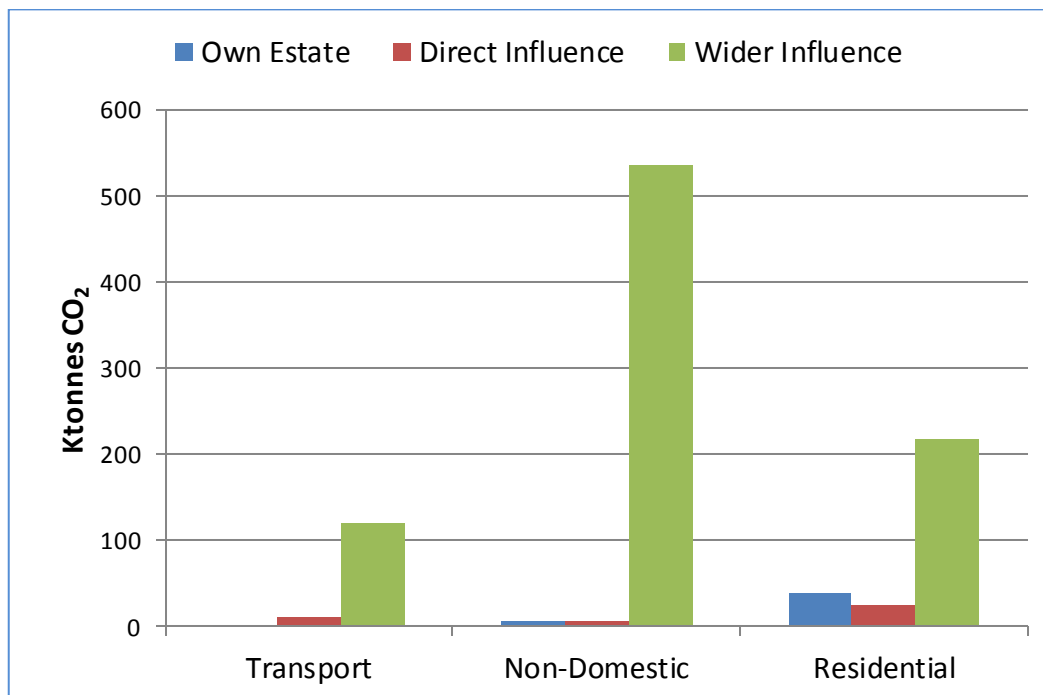


Figure 5 CO₂ emissions in Oxford by source sector and sphere of influence

Air quality trends in Oxford

2.11 The chart below, Figure 6, highlights the variation in local air quality from a roadside location St Aldate's (as 3-year averages), compared to St Ebbe's School (a background location). The difference between the two can be attributed to emissions from road traffic in St Aldate's.

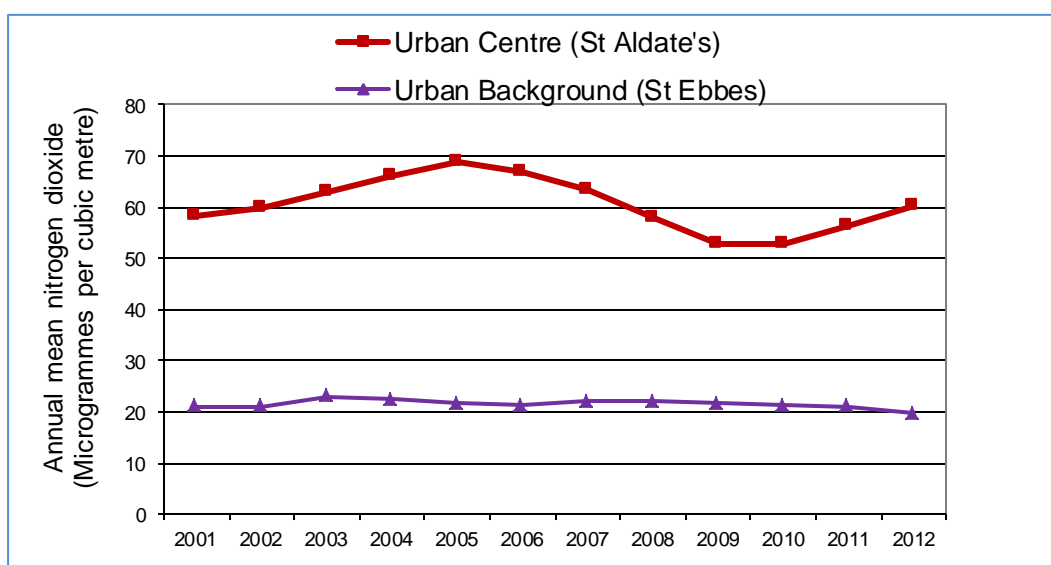


Figure 6 Annual Mean NO₂ Concentration trends in Central Oxford

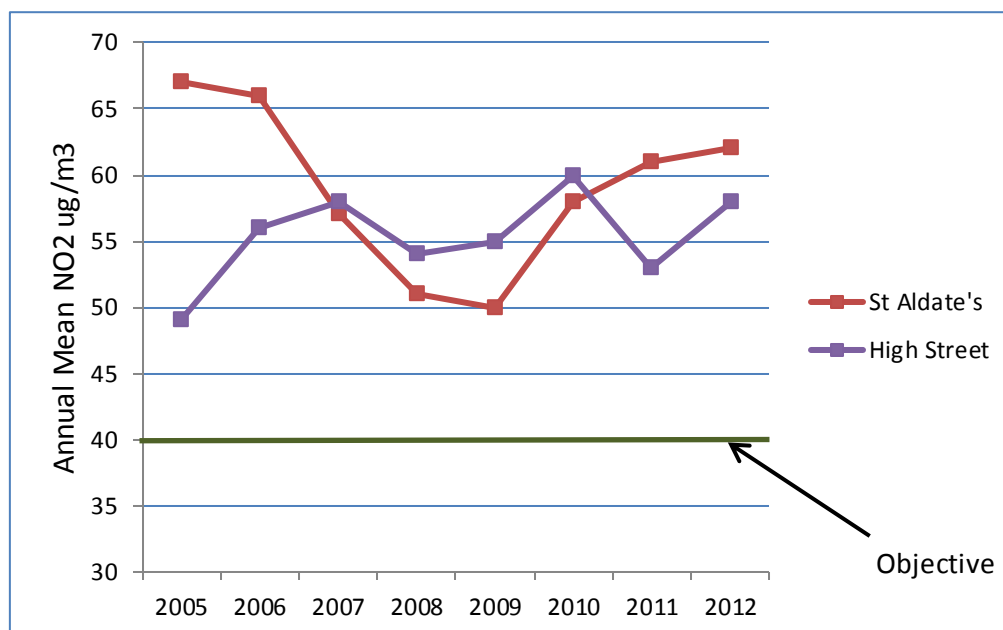


Figure 7 Mean NO₂ in two central Oxford locations

- 2.12 Figure 7, above, highlights year on year differences between two city centre roadside locations, both remaining significantly above the objective for the annual mean of 40 µg/m³. The differences between the two can be attributed to impacts of traffic congestion, bus-stops and street canyon effects in St Aldate's.
- 2.13 These results show air pollution levels are not reducing as expected, particularly at city centre hot spots such as St Aldate's and the High Street. We believe that this is due in part to the higher levels of direct NO₂ emitted from new diesel vehicles, and concentrations of bus stops in narrow congested streets.
- 2.14 This makes clear that there is further work to do to achieve the air quality objectives in some locations.
- 2.15 The areas highlighted in red on Figure 1, exceed the annual mean air quality objective for nitrogen dioxide and 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.

- 2.16 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 NOx 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 NOx emissions.
- 2.17 The nature of vehicle emissions in central Oxford is being assessed, following a DEFRA sponsored study to take large numbers of measurements on individual vehicles. The study is being carried out by King's College in London and will report in Spring 2014.

Progress to date

- 2.18 A significant amount of work has been undertaken to improve air quality in Oxford. The emphasis of this work 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.
- 2.19 The City Council declared a Low Emission Zone (LEZ) which was endorsed by the County Council 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. There are currently over 50 hybrid buses operating in Oxford, part-funded through the Department for Transport's Green Bus Fund.



Figure 8 Oxford Bus Company Diesel Electric Hybrid



Figure 9 Stagecoach Diesel Electric Hybrid

2.20 The phased introduction of these measures is shown in Table 2 below, with the development and implementation of the LEZ on going.

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
January 2014	Bus-based Low Emission Zone for Central Oxford

Table 2 Introduction of measures in the 2006 AQAP

- 2.21 An assessment¹ has been undertaken that summarises the extent that these measures are contributing to reducing vehicle emissions in Oxford for NO_x, PM and CO₂ across the city.
- 2.22 The assessment 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 be done to achieve the air quality objectives for NO₂ 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 NO₂, yet they meet objectives for PM, considered more harmful to health.
- 2.24 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 an increase in monitored roadside NO₂ pollution levels in St Aldate's which has been subject to some significant increases in bus movements. Thus we can see that making improvements in some areas can result in additional emissions in others. This reflects the conflicts between the priorities shown to different road users within a historical city centre.

The way forward

- 2.25 In developing this new AQAP in response to the city-wide AQMA we need to recognise that there is no single solution to local air quality problems. In addition we need to recognise the link between air quality and climate change. This was highlighted in a 2010 DEFRA report² 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.
- 2.26 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. This means we must continue to develop a cohesive approach to the problem, building upon the strategies within the current Local Transport Plan (LTP3) for Oxfordshire, that are promoting the development of sustainable transport solutions.

¹ Review of air quality traffic emissions. AEA Technology August 2012

² 'Air Pollution: Action and a changing climate', DEFRA, March 2010

2.27 The government has laid out five goals which transport authorities are expected to consider as over-arching priorities for their Local Transport Plans, including:-

- Reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change.
- Improve the quality of life for transport users and non-transport users, and to promote a healthy natural environment.

For Oxfordshire the transport authority responsible for producing the LTP is Oxfordshire County Council.

2.28 Improving air quality is firmly embedded within the objectives and main goals of the Local Transport Plan for Oxfordshire 2011-2030 (LTP3)

The main objective aims to: Improve air quality, reduce other environmental impacts and enhance the street environment.

In LTP3 the four main goals are:

- To support the **local economy** and the growth and competitiveness of the county;
- To make it easier to get around the county and improve access to jobs and services for all by offering **real choice**;
- **To reduce the impact of transport on the environment and help tackle climate change**; and
- To promote **healthy**, safe and **sustainable** travel.

2.29 Core policies within LTP3 relating to the environment are:

Policy RE1

Oxfordshire County Council will work to reduce the environmental impact of its operation of the transport network and promote the use of less environmentally damaging forms of transport, particularly in Areas of Outstanding Natural Beauty and Conservation Areas.

Policy RE2

Oxfordshire County Council will ensure that the operation of the transport network balances the protection of the local environment with efficient and effective access for freight and distribution.

3 Vision and Aims of the AQAP

- 3.1 The scope of this document is to set out a range of proposals to reduce emissions of air pollutants and GHGs from road transport in response to the declaration of an AQMA for exceedences of the annual mean objective for NO₂.

Policy integration

- 3.2 The City Council recognises that the quality of the local environment is vital in contributing to the quality of life for residents and visitors to the city. As such the Council has developed a '**Sustainability Strategy**' linking the Council's 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.
- 3.3 The Council recognises the benefits of and the need for an integrated approach to managing climate change and air quality. It has adopted 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.
- 3.4 The **Local Transport Plan (LTP)** is the key delivery mechanism for wider transport measures and is managed and delivered by the County Council as the transport authority.
- 3.5 The **Oxford Area Strategy** is being developed through the LTP process and has identified ten priority areas for development in Oxford City, with specific measures identified under each policy priority. The Oxford Area Strategy is expected to be updated during 2014.
- 3.6 The local area policies within the LTP identify a wide range of measures designed to deliver and promote sustainable transport solutions within the Oxford Area, contributing to the objective of reducing the impact of transport emissions.

Key Themes

- 3.7 Taking an integrated approach the AQAP will provide a framework for incorporating existing activity in the City for reducing transport emissions, and developing new action, in order to meet air quality objectives and carbon reduction targets across the city.

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

3.9 **Theme 1: Support for development of sustainable transport measures**

A wide range of measures are required to support the development of alternative low carbon transport, including transport management measures and investing in public transport infrastructure. Many of these measures will be developed in partnership with the County Council as the Transport Authority through the Oxford Area Strategy

3.10 **Theme 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 low emission vehicle infrastructure development to encourage the uptake of electric and other low emission vehicles. This theme will also cover low emissions behaviours such as eco-driving and anti-idling policies.

3.11 **Theme 3: Reducing freight emissions from Light Goods Vehicles and Heavy Goods Vehicles**

Light and Heavy Goods Vehicles are the next biggest source of emissions in the central area after buses. This theme will consider the development of freight consolidation in the city.

3.12 **Theme 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. This provides the opportunity to use Community Infrastructure Levy (CIL) and Section 106 agreements to support wider sustainable and low emission transport projects across the city.

3.13 **Theme 5: Managing the Council's own transport emissions**

The City Council must lead by example by reducing emissions from our own transport activities with regards to fleet vehicles, business travel and contracted transport services and deliveries.

3.14 **Theme 6: Developing partnerships and public education**

By working with key stakeholders we can consider partnerships to share resources and develop wider strategies to deliver greater benefits. The public consultation highlighted that there is a willingness by the public to engage in actions to reduce emissions, and at the same time, an acknowledgement of lack of knowledge of local programmes to address the issues. This demonstrates a need for improved knowledge sharing and better resources for public education.

Objectives and Targets

- 3.15 As recognised in the City Council'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 AQAP 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"

Targets

- 3.16 The City Council is required to work towards meeting an air quality objective for NO₂ of 40 µg/m³ on an annual average basis. We therefore propose a concentration based air quality target for the AQAP in relation to the national air quality standards and objectives. We may have to introduce a phased approach to meeting this target, while recognising that the urgent goal is to achieve the 40 µg/m³ limit values for NO₂ across the city.
- 3.17 This objective is concentration based, rather than related to total emissions from activities in the City and will be influenced by other factors such as meteorology.
- 3.18 In terms of setting an overall emissions limit we need to relate emissions reduction to decreases in air quality concentrations. Therefore our NO_x reduction target is set at a level that is likely to bring these concentrations down to 40 µg/m³.
- 3.19 A basic analysis of NO_x emissions and associated concentrations suggests that a city wide reduction target of a *50% reduction in NO_x and PM by 2020* is required.
- 3.20 The City Council has set a *40% reduction target for CO₂ emission by 2020 on a 2005 baseline*³. This 40% target is broken down into sectoral targets in order to calculate the relative contribution from individual sectors. Table 3 shows that in terms of transport a 35% reduction in CO₂ is necessary.

³ A Sustainability Strategy for Oxford (2011-2020), Oxford City Council, 2011.

	2005	Target by 2020		
	kt, CO2	% reduction	Emissions, kt CO2	% per year
Total	1021	40%	613	2.7%
Transport	142	35%	92	2.3%
Residential	308	45%	169	3.0%
Non-domestic	571	40%	343	2.7%

Table 3 Subsector CO2 Targets for Oxford

3.21 The AQAP therefore sets targets based on emissions from surface transport across the city as follows:

- **Achieve mean NO₂ concentrations levels of at least 45 µg/m³ by 2020 and 40 µg/m³ by 2025 at the latest;**
- **Achieve a 35% reduction in transport CO₂ emission from 2005 to 2020; and**
- **Achieve a 50% reduction in transport NO_x and PM emissions from 2005 to 2020.**

4 Action Plan Measures

- 4.1 The action plan will focus its effort across the six key themes identified on page 19. The key measures being pursued under each of these themes are set out below. We also highlight the City Council's range of influence for each action, indicating our level of direct control.

Support for Development of Sustainable Transport Measures

- 4.2 The City Council will work with the County Council and its partners across the city to ensure delivery of transport measures which support the delivery of the objectives in the AQAP. We will focus on supporting a shift to more sustainable and low emission modes of travel and to reduce the level of traditional car-based travel to and around the city.

- 4.3 Our core actions will be to:

Direct Influence

- Work to ensure sustainable transport measures developed in the Oxford Area Strategy of the LTP support the targets of the AQAP.
- Support walking and cycling strategies within the LTP to ensure they assist delivery of the AQAP objectives.
- Assist in development of bus and park and ride strategies within the LTP which support the AQAP. In particular we will work with the County to promote traffic management and routing measures to reduce bus emissions.

Wider Influence

- Work with the County and our partners in Low Carbon Oxford to promote travel plans with organisations across the city.

Support for the Uptake of Low and Zero Emission Vehicles

- 4.4 Low emission vehicles, such as electric, plug-in hybrid and hydrogen powered cars, vans and buses, help reduce greenhouse gas emissions and air pollution on our roads.
- 4.5 To encourage more people to use these vehicles, we will:

Direct influence

- 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 following implementation of the LEZ.
- Promote the uptake of electric vehicles by working with our partners to install electric vehicle recharging infrastructure.
- Investigate the feasibility of developing infrastructure to support emerging low or zero emission vehicle technologies, such as hydrogen fuel cells.

Own Estate

- Continue to develop low emission and zero emission vehicles in our own fleet, and seek opportunities to increase the Council's electric vehicle car-pool.

Wider Influence

- Promote the development of low and zero emission car clubs schemes in the city.
- Work with our Low Carbon Oxford Pathfinders to support the introduction of 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 with for example taxi companies.
- Explore the impact of alternative and low emission transport on air quality in Oxford.

Reducing Freight Emissions

- 4.6 The second biggest source of NO_x 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.
- 4.7 Therefore we will explore and develop options to reduce emissions from freight including:

Direct Influence

- Exploring the options available for freight consolidation and management 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.

Wider Influence

- Seek to establish a 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.

Planning for Sustainable Transport

- 4.8 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. Measures should be taken to provide affordable and practical alternatives to the car and to encourage the use of public transport, walking or cycling.
- 4.9 We will seek to strengthen the use of the planning system to further reduce transport emissions as follows:

Direct Influence

- Ensure that transport and environmental impact assessments for new developments are adequate to determine what levels of mitigation may be required to offset potential increases in transport activity and emissions.
- Explore opportunities to develop policy measures that require developers to provide investments in and contributions to the delivery of low emission transport projects and plans, including strategic monitoring and assessment activities.
- Seek to 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.
- Seek to ensure that new developments make appropriate provision for walking, cycling, public transport and low emission vehicle infrastructure e.g. EV charging points.

Wider Influence

- We will encourage the development of voluntary area-wide travel plans for existing developments through the Community Action Groups
- Promote the development of car clubs within new developments.

Managing the Council's Transport Emissions

4.10 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 and promoting electric vehicles in our fleet.

4.11 In further working to reduce our own emissions we will:

Own Estate

- Develop a low emission vehicle hierarchy to guide the procurement of 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 such as Town Hall.
- Roll out eco-driving training for our staff.

Developing Partnerships and Public Education

4.12 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.

4.13 In further developing our partnership working approach we will:

Direct Influence

- Seek to develop a sub-regional approach to air quality monitoring and action planning, working closely with our County and District colleagues, through engagement with the Oxfordshire Air Quality Partnership.
- Consider the benefit of including wider stakeholders such as transport providers, public health organisations and research and consulting expertise.
- Improve communication to increase the public's understanding of the main sources and health effects of air pollution emissions.
- Work with the District and County Councils in Oxfordshire to provide a co-ordinated approach to public awareness and education.

Own Estate

- Update the City Council's website to provide key air quality information, and ensure the site is accessible, up-to-date and user friendly.

Reporting and Monitoring

4.14 We have a well-established air quality monitoring network which has been developing across the whole of the city since 1997. The network consists of three real time monitors along with passive diffusion tubes situated at identified hot spots.

4.15 Progress reporting of the AQAP will be carried out annually as required under the Local Air Quality Management regime. The reporting will cover:

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

4.16 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. We will consolidate this reporting effort by reporting annually on the progress of measures in the AQAP, by reference to baseline data produced for the National Atmospheric Emissions Inventory (NAEI), and annual air quality data measured locally.

5 Glossary

Air Quality Action Plan (AQAP): A plan which must be prepared as part of the Local Air Quality Management (LAQM) process, if an Air Quality Management Area is designated.

Air Quality Management Area (AQMA): An area that a local authority has designated, on the basis of predicted or actual exceedences of the air quality objectives.

Air Quality Objectives: Limit values set by UK Government, usually expressed as a maximum concentration to be achieved within a specified timescale, possibly with a permitted number of exceedences.

Air Quality Review and Assessment: The process by which local authorities review current and likely future air quality and assess whether air quality objectives are currently being achieved or are likely to be achieved.

Annual Mean: The average over a year of concentrations measured (or predicted) for a pollutant, relating to a calendar year

Carbon Dioxide (CO₂): Carbon dioxide, a greenhouse gas that contributes to global warming.

Concentration: The amount of a substance in a volume (of air) typically expressed as a mass of a pollutant per unit volume of air, e.g. microgrammes per cubic metre ($\mu\text{g}/\text{m}^3$).

Core Strategy: The Core Strategy is the principal document in Oxford's Local Development Framework (LDF).

Daily Mean: The average over a day (24 hrs) of concentrations measured (or predicted) for a pollutant.

Department for Environment, Food and Rural Affairs (Defra): Government Department for Environment, Food and Rural Affairs.

Department for Transport (DfT): Government department for transport

Emission: The amount of a substance emitted in a certain time, typically expressed as a mass of a pollutant per unit of time (e.g. grams per second or tonnes per year).

Emissions Inventory: A quantification and compilation of emission sources by geography and time, usually including data covering one or several years

Euro standards: Emissions standards set by the EU which all new road vehicles sold in the EU must meet.

Exceedence: When a UK air objective or EU limit value is not achieved.

Greenhouse Gas Emissions (GHG) Gases that trap heat in the atmosphere, contributing to global warming

Hourly Mean: The average over an hour of concentrations measured (or predicted) for a pollutant.

Light Goods Vehicles (LGVs): Large vans.

Local Air Quality Management (LAQM): A UK Government policy framework that requires local authorities to periodically review and assess the current and future air quality in their areas.

Local Plan: Oxford's City Plan - Includes the strategic policies, previously adopted in Oxford's Core Strategy (2011), updated to take the National Planning Policy Framework and other updates into account.

Low Emission Zone (LEZ): The application of emissions limit for nominated vehicles operating within a defined area.

Microgramme (μg): One millionth of a gramme

Microgrammes per cubic metre of air ($\mu\text{g}/\text{m}^3$): A unit for describing the concentration of air pollutants in the atmosphere, as a mass of pollutant per unit volume of clean air

Nitrogen dioxide (NO_2): Formed in small amounts in the atmosphere during high temperature combustion, but the majority is formed in the atmosphere through the conversion of nitric oxide in the presence of ozone.

Nitrogen monoxide (NO): Formed from nitrogen in the atmosphere during high temperature combustion, and the main constituent of NO_x , commonly known as nitric oxide.

Nitrogen oxides (NO_x): Includes both NO and NO_2

Ozone (O_3) is produced as a result of the combination of exhaust gases from industrial and motor vehicles. Repeated exposure to ozone can inflame lung tissues and cause respiratory infections.

Particulate matter (PM10): Particles with an equivalent aerodynamic diameter of ten microns or less and is small enough to penetrate the lungs.

Particulate Matter (PM2.5): Particles with a mean effective aerodynamic diameter of 2.5 microns or less.