

Low Emission Strategy

May 2013



Executive Summary

Oxford City Council adopted a Sustainability Strategy following a public consultation in December 2010. The Strategy sets out the overarching framework which for the first time addresses all material issues across the environmental sustainability agenda. The strategy will be in place until 2020.

The Sustainability Strategy focuses on a number of core themes and sets long term targets and objectives for these themes. The themes covered are:

- Climate change and sustainable energy
- Sustainable transport and air quality
- Sustainable business and procurement
- Water consumption and sustainable drainage
- Waste management

Climate change is a core issue for the sustainability strategy.

Despite a wide range of activity to reduce carbon emissions the Council does not have an overarching city-wide carbon reduction plan.

The Low Emission Strategy provides a framework for integrating all of the Council's activities to reduce carbon and air quality related emissions across the City.

It will also provide the framework to ensure that we maximise the co-benefits of tackling climate change and air quality in an integrated and co-ordinated way.

The integrated approach within the Oxford Low Emission Strategy (LES) will fulfil the ambitions expressed by the Climate Change Committee for delivering a local low carbon plan.

The Low Emission Strategy seeks to reduce the climate change and air quality related emissions generated from activities across the city.

In terms of emissions generating activity in the city these can be grouped into three main sectors:

- Domestic activity – essentially emissions from domestic or residential dwellings
- Non-domestic activity – emissions from commercial, industrial, business and public sector premises
- Transport – all transport activity on the road and rail network in the City

As a City Council strategy the LES will focus on the measures and policies the City Council can carry out or influence, rather than action from all actors in the City.

The range of influence of the Council has is quite extensive and is categorised into three main groups:

- Own estate – measures to reduce emissions from the Council 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.

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1. Introduction

The City Council recognises that environmental sustainability is a vital ingredient in contributing to the quality of life for residents and visitors to Oxford. As such it has set out a Sustainability Strategy for Oxford, pulling together its activities in a number of sustainability areas including climate change and air quality. Through its sustainability work Oxford City Council has been at the forefront of delivering innovative measures to improve air quality and mitigate climate change. This has been recognised for example with awards for the Council's work with businesses and communities across the city with its Low Carbon Oxford initiative and its own internal carbon reduction successes including its comprehensive eco-driving programme for staff.

In addition the City Council is a member of the Low Emissions Strategy Partnership which was established by the Beacon Authorities Air Quality group, to focus on air quality and transport emissions caused by new developments. Through this partnership the City Council was tasked with developing its own integrated **Low Emission Strategy (LES)** for improving air quality and reducing carbon emissions. This is a commitment we have also set out within our Sustainability Strategy.

The definition of a Low Emission Strategy, as developed by the partnership, is a package of measures to reduce the emissions impact of transport, both carbon dioxide and those affecting air quality, from new developments. A key aspect of this approach was the use of planning measures to promote the uptake of low emission fuels and technologies in and around the development site.

However, in considering a strategy for Oxford the Council feels that this definition is too limited, especially given the relatively small contribution that new developments make to total carbon and air quality emissions in Oxford. Therefore we have set out to develop a much more comprehensive Low Emission Strategy covering emissions from all sectors (transport, residential and non-domestic) and from both new and existing development.

This concept of a much wider strategy is endorsed by Government, that has recognised that actions to reduce carbon emissions can benefit air pollution. Therefore maximum benefit can be gained by identifying and driving through carbon reduction measures that also benefit air quality. By considering air quality alongside carbon reduction Government estimates that additional benefits of some £24 billion could be generated across the country by 2050.

This document sets out the Low Emission Strategy that the Council has developed for Oxford. It covers:

- the context to climate change and air quality, and the benefits of developing an integrated Low Emission Strategy for Oxford;
- the scope and objectives of the strategy;
- the priority actions that we will seek to develop and deliver to reduce emissions in Oxford;
- and the monitoring and reporting process that we have set up to track progress of the strategy and support further development of the actions.

2. Why a Low Emission Strategy for Oxford?

Carbon and air quality related emissions from transport, buildings and industry are a key environmental issue for Oxford and other cities in the UK. They are being tackled by a range of policy measures at both the national and local level. Taking an integrated view of the policies in place in order to generate maximum benefit is at the centre of developing a Low Emission Strategy for Oxford.

2.1 National policy and drivers

2.1.1 Climate change policy

The Government's commitment to tackling climate change is enshrined in the Climate Change Act 2008, with a target of an 80% reduction in greenhouse gas emissions by 2050 compared to 1990 levels. This overall target is being broken down into a series of five year carbon budgets, which are being developed and monitored by the Committee on Climate Change. The Carbon Plan¹ brings together the current coalition Government's national policy plans that will deliver the first four carbon budgets producing a 50% emissions reduction on 1990 levels by 2027.

Some of the key policy measures in the Government's Carbon Plan include:

- significant improvements in residential building efficiency through the Green Deal and Energy Company Obligations (ECO);
- increasing the uptake of renewable energy through the Feed in Tariff (FiT) and Renewable Heat Incentive (RHI);
- supporting low carbon vehicle technology through grants and vehicle emission carbon targets for the automotive industry;
- driving energy efficiency in the industrial and commercial sectors through the European Emissions Trading Scheme (EUETS) and the CRC Energy Efficiency Scheme;
- decarbonising the electricity generation sector through support for renewable electricity and carbon capture and storage (CCS) for gas and coal powered generation.

Local authorities have a significant role to play in delivering and supporting these Government policies within local communities. Their role was explored in detail by the Committee on Climate Change (CCC) in 2012² and they concluded that local authorities:

'have significant scope to influence emissions in buildings, surface transport, and waste, ... (and) there is an opportunity to reduce emissions in these sectors by 20% in 2020 from 2010 levels'

Within this role the CCC believed that the greatest contribution that local authorities will have is in support of energy efficiency improvements in residential housing and through leadership by reducing carbon emission from their own activities. The committee also recommended that local authorities should draw up low carbon plans with high levels of ambition.

¹The Carbon Plan: Delivering out low carbon future', HM Government, December 2011.

²How local authorities and reduce emissions and manage climate risk', Committee on Climate Change, May 2012

2.1.2 Local Air Quality Management

Air pollution has always been seen as a local issue and is tackled through the local air quality management (LAQM) regime. This requires all authorities to report on air quality in their area and whether they are meeting statutory objectives. Where authorities report that they will not meet the objectives they must declare an air quality management area (AQMA) and establish an action plan (AQAP) of measures to meet the objectives. This legislation is the major driver behind a significant amount of activity on air quality at the local level, especially in urban areas such as Oxford where transport is a major source of air pollution emissions.

Defra is the LAQM reporting body and provides a wide range of guidance and information on how to carry out monitoring, assessment and action planning. Since transport is a major source of these emissions much advice has been provided to authorities on tackling these emissions including practical guidance published on Low Emission Zones and encouraging Low Emission Vehicles.

2.1.3 Planning

In 2010 the Government published the Localism Bill that set out a series of proposals to shift power away from central government to local authorities and communities. This potentially gives local authorities much greater freedom to act in their local area. One development arising from the Localism Bill was the establishment of a new National Planning Policy Framework (NPPF) in early 2012.

The NPPF represents a significant change to the planning system in England. It seeks to radically streamline planning and has rendered much pre-existing planning guidance obsolete, including the detailed Policy Planning Statements on Transport, Air Quality and Sustainable Development. However, the NPPF is based around a 'presumption in favour of sustainable development', in particular it supports:

- transition to a low carbon future
- conserving and enhancing the natural environment
- locating development in sustainable locations in a way that makes fullest possible use of public transport, walking and cycling
- local strategies to improve health, social and cultural well-being
- the use of Strategic Environmental Assessment and Sustainability Appraisal (SA) and encouraging the use of other assessment tools.

2.1.4 Local Transport

Transport is a major contributor to both carbon and air quality emissions and so is a significant element in national policy and guidance on both air quality and climate change. At the local level transport policy and activity is driven through the Local Transport Plan (LTP) process. This is the responsibility of the local highway authority, in this case Oxfordshire County Council, and sets out the transport priorities and funding for the area.

Climate change and support for local economic growth are the priorities of the current third round of Local Transport Plans (LTP3). Air quality is still included within the guidance provided by Government but potentially given less priority. However, with a much less prescriptive format than in previous LTP rounds there has been an opportunity for a more integrated climate change and air quality approach to transport in an LTP.

To support these sustainability objectives the Government launched its Local Sustainable Transport Fund in 2011³. The fund has supported many local authorities develop major initiatives on around walking and cycling, improved public transport and low carbon vehicles.

2.1.5 Integrating air quality and climate change

The Department for Environment and Rural Affairs (DEFRA) has recognised and is promoting the links between measures to tackle both air quality and climate change as set out in a 2010 publication⁴. This document explores the benefits of an integrated approach and the need to carry this out at both a national and local level, and concludes:

'Optimising climate change policies for air pollution can yield additional benefits of some £24 billion (net present value) by 2050.'

'Action at national, regional and local levels will be needed to ensure policies are integrated to maximise these co-benefits and ensure ambitious but realistic targets for air pollution are set for the future'

As part of this commitment to integrating air quality and climate change at the local level DEFRA have been supporting the work of the LES Partnership, of which Oxford is a member, and have published a good practice guide on Low Emission Strategies⁵

2.2 Local delivery

2.2.1 Oxford's Sustainability Strategy

The City Council recognises that the quality of a local environment is a vital ingredient in contributing to the quality of life for residents and visitors to the City. The Council has already been successful in dealing with sustainability issues and the 'Sustainability Strategy' builds on this success. The strategy pulls together the Council's existing policies relating to sustainability and sets out a longer term framework to deal with these issues.

Our strategy focuses on a number of core themes and sets long term targets and objectives for these themes. The themes covered are:

- Climate change and sustainable energy
- Sustainable transport and air quality
- Sustainable business and procurement
- Water consumption and sustainable drainage
- Waste management

2.2.2 Climate Change

Climate change is a core issue for the sustainability strategy. Current carbon dioxide emissions from activity within the Oxford City are shown in Figure 1. This indicates the key sectors as being non-domestic and residential emissions, followed by transport. The City Council has been very active in exploring ways to reduce these emissions and championing the case of climate change mitigation in Oxford.

With regards to non-domestic emissions the City Council has been recognised for its outreach work through the 'Low Carbon Hub' initiative with communities, individuals and business, and the Low Carbon Oxford Pathfinder's a partnership of key organisations in the city and who have pledged to reduce their CO₂ emissions by 3% per year and to promote a low carbon economy.

³'Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen', Department for Transport, January 2011

⁴'Air Pollution: Action and a changing climate', DEFRA, March 2010

⁵'Low Emission Strategies: using the planning system to reduce transport emissions' DEFRA Good Practice Guide, Jan 2010.

In addition the Council is working hard to reduce its own carbon footprint. It has developed its carbon management plan with support of the Carbon Trust and has carried out a 'Green Fleet Review' to assess its own in house transport activities. The Council's target to reduce its own emissions is a 5% reduction per year and key areas of activity include:

- Improvements to building services covering voltage optimisation, variable speed drives and lighting improvements.
- Management practice including BEMS best practice, smart meters, and insulation of boiler pipes and valves.
- Upgrading of equipment covering ICT hibernation and virtualisation and procurement of low energy vending machines.
- Staff engagement with the establishment of a Carbon Champions network.

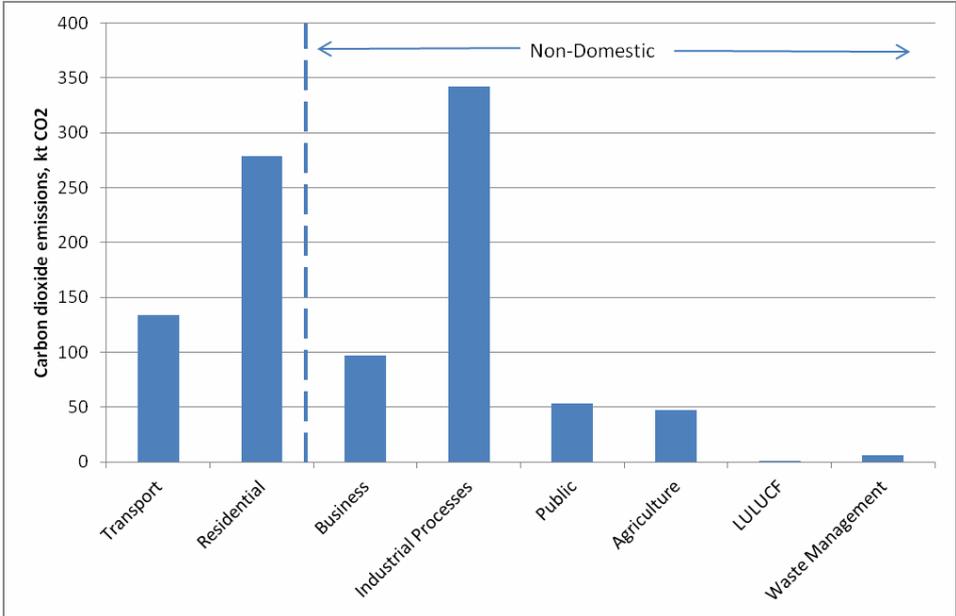


Figure 1: Carbon dioxide emissions in Oxford broken down by sector for 2010

In terms of the residential sector the City Council has been very active with measures to reduce emissions from its own housing stock. Council housing has been subject to a programme of efficiency improvements and has an average SAP rating of 71 (with its target of 70 achieved a few years ago) and is on target to meet Decent Homes Standard Thermal Comfort Criteria (DHS TCC) for all its homes. It has also been working with other social landlords (RSLs) to improve their housing stock and has been providing advice and grants to private households.

The Council has been working to reduce emissions from its own transport fleet, through fleet renewal and driving training. However, it has done less direct work on wider transport emissions except for its influence on the Local Transport Plan and carbon benefits generated through the air quality action plan.

However, despite this wide range of activity to reduce carbon emissions the Council does not have an overarching city-wide carbon reduction plan.

2.2.3 Air Quality

Like most cities Oxford has air pollution issues within the city related to Nitrogen Dioxide (NO₂) concentrations derived from Nitrogen Oxide (NOx) emissions from activities in the City. Figure 2 shows that the largest source of NOx emissions in the city is from road transport, as is the case in most other cities.

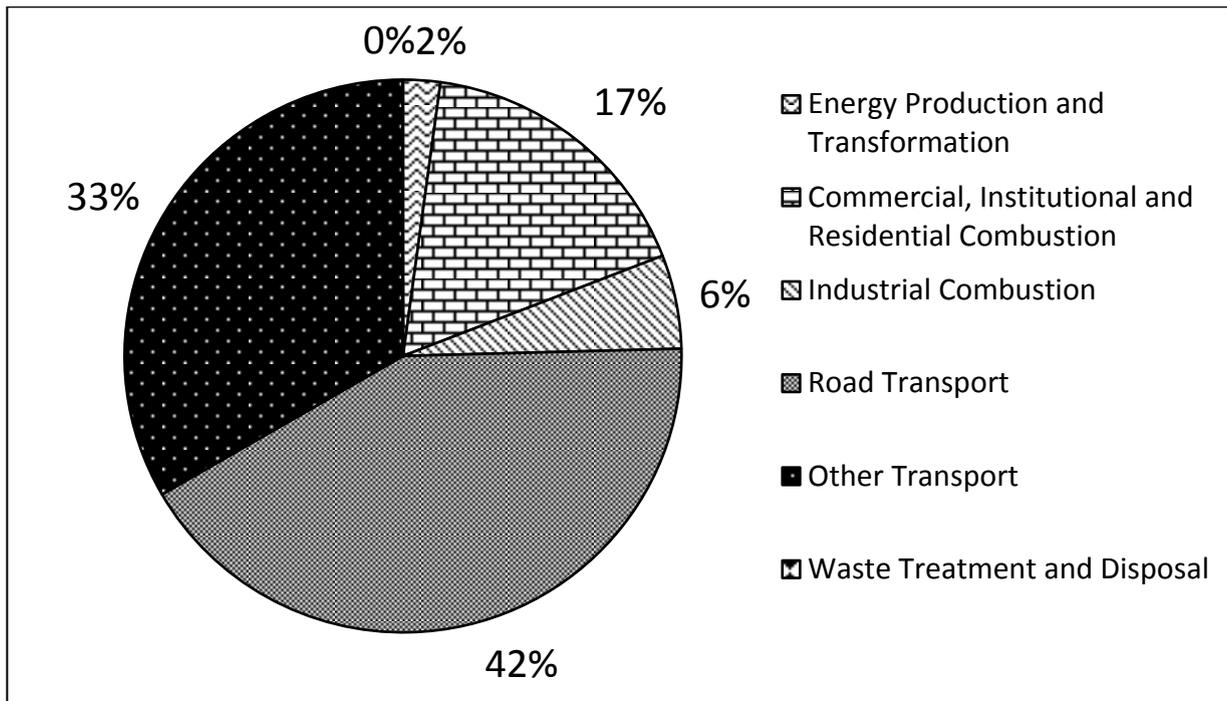


Figure 2: Total NO_x emissions across Oxford (Source NAEI, 2010)

Due largely to transport emissions of NO_x the City Council has declared an Air Quality Management Area (AQMA) to cover the whole of the city. AQMA's require the production of Air Quality Action Plans (AQAP) to highlight measures to address the pollution problems identified by the AQMA. The previous AQAP (2006) was integrated with the 2006 Local Transport Plan, and included an air quality target.

The 2006 AQAP highlighted the need to reduce vehicle emissions, particularly in central Oxford, where the annual mean objective for nitrogen dioxide is not met close to most busy roads. This led to the development of the bus based Low Emission Zone in central Oxford due to be operational from 2014. Other measures within the 2006 LTP that contributed to reductions in vehicle emissions in central Oxford, included:-

- Traffic management measures including bus gate enforcement and traffic light phasing
- Transform Oxford – removal of bus stops from Queen Street
- Cross Operator ticketing – reducing bus numbers in central Oxford

An updated Air Quality Action Plan (AQAP) is currently under development which will highlight further measures to reduce transport emissions. The new AQAP will consider the contribution from a range of measures, including:

- An integrated approach to reducing carbon and air quality emissions from transport
- Extending the application of the LEZ to other vehicles
- Promoting the uptake of Electric and other Low Carbon vehicles
- Promoting alternatives to travel by private motorised transport, e.g car-clubs, car share, work place travel plans
- Parking strategies
- A freight partnership to review delivery activity and emission reduction strategies
- Travel plan measures and wider actions to develop walking, cycling and public transport

2.2.4 Planning policy

The City Council's Local Development Framework (LDF) and Core Strategy (CS) covers the period up to 2026. The Core Strategy's objectives with respect to climate change and emissions are to:

- Maximise Oxford's contribution to tackling the causes of climate change, and minimise the use of non-renewable resources.
- Maintain, enhance and promote access to Oxford's rich and diverse natural environment.
- Help protect people and their property from flooding.

In addition, the following Core Strategy objective relates to providing infrastructure to support new development: *"Promote a reduction in car use, minimise the impact of traffic, and encourage walking, cycling and the use of public transport."*

In relation to climate change Core Strategy policy CS9 covers energy and natural resources, where developments are expected to demonstrate how sustainable design and construction methods will be incorporated. Currently this is through submission of a Natural Resource Impact Assessment (NRIA) checklist. The checklist sets performance standards for qualifying development which are:

- Minimum energy efficiency standards (either using SAP or SBEM)
- deliver a proportion of on-site renewable or low-carbon energy generation (the NRIA Supplementary Planning Document currently requires a minimum 20%)
- Materials – sustainability criteria on aggregates, timber, insulation and sourcing
- Water – limits on consumption per year

Core Strategy Policy CS1 relates to providing a hierarchy of centres, which will reduce the need to travel. Policy CS14 relates to supporting city wide movement. There are a series of planning objectives which ensure that the following key outputs are achieved:

- Tackle local traffic congestion
- Improve local air quality
- Ensure frequent and reliable public transport connects people and services
- Ensure cycling and walking are attractive options for shorter journeys

Other development plan documents further support the Core Strategy objectives. The Sites and Housing Plan includes Policy HP11, which requires that residential and student accommodation development includes an element of on-site renewable or low carbon technologies where practicable, and that sites of 10 or more dwellings, and sites of 20 or more student rooms, generate at least 20% of their energy needs from on-site renewables or low carbon technologies. Both the Barton and West End Area Action Plans include policies that promote energy and resource efficiency in recognition of the need to tackle climate change.

2.2.5 Local Transport

The County Council leads on Local Transport policy through the Local Transport Plan (LTP) which currently covers the period 2011 to 2030. The LTP has as one of its key priorities the reduction of carbon emissions, it also covers wider environmental impacts including air quality and has a specific Oxford Area Strategy.

The policies on carbon reduction focus primarily on travel planning measures to reduce travel, with less attention on the ideas around low emission vehicles. The air quality elements focus on bus emission reduction measures. The Oxford Area Strategy also includes an emissions strategy that covers the Low Emission Zone, the concept of promoting electric vehicles, traffic routing measures and the need to explore emissions reduction from freight.

2.3 An integrated approach

The Committee on Climate Change Report to Local Authorities recommends that “*Given the crucial role identified for local authorities in delivering emissions reductions to meet national carbon budgets, we recommend that all areas should be covered by local carbon plans*”. Such a plan should focus on emissions drivers over which local authorities have control or influence and be based on a subset of indicators which can be monitored at the local level to determine underlying progress in reducing emissions.

In addition the benefits of an integrated approach to managing climate change and air quality have been clearly set out by Government, with DEFRA noting that ‘*Action at national, regional and local levels will be needed to ensure policies are integrated to maximise these co-benefits and ensure ambitious but realistic targets for air pollution are set for the future*’. This integrated approach has been supported through the work of the Low Emission Strategies Partnership of which the City Council is a member.

The City Council is very active in tackling both climate change and air quality in the City. It has a strong air quality action plan, currently being updated, focused at tackling NOx and PM emissions from transport. It has also been recognised for its work on reducing its own carbon emissions and working with the wider Oxford community through its Low Carbon Hub and Pathfinder initiatives. However, these activities are spread across a range of policies and programmes and it does not have:

- an overarching carbon reduction plan;
- nor a strategic approach to integrate actions to generate co-benefits from tackling air quality and climate change together.

The City Council recognises the benefits of and the need for an integrated approach and it has committed through its Sustainability Strategy to develop an *integrated Low Emission Strategy (LES) to provide an framework for integrating all of the Council's activities to reduce carbon and air quality related emissions across the City*. Therefore it is our intention that the integrated approach within the Oxford Low Emission Strategy will fulfil the ambitions expressed by the Climate Change Committee for delivering a local low carbon plan. It will also provide the framework to ensure that we maximise the co-benefits of tackling climate change and air quality in an integrated and co-ordinated way.

This document sets out the scope and objectives of the Low Emission Strategy, the priority actions that the Council will seek to take and how the Strategy will be monitored and reported.

3. Scope and objectives of the strategy

3.1 Scope of the strategy

The Low Emission Strategy seeks to reduce the climate change and air quality related emissions generated from activities across the city. In particular it will tackle the emissions of carbon dioxide (CO₂), nitrogen oxides (NOx) and particulate matter (PM), the emissions of most concern. It does not, however, tackle the wider issues of climate adaptation or reduction of direct exposure to air pollution.

In terms of emissions generating activity in the city these can be grouped into three main sectors:

- Domestic activity – essentially emissions from domestic or residential dwellings
- Non-domestic activity – emissions from commercial, industrial, business and public sector premises
- Transport – all transport activity on the road and rail network in the City

As a City Council strategy the LES will focus on the measures and policies the City Council can carry out or influence, rather than action from all actors in the City. However, the range of influence of the Council has is quite extensive and is categorised into three main groups:

- Own estate – measures to reduce emissions from the Council 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.

Combining the 3 emissions generating activities with the 3 ways in which the Council can influence these activities gives 9 segments of action, as illustrated in Figure 3 below, through which the strategy can influence carbon and air quality emissions.

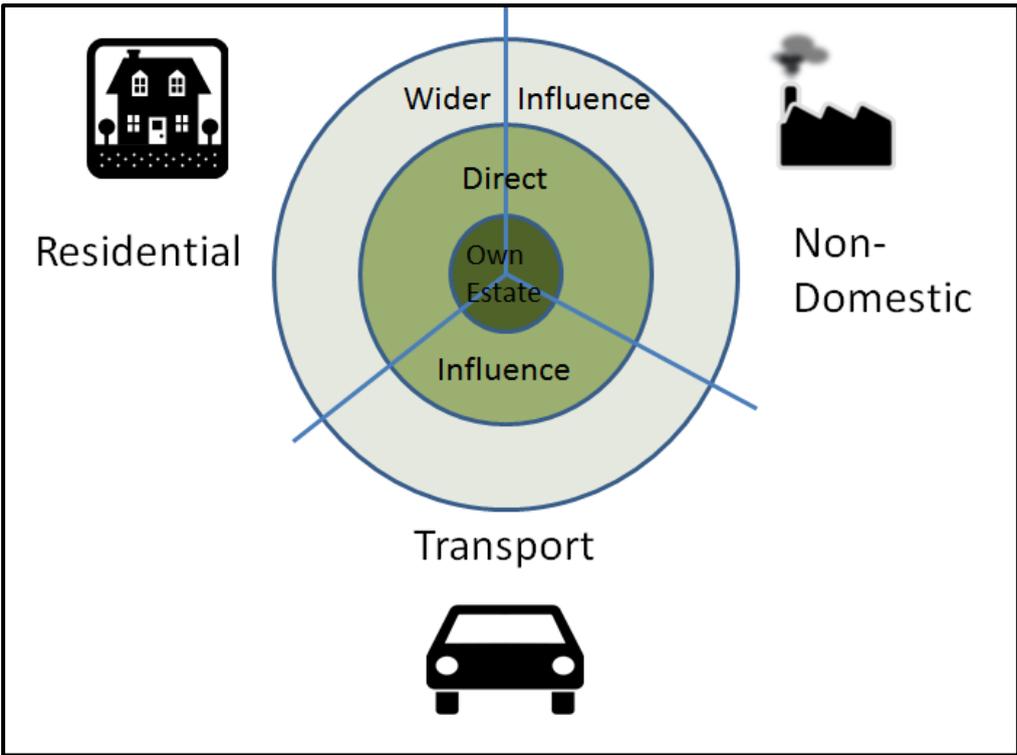


Figure 3: Scope of activities with the LES

An estimate of the emissions generated from each of these segments is shown in Figures 4 and 5 below. For CO₂ emission the non-domestic sector (commercial, industry, etc) is the principal emitter, followed by residential and then transport. However, for NO_x emissions the transport sector is the largest emitter, followed by non-domestic and then residential. The Council's own emissions are a relatively small proportion of both CO₂ and NO_x. The sector the Council has most control over is residential emissions, both through Council owned property and direct measures such as planning controls. However, in all cases the greatest proportion of emissions are where the Council has no direct control. The challenge is to work through influence and partnership to generate reductions in emissions from these segments.

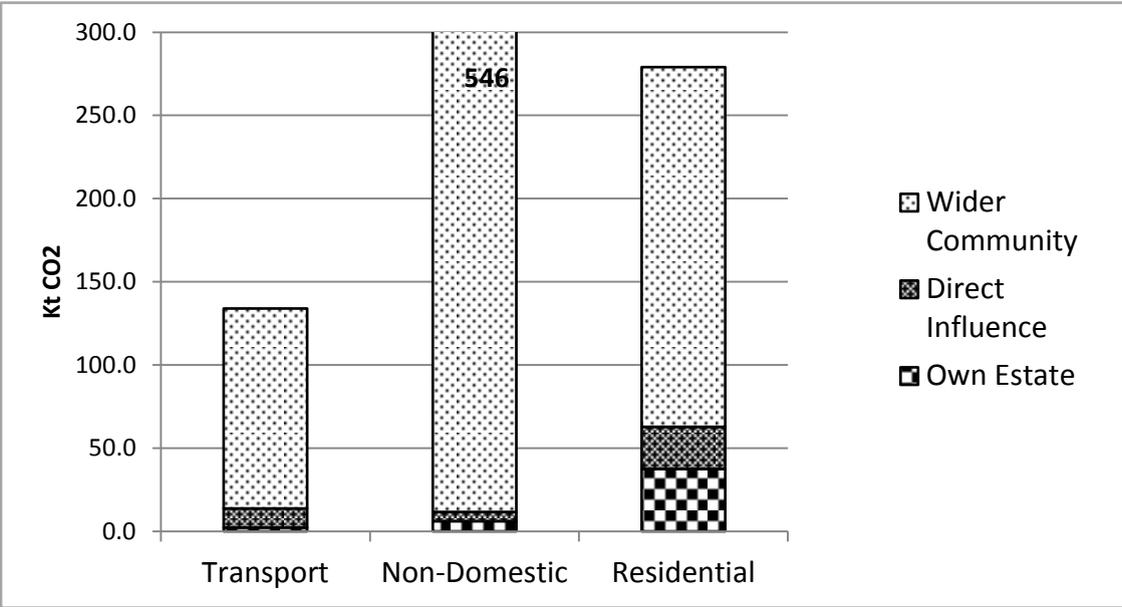


Figure 4: Estimated CO₂ emissions in 2010 by segment of activity and influence

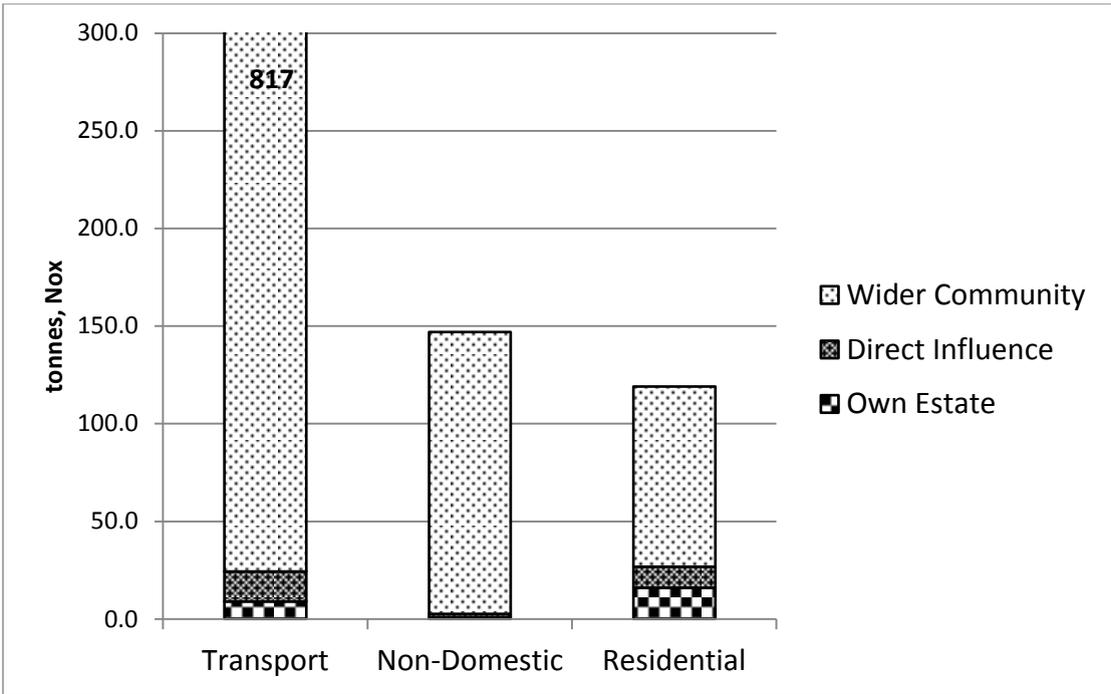


Figure 5: Estimated NO_x emissions in 2010 by segment of activity and influence

3.2 Objectives and targets

The objectives of the LES reflect the aspirations of the Sustainability Strategy, as well as national targets and obligations with respect to climate change and air quality. At a simple level the overall goal of the LES can be stated as:

'to provide an integrated approach to the reduction of emissions of carbon dioxide, oxides of nitrogen and particulate matter from all activity in Oxford

However, underpinning this overall goal we have set specific targets in relation to carbon dioxide, nitrogen oxides and particulate emissions to be achieved by 2020.

3.2.1 Carbon dioxide emissions

At the national level the Government has a binding target of an 80% reduction of emissions between 1990 and 2050. Through the work of the Climate Change Committee and the Government's Carbon Plan current CO₂ emissions are expected to be some 30% lower than 1990 levels by 2022. This represents a target reduction of about 20% between 2008 and 2020. This is expected to comprise of reductions in the respective sector as follows:

- Residential: 34%
- Non-domestic: 24%
- Transport: 18%

At the local level the City Council has set a *40% reduction target for CO₂ emission by 2020 on a 2005 baseline*⁶. This is slightly less than a 3% reduction per year, and equates to a 32% reduction between 2008 and 2020 a more challenging target than set by Government.

This 40% target is the top level CO₂ target that the LES will work towards. In addition using the same relative reduction in emissions from the three main sectors of activity, as estimated by Government, a carbon reduction target has been set for each of these sectors in Oxford as follows:

	2005	Target by 2020		
	kt, CO ₂	% reduction	Emissions, kt CO ₂	%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 1 Subsector CO₂ Targets for Oxford

⁶A Sustainability Strategy for Oxford (2011-2020), Oxford City Council, 2011.

3.2.2 Nitrogen oxide and particulate emissions

Under the Local Air Quality Management (LAQM regime) the Council is required to work towards meeting concentration limit values for both nitrogen dioxide (NO₂) and particulate matter (PM₁₀). For both NO₂ and PM₁₀ these limit values are 40 µg/m³ on an annual average basis. These are the values that the Council must seek to achieve through its Air Quality Action Plan (AQAP). These limit values are however concentrations, rather than total emissions emitted by activity in the City and will be influenced by other factors such as metrology.

In terms of setting an overall emissions limit we need to relate emissions reduction to air quality concentrations. The City's 2011 air quality progress report showed NO₂ in the City Centre and the High Street at 58 and 60 µg/m³ respectively with some streets showing levels up to 67 µg/m³. Therefore our NO_x reduction target should be set at a level that would be likely to bring these concentrations down to 40 µg/m³.

Although not a straight forward assessment, a basic analysis of both NO_x and PM emissions and their related concentrations suggests that a city wide reduction target needs to be of the order of 50% to allow the air quality limit values to be achieved. The *50% reduction in NO_x and PM by 2020* represents a reasonable target for the LES to seek to achieve.

However, it should be recognised that the ultimate goal in terms of air quality will be to achieve the 40 µg/m³ limit values for NO₂ and PM across the city. The LES will provide a major element of achieving this alongside the Air Quality Action Plan.

3.2.3 An integrated target

Putting these two top level targets together the overarching target for the LES is to achieve:

'a 40% reduction in the CO₂ emissions footprint and a 50% reduction in the NO_x and PM emissions footprint of the city from 2005 to 2020'

3.3 The LES as an integrating framework

Like the Sustainability Strategy the LES is intended to pull together and provide a 'framework' for the integration of activities on emissions reduction across the Council. The 'implementation' or 'delivery' of measures will take place through existing programmes and policies owned by specific departments in the Council. Therefore the LES will pull together and track existing activity and help formulate new measures, within existing policies and programmes, going forward. The benefit of this approach is that the delivery of measures lies within the programmes and policies of departments responsible for their delivery.

The key policies and programmes that influence and deliver emission reduction actions include:

- *Oxford Community Strategy and Sustainability Strategy* – which should set the top level objectives and framework for activity;
- *Corporate plan* – providing an overview of the councils priorities and activities;
- *The local development framework (LDF) and building control* – setting the framework for the development of the built environment within Oxford;
- *HECA strategy and reporting* - setting out the Councils plans to improve the efficiency of the private housing stock;
- *Housing strategy and HRA business plan* - setting out how the Council will manage its own housing stock;
- *Asset management plan* - which provides a strategy for the management of the Council's own buildings and assets;
- *Carbon Management Plan* - the strategy for improving the carbon footprint of the Council's own estate;
- *Procurement, Commissioning and Supplier Management strategy policy* – through which the Council can drive change through the supply chain;
- *Low Carbon Oxford and the Low Carbon Hub* – activities specifically driving energy and carbon reduction across the city;
- *LAQM and the Air Quality Action Plan*– the requirements on Oxford to define its AQMA and associated action plan, which focuses largely on transport activity and emissions;
- *Local Transport Plan* – setting out transport policy and actions, which although the responsibility of the County Council is developed with the partner districts;

The relationship between these policies and programmes, and on which level of influence they operate, is indicated in Figure 6 below.

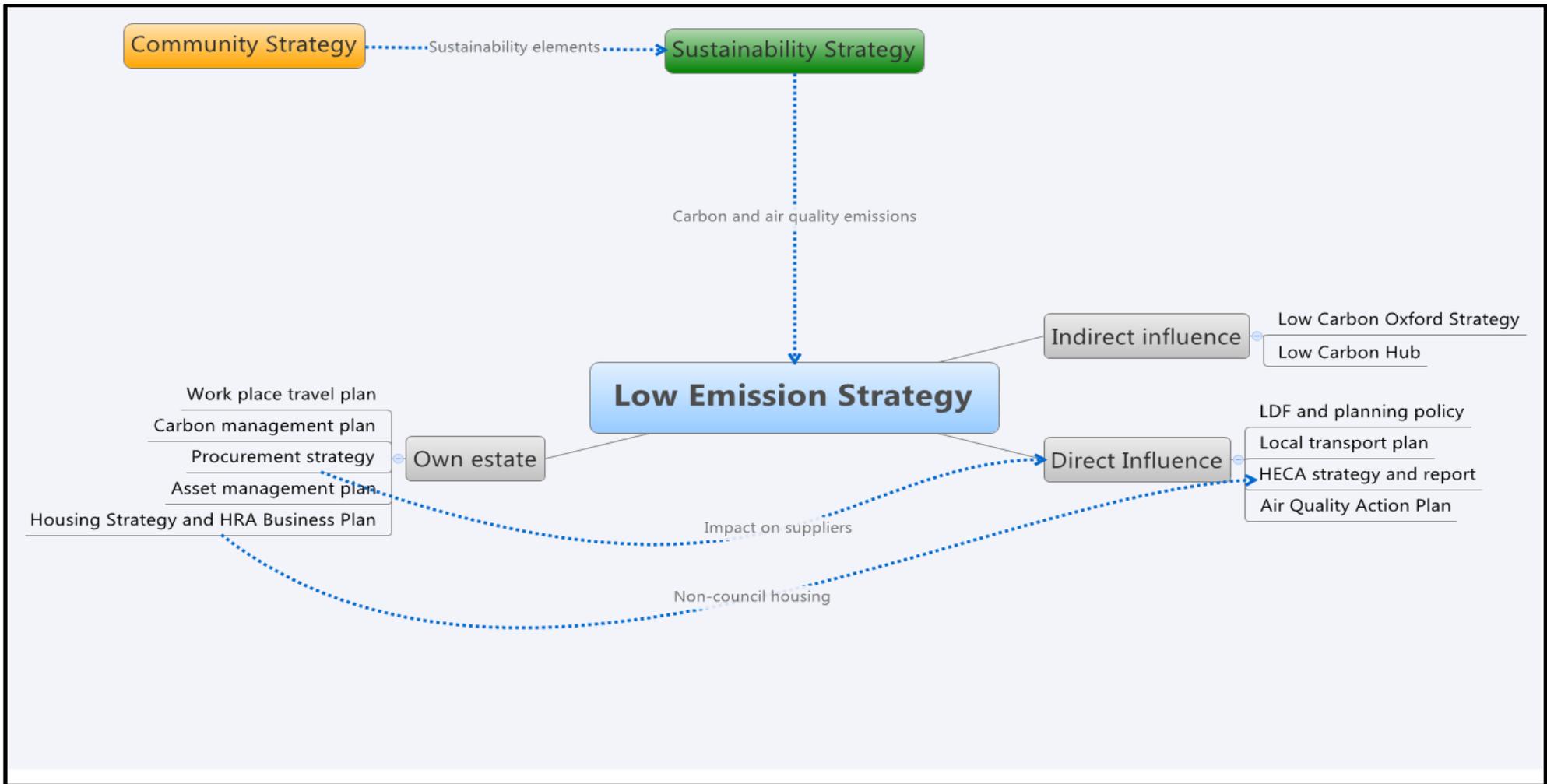


Figure 6: Relationship between policies delivery emission reduction actions

4. Priority actions

The Low Emission Strategy provides a framework for emissions reduction actions being carried out by the Council. However, there are a number of priority actions in each of the three main activity sectors that are likely to have most impact and we believe should be the focus of the LES. These actions are set out in the sections below and the Council will seek to develop and drive forward these actions over the period to 2020. In addition these action will be the focus of monitoring and performance reporting for the LES.

4.1 Residential

The Council has made significant strides with the improvement of its own housing stock and working with Registered Social Landlords (RSLs) on housing association properties. Therefore going forward our focus is on private sector housing both owner occupied and rented. This is supported by the Home Energy Conservation Act (HECA) requirements to develop a strategy to reduce residential CO₂ emissions and then on going public reporting of progress.

Priority R1: Improve the average energy efficiency of private sector housing.

Description: The City Council had an Energy Saving Trust study done in 2010/11 and this recommended a target average SAP (energy efficiency) rating for private sector housing of 66. The current SAP levels for private housing are estimated to be around 53, hence improving to 66 is about a 25% improvement. Therefore our target is to improve the energy efficiency of private sector housing by 25% by 2020. This improvement is estimated to save some 55 ktonnes of CO₂ per year.

Delivery: This priority will be developed through the HECA strategy for 2013 and potentially the Housing strategy, and be the responsibility of the Environmental Sustainability team. Key elements of action include:

- the development of a 5 year rolling programme of building condition and SAP surveys to provide robust data for monitoring and targeting action;
- working with community groups to develop a programme of whole house/street retrofit schemes funded through 'Green Deal/ECO'.

Status: The HECA strategy has been developed. The action plan is currently being developed and we will consider options to progress this.

Priority R2: Develop a programme of community renewable energy schemes

Description: The Sustainability Strategy commits to a significant reduction in residential CO₂ from the implementation of renewable energy by 2020. We have set a target of a 20% reduction in residential CO₂ emission through the use of renewable energy. This target reflects the planning target of 20% renewables for new build and when combined with the 25% energy efficiency improvement target meets our top level 45% CO₂ emission reduction target for the residential sector.

Delivery: The Council's Environmental Sustainability team will explore the options to deliver this action. The approach may be the development of a specific community renewables action plan or a renewable energy section of the HECA action plan. Implementation is likely to be through working with community groups and exploiting funding through the FiT and RHI mechanisms.

Status: Work with community groups such as Low Carbon West Oxford to develop potential schemes is ongoing. We are exploring options to develop a community renewables plan either as a stand-alone document or part of the HECA strategy.

Priority R3 Ensure all Houses of Multiple Occupation (HMO's) have an Energy Performance Certificate (EPC) and the average rating is improved.

Description: The Council's HMO licensing powers now require an EPC from all HMO rented properties. This will give a baseline for the current EPC rating of this sector. From 2016 the Council will have powers to require energy efficiency improvements. Using these powers we will seek to improve the average rating to C dependent on the current baseline and resources available to support improvements.

Delivery: This would be delivered through the HMO licensing team and the Council's Environmental Sustainability team. The action may be included as an element of the HECA strategy and supported with funding through the Green Deal mechanism.

Status: EPCs have now been collected for most HMO properties. We are currently exploring the potential to use of powers to require improvements.

4.2 Non-Domestic

The largest potential in this sector is tackling the wider non-council operated non-domestic estate. A key element of this will be the emissions from the Low Carbon Oxford pathfinders which are estimated to account for some 50% of the city's non-domestic CO₂ emissions. Another key area, where currently little action has taken place to date, is the Council's leased estate.

Priority N1 - Continued annual reduction in Low Carbon Oxford pathfinder's CO₂ emissions

Description: The Low Carbon Oxford Pathfinders have committed themselves to an annual 3% reduction in their carbon footprint. If these pathfinder organisations account for 50% of the Oxford Non-domestic CO₂ emissions then this action is estimated to save around 50-60 ktonnes per year by 2020.

The Pathfinders will also consider setting a similar target for NO_x and PM emission reductions and reporting across all three pollutants.

Delivery: This action will be delivered through the Low Carbon Oxford initiative and its Pathfinder organisations.

Status: Low Carbon Oxford is continuing to develop and resources have been committed to its management and further development. Its first year's progress report has been completed and further annual progress reporting will be carried out.

Priority N2 - Improve the energy efficiency of OCC leased estate

Description: The Council owns and leases a significant amount of business property on a commercial basis. This property forms a fairly large part of the non-domestic estate and is an area where more information is needed and where more action could be taken to reduce emissions. An EPC is generated when leases are renewed, but accelerating this process would ensure good baseline information for this sector and where to target improvement effort.

We will explore options for a more rapid roll out of EPC assessments by 2015 and generate improvements to ensure an average EPC rating of C by 2020 across this estate (within the parameters of lease restrictions). The estimated saving from this improvement for a potential base line of an EPC rating of E would be some 3 ktonnes of CO₂ annually

Delivery: Funding for EPC assessment and improvements would likely be through the Green Deal/ECO. If this funding is readily available on a commercial basis then the key activity of the Council will be to promote and support access to this funding for its commercial tenants.

Status: We will explore options for funding EPC assessments and seek to identify funding sources to enable improvements in energy efficiency.

Priority N3 - Planning for low carbon developments

Description: The Council has been using the planning system for many years to support low carbon development. The Council will seek to strengthen its activity in this area in particular through:

- continuing to update planning policy and supporting documents which require low carbon and energy efficient development;
- supporting the use of renewable or low-carbon technology within qualifying developments, in order to supply a minimum 20% of their energy needs;
- promoting the use of district heating and other larger scale renewable energy schemes.

Although the impact of new developments can be fairly modest overall, as they are a small proportion of the total non-domestic estate, such schemes as district heating can have a much more significant impact. For example a viable district heating scheme for the City Centre utilising biomass Combined Heat and Power (CHP) could save some 17 ktonnes of CO₂ per year.

These action supports a path to towards zero carbon new developments by 2019, the Government's commitment in its Carbon Plan.

Delivery: These planning actions will be developed through the Local Development Framework and associated supplementary planning policies. The details of the necessary actions will be developed by the Planning and Building control teams.

Status: Planning policies are in place and will continue to be developed and promoted.

Priority N4 Showing leadership with continued reduction of the Council's own carbon footprint

Description: The Council has recently updated its carbon management plan, and has set an annual improvement target of 5% per year. This level of improvement suggests an annual carbon saving of some 2 ktonnes by 2020.

Along with the Low Carbon Oxford Pathfinders consideration will be given to setting this target for NO_x and PM emissions as well, and reporting all three emissions annually.

Delivery: Detailed measures will be developed and set out in the Council's Carbon Management Plan (CMP) which will be regularly updated. The CMP will be managed by the Environmental Sustainability team with key delivery through Corporate Assets and the Asset Management Plan. Funding will be through Salix (a Carbon Trust initiative) and a new Council supported revolving fund.

Status: The Carbon Management Plan has recently been updated and the target for percent improvements is on track.

4.3 Transport

Transport is the main contributor to air quality related emissions in terms of NO_x and PM, as well as generating some 15% of the city's CO₂ emissions. The Council's Air Quality Action Plan provides a focus for transport measures to reduce NO_x and PM. However, at present there is no real focus for measures to reduce carbon emissions from transport in the City apart from what is set out in the LTP. Therefore the current AQAP has a priority action to develop a city-wide low carbon transport plan. This plan will encompass all surface transport emissions within Oxford and is proposed for further development with Oxfordshire County Council as a key local mechanism to introduce an integrated approach to management of air pollution and carbon emissions from transport in the City. As such the low carbon transport plan, along with the AQAP, and the County Council's LTP will provide the main delivery mechanisms for transport measures in the LES.

In terms of air quality related emissions buses are the main source in the city centre, accounting for some 35% of emissions and over 50% on some city centre streets. The Council has taken strong steps to manage these emissions with the introduction of a bus-based LEZ coming into force in 2014. The next biggest source of NO_x emissions is freight vehicles accounting for some 33%, with vans accounting for about half of this. This is traditionally a difficult sector to tackle, but will be a priority going forward.

Private cars account for most of the remainder of the emissions and are by far the biggest group of vehicles. Measures to reduce car traffic are already developed and progressing with mode shift measures in the Local Transport Plan. However, further action here and maintaining momentum will be important.

Lastly the development of low and zero emission technology will help drive down emissions and this technology is becoming increasingly available.

Priority T1: A city wide sustainable travel plan

Description: The development of a city wide travel plan is a commitment of the Sustainability Strategy. The aim will be to develop a more integrated approach to travel planning in the City incorporating the work by the County Council on travel choices and the City Council's transport activities in the Low Carbon Hub.

We will set an improvement target for this measure in terms of a reduction in car vkm in the city, with complementary targets on walking and cycling trips. These targets will be developed as part of the overall travel plan. However, an indicative target is suggested of a 10% reduction in car vkm by 2020. If this level of reduction is achieved it is estimated to save some 10ktonnes of CO₂ and 22 tonnes of NO_x emissions annually.

Delivery: A partnership approach will be taken to the delivery of this measure including:

- overall co-ordination of the plan within the AQAP as part of the low carbon transport plan, with support from the City's travel plan officer;
- integration into the County Council's LTP, in particular the Oxford Area Strategy;
- support from the Low Carbon Oxford initiative and the Low Carbon Hub for community engagement.

Status: Existing work is already going on through the LTP and the Low Carbon Hub. We will explore options to integrate and further develop this into a city wide sustainable travel plan.

Priority T2: Emission reduction measures for the freight sector

Description: The City Council will work closely with the County Council to develop a set of measures to reduce emissions from the freight sector. Two measures that are currently under consideration are:

- A freight consolidation centre - such centres can significantly reduce freight movements by co-ordinating and consolidating deliveries especially in the central area. Our aim would be to develop a scheme that would generate a 10% reduction in freight traffic by 2020.
- A freight Low Emission Zone - building on the bus LEZ we are looking at options for a freight scheme. Such a scheme may be able to target some 50% of the freight vehicles in the city and reduce total freight transport NOx by 45%.

In combination these two measures could reduce CO₂ emissions by 5 kt per year and NOx emissions by 100 tonnes per year.

Delivery: Consideration will be given to taking forward a feasibility study to investigate the opportunities and benefits of developing measures to reduce emissions from the freight sector as outlined above.

Status: Initial work with partner's underway and part-funding identified. We will continue to develop more detailed plans and seek to identify additional sources of funding.

Priority T3: Promote zero emission vehicles in the light duty fleet

Description: This action will focus on the promotion of electric vehicles, mainly cars, vans and taxis, in both the business and private fleets. Our aim is to facilitate a 10% uptake of electric vehicles in the light duty sector by 2020. Based on this 10% target some 5 ktonnes of CO₂ and 30 tonnes of NOx savings are estimated annually.

Delivery: This measure will build on existing work by the City and County Councils in their own vehicle fleets and work within the plugged-in-fleets initiative and aspirations in the AQAP and LTP. To take this forward we will aim to develop activities in the following areas:

- development of recharging infrastructure for electric vehicles across the city, using planning policy, direct funding for public stations and working with LCO partners;
- explore further opportunities for introducing EVs into our own fleets;
- work with partners such as the Low Carbon Oxford pathfinders to encourage the introduction of EVs into business fleets.

Status: Initial work has taken place through the Government's Plugged-in-Places and Plugged-in-Fleets initiatives. We will continue to develop more detailed plans and seek to identify additional sources of funding.

4.4 The wider LES action plan

As well as these priority actions the LES will have a wider action plan of measures tracking all emission reduction activities across the Council. This full LES action plan will be a living document to evolve over time as measures and actions develop. The action plan will include these priority measures and any sub actions beneath them, but also the wider set of emission reduction measures within the Council's programmes and policies. This will for example include actions on the Council's housing stock, transport fleet and procurement practices.

5. Monitoring and assessment

The key to the success of the LES will be the ability to monitor and report the progress of measures and assess their impact. This will allow the Strategy 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 the LES action plan. The database tracks three types of data:

1. **Measure data** - this is information describing each of the measures in the LES action plan. It will include the name of the measure, the indicator used to track the measure, which sector the measure relates to, who is responsible for the measure and the policy or programme through which it is being implemented.
2. **Activity data** - this is the direct activity that a measure will influence for example reducing vehicle kms, increasing the number of electric vehicles in the city or electricity consumption. Any measure may have one or more activity data sets associated with it to track its progress. Primarily the associated activity data set should be that required to assess the target set for a measure.
3. **Emissions data** - this is actual emissions data in terms of CO₂, NOx or PM emissions that are being collected and which the LES will influence. The emissions data has two levels:
 - a. *City wide data* - for tracking the top level targets of the LES for the city as a whole
 - b. *Measure level (or detailed) data* - related specifically to a measures such as CO₂ emissions related to the Council's carbon management plan.

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 or a reduction in gas consumption can be used to calculate a reduction in CO₂ emissions. The calculation will require the use of emission factors or tools.

These data sets and the relationships between them are illustrated in figure 7 below:

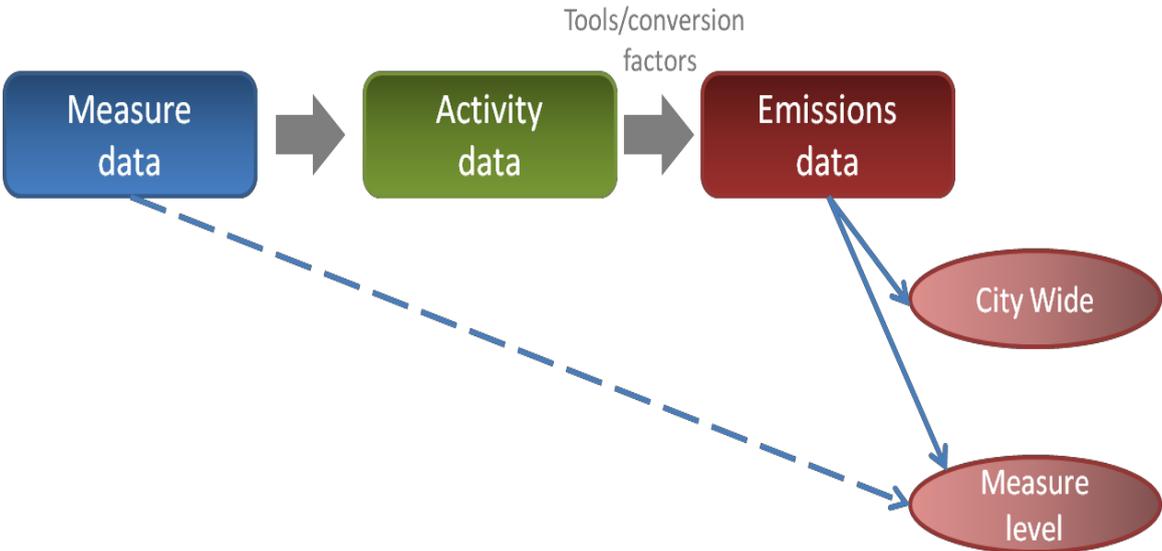


Figure 7 Data sets and their relationship in the integrated emissions database

In the following sections we set out how we aim to collect the information and data to be tracked in the database in relation to the top level targets and the priority measures in the LES.

5.2 Top level targets

The LES has city-wide targets for CO₂, NO_x and PM reductions and sub-sector targets for CO₂ emissions. These targets will be tracked with city-wide emissions data stored in the integrated emissions database.

CO₂ data

The primary data for city-wide CO₂ emissions is the Government's local and regional CO₂ statistics published by DECC. These data are published annually, but with a 2 year lag. A summary of these data are shown in table 2 below, for the base year 2005 and the latest year for which data is available 2010. This data shows that the Council is behind target, with emissions reducing at an average of 1.2% per year against a target of 2.7%. The best performing sector is residential emissions.

	2005	Target by 2020			2010		
	kt, CO2	% reduction	Emissions,kt,CO2	% per year	Emissions	% reduction	% per year
Total	1021	40%	613	2.7%	958	6.2%	1.2%
Transport	142	35%	92	2.3%	134	5.6%	1.1%
Residential	308	45%	169	3.0%	278	9.7%	1.9%
Non-domestic	571	40%	343	2.7%	546	4.4%	0.9%

Table 2 DECC CO₂ data for Oxford against the LES top level targets

Within this data the residential and non-domestic data is very robust as it is based on geographically based energy consumption data and simple conversion factors. The transport data is less robust as it is based on estimated traffic data and national vehicle fleet data.

NO_x and PM data

At present the only full NO_x and PM emissions footprint data available for the city is the National Atmospheric Emissions Inventory (NAEI) 1km X 1km grid data for Oxford. Data for 2009 and 2010 is publicly available and is shown below in Table 3. However, direct contact with the NAEI support team will be needed to get data back to 2005 to allow comparison with a 2005 benchmark for full tracking of the target.

	Emissions in tonnes			
	2009		2010	
	NO _x	PM	NO _x	PM
Transport	670.4	56.9	817.1	61.1
Residential	107.4	5.5	119.3	5.3
Non-domestic	290.0	11.2	147.4	8.1
Total	1067.8	73.6	1083.9	74.6

Table 3 NAEI 1km X 1km NO_x and PM data for Oxford

5.3 Measures

For each of the priority measures an improvement target has been set. Table 4 on the following page provides a summary of each priority measure, its improvement target and associated indicator and the data that will be collected to track progress against the target.

No	Measure Description	Target	Indicator	Priority	Monitoring data
R1	Improve the average energy efficiency in all private sector housing	25% improvement 2005-2020	Average SAP	Medium term	Annual rolling house condition survey, including SAP assessment. Complemented by EPC data from Green Deal assessments and properties being sold/rented.
R2	Develop a programme of community renewable energy schemes	20% reduction in residential CO ₂ 2005-2020	Installed capacity of renewable energy schemes	Medium term	FiT registration data from Ofgem and RHI registration data when this becomes available. The installed capacity can then be used to calculate CO ₂ savings
R3	Ensure all HMO's have an EPC and the average rating is improved	Achieve average band C by 2020	Average EPC rating	Medium term	EPC data collected through HMO licensing
N1	Annual reduction in LCO pathfinder CO ₂ emissions	3% annual improvement	Pathfinder CO ₂ emissions	Short term	LCO pathfinder energy and CO ₂ data, which will also be reported in the LCO annual report
N2	Improve energy efficiency of OCC leased estate	All EPC by 2015, average band C by 2020	Number and Average EPC	Longer term	A programme of EPC assessments to be developed. Complemented by EPC data from Green Deal assessments and properties being sold/rented
N3	Planning for low carbon developments	All new developments zero carbon by 2019	Estimated CO ₂ emissions	Short term	Building regulation data on CO ₂ emissions collected for Part L compliance.
N4	Continued reduction in the Council's own estate CO ₂ emissions	5% annual improvement	Council CO ₂ emissions	Short term	Carbon Management Programme reporting, complemented by data from the CRC
T1	City wide sustainable travel plan	10% reduction in car vkm by 2020	Car traffic counts	Medium term	County Council count data. Complementary cycle and pedestrian count data
T2	Emission reduction measures for the freight sector	10% reduction in freight vkm by 2020 45% reduction in freight NOx emissions	Reduction in HGV cordon counts Reduction in freight NOx and PM emissions	Longer term	County Council annual count data Emissions inventory data - full or simplified
T3	Promotion of zero emission vehicles in the light duty fleet	10% of light duty fleet by 2020	Number of EV's in light duty fleet	Medium term	DfT/DVLA registration data

5.4 Wider action plan

A process of identifying indicators and monitoring data will be carried out for all measures in the wider action plan. These indicators and data sources will be identified as the full action plan is developed. These data will be stored in the integrated emissions database where possible

However, the focus for progress monitoring of the LES will be on the priority measures. Effort will be directed at setting up the data collection processes for these measures first and they will be seen as the primary measure of the success of the LES.

5.5 Progress reporting and feedback

The intention is that all these data, at least for the top level targets and priority measures, should be updated on an annual basis. This will then give a full data set for each year to allow annual tracking of measures. An annual progress reports will be produced each year showing progress, similar to the LTP or air quality progress reports. The report will also to be used to review the success of measures and make recommendations for the development of the strategy.

However, it is recognised that there will be related reporting for the programmes and policies that are delivering LES measures such as the HECA reporting, LCO reporting and so on. Where possible and appropriate we will consolidate this reporting effort. In some cases the LES reporting may be sufficient or replace other reporting, in other cases simply repeating data and results will be required. 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.