10. Reducing the Environmental Impact of Travel

Objective 7 - Improve air quality, reduce other environmental impacts and enhance the street environment

Our core objective for the environment is to ensure that transport contributes to improvements in the attractiveness and environmental quality of the county and that this is taken into account in decisions on economic development of the county.

Policies

Policy RE1	**Oxfordshire County Council will seek to reduce the environmental impact of its operation of the transport network and promote the use of less environmentally damaging forms of transport.**
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.**
Policy RE3	**Oxfordshire County Council will work with partners to improve the public realm and de-clutter the street environment.**
Policy RE4	**Oxfordshire County Council will take into account the needs of vulnerable users, including people with disabilities, in the design of public realm improvement schemes.**

10.1 Our strategy for meeting these objectives includes:

- Developing air quality action plans and low emission strategies, in conjunction with district councils, to deal with areas where air quality problems have been identified;
- Implementing strategies to deal with noise, vibration and other impacts;

- Working with industry and local communities to deal with problems caused by inappropriate lorry traffic;
- Developing and implementing strategies to improve the public realm, especially in town centres
- Developing and implementing strategies to deal with the impacts of transport on the environment, particularly on landscape and biodiversity.

Low Emissions Strategies

Air quality

10.2 Air quality is monitored by District Councils in line with the National Air Quality Strategy. To date eight areas in Oxfordshire have been declared as Air Quality Management Areas (AQMAs) where the levels of nitrogen dioxide (NO_2) exceed the objective levels set out in the strategy.

	Annual average µg/m³ NO_2 (year)	**Comment/Location**
Cherwell		No AQMAs declared to date
Oxford		
City Centre	51 (2008)	An action plan covering the whole of Oxford is being prepared
Cowley	57 (2007)	
Green Road R'about	48 (2007)	
Summertown	44 (2007)	
Wolvercote Roundabout	42 (2007)	
Abingdon Rd	48 (2007)	
Headington	53 (2007)	
South Oxon		
Henley	47 (2008)	Duke Street
Wallingford	57 (2007)	High Street
Watlington	47 (2008)	Shirburn Street
Vale of White Horse		
Abingdon	42 (2007)	Stert Street
Botley	54 (2008)	Stanley Close
West Oxon		
Chipping Norton	40 (2004)	Horsefair
Witney	44 (2004)	Bridge Street

Sources: air quality reviews and monitoring reports produced by the district councils (objective level is 40 µg/m³ NO_2)

10.3 In all of these areas the major source of these exceedances has been identified as being from road traffic. Monitoring by the district councils is currently suggesting that AQMAs may be declared in the future in Banbury, Bicester, Didcot and Kidlington.

10.4 Measurements have shown that high emissions (in g/km) tend to occur at low speeds (e.g. in congested traffic) and at high speeds (e.g. on motorways). Emissions per vehicle kilometre travelled are expected to improve in the future, at least in the short term, as the vehicle fleet is replaced by vehicles meeting stiffer emissions standards. The actual emissions from any trip depend upon the particular characteristics of the vehicle and how it is being driven. For example, emissions under 'stop-start' driving conditions tend to be higher than those when vehicles are driven more smoothly.

10.5 For emissions to constitute a problem there need to be people who are exposed to the pollutants. This requires residential properties close to the chemical's generation. Except at extreme traffic volumes this is unlikely to be sufficient to create levels which are above the objective levels. In most cases the layout of an area also plays an important part in determining if a problem is created. Narrow streets lined with high buildings are most likely to have high values. The mix of vehicles is also important with heavy goods vehicles producing considerably more emissions per vehicle kilometre than smaller vehicles.

Emissions from buses

10.6 Oxfordshire has had considerable success in encouraging bus operators to reduce the impact of bus operations on air quality; in particular through encouraging drivers to switch off engines and operators to introduce (or retrofit) vehicles with improved emission standards. Measures to encourage subsidised service operators to provide lower emission vehicles and otherwise minimise emissions include:

- Drivers required to switch off engines whenever stopped for over 1 minute;
- services (or service groups) on which any bus enters any AQMA 10 or more times per day, must use buses meeting at least Euro III standards for nitrous oxides and particulate matter and
- the tendering process gives an increasing price preference for vehicles which meet Euro III, IV or V emission standards.

10.7 These policies have proved effective in minimising emissions from subsidised services, without an unduly high cost to Oxfordshire County Council. It is however recognised that the precise Euro standards quoted – which were adopted in 2008, one year

before Euro V became compulsory for new vehicles, - will become increasingly dated. It is therefore considered appropriate to revise standards upwards one year before each new Euro standard is adopted. These policies will therefore be maintained, with Euro numbers increased progressively as engine development proceeds.

10.8 On commercial services, the Core Partnership Agreement includes commitments by operators to switch off engines whilst stationary, to use vehicles achieving lower emission standards, and to train drivers in driving styles which minimise emissions. Oxfordshire County Council will continue to work in partnership with bus operators to further reduce the level of toxic emissions from buses used on commercial services.

10.9 Due to the particularly large impact which buses have on air quality in Oxford city centre Oxfordshire County Council proposes to introduce a Low Emission Zone, requiring registered local services in the city centre to meet Euro V standards from 1 January 2014. Oxfordshire County Council proposes to ask the Traffic Commissioner to introduce a Traffic Regulation Condition to enforce this; the details will be developed in discussion with stakeholders.

Other environmental impacts

Noise

10.10 The amount of noise generated by traffic on a road is dependant upon the number and mix of vehicles on the road, their speed, the nature of the road surface and other factors. Vehicles generate noise both from the engine and through the rolling of tyres along the road surface. The impact of noise on a listener depends upon the distance from the noise source and also the characteristics of the intervening terrain. Where noise is deemed excessive then either method can be taken to reduce the generation or to block its transmission to a listener.

10.11 Reducing noise generation - the most effective means of reducing the amount of noise generated is to reduce the amount of traffic on the road in question. If this is not possible then adjusting the mix of traffic by reducing the amount of heavier vehicles may also have an impact. In some cases the amount of noise generated may be reduced by changing the characteristics of the road surface or by removing surface defects such as cracks or potholes.

10.12 Building insulation - Securing an appropriate standard of internal acoustic conditions can be achieved by the careful design of the sound insulation of buildings. This can either occur at the design stage of a new structure or by improving the insulation of an existing building. Double glazing may provide some reduction in noise but it may be necessary to provide alternative ventilation is provided so that windows can be kept closed but with ventilation still available. These methods are only usually considered where a new road is constructed and noise insulation has to be provided as compensation.

10.13 Noise Barriers or other similar methods - The use of barriers to reduce the propagation of noise from a road to a sensitive receptor is widespread in England. At its simplest, purpose built barriers can be found alongside many roads. In addition, or alternatively, landscaping and the built environment itself may be used to provide similar mitigation.

10.14 Noise mapping published by the government in 2009 suggested that there might be significant noise pollution from some roads in the Central Oxfordshire sub-region. This was carried out at a very high level and it is likely that local conditions will mean that not all the identified areas will be subject to noise exposure as high as that indicated in the published maps.

Vibration

10.15 The effects of vibration on buildings and their occupants is a technical and complex, but also a highly emotive, issue. When goods vehicles pass then windows vibrate, ornaments rattle and occupants can feel a range of emotions from mild annoyance to grave alarm.

10.16 Traffic vibration is also exclusively caused by heavy vehicles such as lorries and buses. Speed also appears to be a factor as does the standard of the road surface. Research indicates that vibrations from road traffic are unlikely to cause structural problems to any fairly robust building but may possibly exacerbate existing problems in more fragile buildings, although it is usually impossible to attribute cause and effect.

10.17 Where vibration is considered a problem maintenance of the road surface is usually the most effective solution. Reducing speed limits or restricting heavy vehicles could also be effective

but may be difficult to enforce.

Water quality

10.18 Road and transport can affect water quality in two main ways:

- flooding - new roads and other structures can interrupt natural flows and exacerbate problems on flood plains;
- water quality - run-off from roads may include pollutants such as fuel oils and seasonal road treatments that can pollute nearby watercourses

10.19 These issues are dealt with in Chapter 4 in the section on highway drainage.

Light pollution

10.20 Light pollution from street lighting has become a major issue in some areas in recent years, particularly in rural areas. In response to this, and as a means of reducing our carbon footprint from the operation of the highways, we will:

- Look critically at any requests for new or extended street lighting schemes;
- Investigate opportunities to remove or reduce existing lighting schemes;
- Limit the hours of operation of street lighting schemes in appropriate cases.

10.21 In all cases there needs to be a balance between the environmental benefits of reducing the amount of light pollution, and carbon, and any disbenefits such as increased accident risk or fear of crime and anti-social behaviour.

Freight and Distribution

10.22 People have an ambivalent attitude towards the movement of goods. We want to be able to buy things easily in convenient, attractive shopping areas and to have them delivered to us, preferably at low prices. Many of our jobs are dependent upon there being convenient ways of delivering materials and goods quickly and reliably. Yet at the same time we dislike the consequences of having goods moved to where we want them – lorries in high streets during the day, passing near homes at

night, adding to congestion during peak hours, causing fear and danger to other road users (particularly pedestrians and cyclists) at any time of day.

10.23 Policy on freight needs to balance the economic benefits of efficient movement of goods and our desire for convenient access to those goods against the range of potential adverse impacts. Lorry numbers have grown in recent years as a result of the adoption of business practices such as just in time deliveries and also through the growth in international goods movements. There may be scope to reduce the need for freight transport in the longer term, although this would require wider changes in the way that society and the economy operate.

10.24 Road freight is continuing to grow in terms of the amount of freight carried, the distances over which it is carried, the numbers of freight vehicles used (particularly vans), the weights of the heaviest vehicles and the proportion of road freight carried by these heaviest vehicles. However road freight has a number of adverse impacts in terms of road safety, noise and impact on the local and global environment. Nationally, there has been a significant revival in rail freight in recent years and this does have the potential to reduce many of these impacts. However, road carriage is likely to remain the dominant freight transport mode in the short and medium term, at least.

10.25 Deliveries are often a point of conflict between ensuring the economic vitality of areas and protecting the local environment. This can be most pointed in historic urban areas where there are few opportunities to provide delivery points away from major streets. The most common solution to the problems caused by deliveries is that of timed restriction on when deliveries can be made. While this can be effective in reducing conflict it needs to be considered carefully to ensure that it does not adversely affect the balance of shops in a locality – larger shops and chain stores are generally more able to accept out of hours deliveries than small independent shops. The times allowed for deliveries to all locations need to be carefully looked at to ensure that deliveries in peak times do not cause unnecessary congestion in peak hours, but it is acknowledged that the timing of deliveries to premises in smaller towns and villages is less controllable and could impact upon the viability of local services.

10.26 Traffic management measures may also have an impact on deliveries. Restrictions on the use of some roads in central Oxford effectively divided the city centre into four zones. Effective

publicity is essential when such measures are introduced if business vitality is not to be impacted.

10.27 Trans-shipment systems, where goods for a town or city are transferred from large lorries to smaller, less intrusive vehicles for the final delivery leg, have been suggested in the past as a way to reduce the impact of lorries in central areas. Examples to date in the UK usually relate to new shopping centres or other specific destinations (such as airports) but there is no reason in principle why these could not be extended to existing town centres. Trans-shipment would though increase the cost of making deliveries to shops.

10.28 In recent years satellite navigation systems have caused increases in lorry traffic on many unsuitable roads across the country. A problem at the moment is that systems do not discriminate in route choice between large and small vehicles. This can lead to lorries being directed onto roads unsuitable for them but which would be the "best" route for private cars. More advanced systems in the future may provide a solution to this but there is also a clear need to ensure that, as far as possible, satellite navigation companies have information on the suitability or otherwise of roads to carry traffic.

10.29 Lorry drivers are required to take both daily and overnight driving breaks by the Driver Hours Directive 1985. Areas for goods vehicles to stop and park when away from base therefore play a vital part of the national delivery network. In recent years though there has been a reduction in the number of sites available for trucks to stop at. Many service areas on non-motorway routes are now not available for lorries. Safety and traffic management concerns, relating to the time that lorries take to accelerate out of them reducing speed on the main carriageway, have led to the removal of some roadside lay-bys. The consequences of this can be uncontrolled overnight parking on minor roads.

10.30 Well designed and located lorry parks could play a role in reducing the mileage run by visiting vehicles, promoting driver well-being, helping with efficient deliveries and minimising disruption to communities. However the benefits of such facilities would need to be balanced against the local environmental impacts that such a facility would bring in deciding on whether any particular site was suitable for this use. The Department for Transport has published a strategy (November 2009) to encourage the development and use of secure lorry parking locations. Any proposals within Oxfordshire would need to be in

line with this national strategy.

Street Environment & the Public Realm

10.31 A good public realm should engage people and encourage human interaction. It is the type of environment that makes people want to spend time in public space and watch what is going on rather than stay inside. It encourages walking, but also stopping, sitting and lingering. It promotes health, includes green infrastructure encourages community cohesion and acts as a deterrent to crime. It is important for the local economy, enhancing the shopping and leisure experience to help town centres or village shops compete with the often highly manicured and well-presented out-of-town retail and leisure parks.

10.32 The street environment and public realm is the environment that the streets, open and green spaces, parks and plazas of a city, town or village create for residents, workers and visitors. The street environment and public realm also includes public rights of way, canal towpaths, country parks, town parks, nature reserves, play areas and allotments.

10.33 A good public realm is an asset to the economy of an area. A high quality public realm encourages businesses to recruit employees, who are attracted to the area. Investment in public spaces can help increase land and property value, boost tourism and visitor numbers, enhance an area's image, improve its business productivity and attract investment.

10.34 A key challenge in cities and towns, but also in villages and rural areas to a lesser extent, is how to deal with vehicle movement and how it impacts on other users of the public realm. There can be conflicts between providing the elements of a high quality street environment and public realm and providing car parking. It is often the case that car parking has taken over large open spaces within towns and cities as either formal or informal car parks. While there is a great deal of potential for creating good quality street environments by removing parking, proposals such as this are often controversial with shopkeepers and local residents.

10.35 The essential element of our strategy to improve the street environment is to ensure that the treatment of any area reflects

the particular needs of the area. There is no model treatment that can be "parachuted" into any location. Local input will be essential in determining how an area is to be improved and what the aims of each public realm scheme should be.

The Natural Environment and Green Infrastructure

10.36 Local authorities have statutory duties regarding the protection of the environment through various Acts of Parliament and European regulation and legislation. Relevant legislation and guidance regarding the impact on the natural environment will be considered at an early stage of all new schemes and projects. Local authorities in particular have a duty to the conservation of biodiversity in exercising all their functions and the purposes of Areas of Outstanding Natural Beauty when making decisions or carrying out activities that affect land within these areas.

10.37 Ensuring that an understanding of landscape and townscape character and sensitivity to development informs transport decisions includes recognising that materials, signing and lining can have a negative impact on character and tranquillity. We will use tools already available, such as the Oxfordshire Wildlife and Landscape Study, local landscape and townscape character assessments and other studies to inform the design of schemes and carry out site specific assessments for specific schemes or projects to determine impacts and opportunities to inform the design on these matters at an early stage.

10.38 Consideration will be given to the impacts and opportunities of new and existing transport infrastructure on the county's biodiversity in order to:

- Protect and enhance biodiversity within designated sites, local sites and the wider environment;
- Ensure that mitigation and compensation are provided for biodiversity loss where impacts are unavoidable;
- Integrate proposals to enhance biodiversity into schemes, where possible;
- Evaluate the impact of specific schemes.

10.39 Oxfordshire County Council will take into account the management plans of each Area of Outstanding Beauty in the planning and design of schemes in AONBs and will work in partnership with the AONB teams to implement relevant policies or actions from the management plans. We will continue to

manage and maintain new and existing infrastructure for the benefit of the biodiversity of the county wherever possible, particularly with regard to Oxfordshire's road verge nature reserves and highway trees. When developing or updating strategies for the management of the highways network we will seek to increase benefits for green infrastructure, particularly relating to health and wellbeing, biodiversity, and climate change adaptation and mitigation.

10.40 We will design new assets to improve green infrastructure benefits and will seek to mitigate against other impacts on the natural environment identified in the Strategic Environmental Assessment of this Plan and in specific assessments of individual schemes.