AIR QUALITY ACTION PLAN

January 2009

ACKNOWLEDGEMENTS

This Air Quality Action Plan has been developed by Reading Borough Council and has involved the participation of a number of council officers, key partners, and everyone who took part in the recent consultation exercise on air quality and climate change issues.

The Environmental Protection Team would like to thank all of those who have informed the development of this Air Quality Action Plan.

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1. INTRODUCTION

1.1 Clean air is essential for our health, quality of life and the environment. Air pollution is not only harmful to human health but may also have harmful effects on plants and animals as well corroding materials and buildings.

1.2 Air quality in Reading is generally good. However, there are small areas close to congested roads where levels of nitrogen dioxide (NO_2) exceed the air quality objectives, and where levels of particulates (PM10s) are within the limits but are elevated. These levels are found close to busy and congested roads and are linked to traffic exhaust emissions.

1.3 In September 2006 Reading Borough Council declared 6 Air Quality Management Areas (AQMA[1]). Since then we have completed a stage 4 assessment of air quality in the air quality management areas to determine the sources of air pollution. We have also carried out a borough-wide consultation process including two participatory workshops, in association with the Air Quality Management Research Centre (AQMRC) at the University of West England.

1.4 Whilst developing this Action Plan, Reading Borough Council has had regard to guidance from government, Environmental Protection UK (EPUK, formerly NSCA), as well as the Reading Borough Council Local Transport Plan, Local Area Agreement and Local Development framework documents.

1.5 The plan sets out current and new policies and measures to address air quality issues in the AQMAs and across the borough generally and to work towards meeting the air quality objectives for NO_2.

1.6 Air Quality has clear links with Climate Change, although there are areas where clear policies will need to be defined where a benefit for air quality may be detrimental to climate change or vice versa. We have carried out consultation on this action plan jointly with our climate change strategy to ensure that where possible actions taken benefit both climate change actions and air quality, and where a choice must be made it is clearly and transparently identified.

[1] Air Quality Management Areas must be declared in areas where the national air quality objectives for air pollutants are not met, and where there is relevant human exposure. Reading's AQMAs have all been declared for exceedances of the Air Quality Objective for NO2.

2. READING BOROUGH COUNCIL

2.1 Population

2.1.1 The area within Reading Borough Council boundaries is 442,000 hectares. In 2001 the Reading population was 144,483. Today Reading has an estimated population of 147,000, while around 230,000 people live in the wider urban area around Reading. Reading has (within a small geographical area) some of the most affluent and most deprived neighbourhoods in the whole of the Thames Valley and in this respect has the most marked extremes in the region outside London.

2.1.2 Reading's population is ethnically diverse, with over 13% of the population from black and minority ethnic communities. This diversity is being extended further by an influx of workers and their families from EU accession countries. There are consequently over 50 languages spoken in Reading's schools. There are a high proportion of young adults (20–25 year olds) and a growing number of residents aged 65+.

2.2 Social and Economic Structure

2.2.1 Reading is an ancient town with over 1000 years of history and contains a wealth of archaeology and historic buildings. Recognised as the capital of the Thames Valley area, there has been a huge structural shift from the town's industrial origins of beer, bulbs and biscuits to a compact service economy specialising in business services. Strategically located as a major transport hub and in close proximity to Heathrow, Reading is now home to the largest concentration of ICT corporations in the UK. The town attracts large numbers of shoppers, workers and visitors from a wide catchment, adding to the vitality and success of the town but at the same time pressuring scarce resources across a range of services.

2.2.2 A large percentage of the working population is highly skilled and qualified, with 30% educated to degree level or above, and Reading's universities provide both research opportunities and a well-qualified labour pool. Unemployment is low at 2.2% (2006), however this disguises the fact that unemployment is relatively high in a number of more deprived areas. Although as a whole, Reading is an affluent town, two wards within the town are considered relatively deprived in national comparisons (2000 index of multiple deprivation). Over 40% of Reading's households have a gross income of less than £15,000[2].

2.2.3 The housing market in Reading has house prices well above the UK average. This market is increasingly putting sale and rental levels above those that can be afforded by many sections of the population.

[2] Experian income profiles, IdeA knowledge, 2004

2.2.4 Reading is a major shopping destination in the region and is ranked in the top 12 national retail centres. The Oracle combines shopping and leisure facilities in the centre of Reading in a development of 65,000 square metres and has contributed to the growth of Reading's evening and late night economy, with further expansion proposed.

2.3 Environment

2.3.1 Although Reading is largely urban in nature, the town contains a number of green areas, which are important for informal recreation and wildlife. These areas are a valuable resource providing opportunities for enjoyment and education and giving the Borough its individual character. As a constrained urban area, economic growth puts pressure on the environment in a number of ways. Despite consistently exceeding targets on brownfield development, there can be pressure on urban green space for both amenity and wildlife.

2.3.2 Businesses and households consume considerable amounts of energy, water and other natural resources that must be reduced if we are to achieve a truly sustainable economy and address our contribution to climate change. It is essential that the economic growth and success of Reading becomes more sustainable, and this is becoming paramount in the vision of the Council and its partners. The principle of sustainability underpins the key priorities for partners as set out in the Council's Sustainable Community Strategy.

2.3.3 Across the majority of the borough, air quality is good, however, there are some areas around busy congested roads where levels of nitrogen dioxide are exceeding the air quality objectives for this pollutant. Trends in air quality in Reading are discussed in chapter 4.

2.4 Transport

2.4.1 A key factor in Reading's success is its connectivity, being identified as a regional transport hub and major transport interchange. Reading has excellent links to national road and rail networks and is in close proximity to London and Heathrow.

2.4.2 Reading provides the main rail gateway to parts of the South West, Midlands and North of England with linkages through to Ireland to the west and London on to Europe and the east. Reading's rail station is the second busiest interchange outside London, catering for approximately 15 million passengers a year.

2.4.3 The M4 motorway skirts the southern boundary of Reading, and provides access at three junctions, linking Reading to London and the West. The A33 connects Reading to the south via the M3, with 'A' roads to the east, west and north connecting to the M40 and A34.

2.4.4 Just under half of Reading's residents travel to work by car, the third lowest percentage of 67 south east authorities.

2.5 Health

2.5.1 Life expectancy for people in Reading is similar to the England average, but lower for both men and women than in West Berkshire and Wokingham, and differs between the different income groups. The percentage of the GP registered population with asthma is 6.3% in the Berkshire West PCT area (Reading, Wokingham and West Berkshire) compared to 5.8% nationally.

Local priorities for health are:

- To improve the health and well being of people from all sectors of the local community
- To continue to reduce the gap in life expectancy between the least deprived quintile of wards and the rest of the population.[3]

[3] Reading Health Profile 2007, NHS/Department of Health

3. AIR QUALITY IN CONTEXT

3.1 Local Air Quality Management

3.1.1 The Environment Act 1995 requires local authorities to review and assess air quality on a regular basis, against a set of Air Quality Objectives (AQOs) set out in the Air Quality Regulations. (See figure 1). Local authorities are required to declare as Air Quality Management Areas (AQMAs) any area where the AQOs are exceeded and there is relevant human exposure, and must draw up an action plan to show what steps it intends to take to improve local air quality.

3.1.2 Where transport is the main source of emissions it is considered good practice to incorporate the Air Quality Action Plan (AQAP) within the Local Transport Plan (LTP). Reading is currently mid-cycle with its second LTP, which runs from 2006-2011. Therefore due to the timing of Reading's AQMAs being declared (in September 2006) it has not been possible to integrate the final action plan into the LTP. However, it has been incorporated within the LTP Annual Progress Report, published Dec 2008.

3.1.3 Nearly 200 local authorities have declared AQMAs, mainly for exceedances of the annual average objective for NO2, and also to a lesser extent the short-term objective for fine particulates (PM10). Road transport sources are the main cause of AQMAs in the UK.

3.1.4 The air quality objectives are contained within the National Air Quality Strategy, and are reproduced in Figure 1 below.

Pollutant	Concentration	Measured as…	Date to be achieved by…
Benzene	16.25¤g/m^3	Running annual mean	31.12.2003
	5¤g/m^3	Annual mean	31.12.2010
1,3 Butadiene	2.25¤g/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5¤g/m^3	Annual mean	31.12.2004
	0.25¤g/m^3	Annual mean	31.12.2008
Nitrogen Dioxide	200¤g/m^3	1-Hour mean (not to be exceeded more than 18 times a year)	31.12.2005
	40¤g/m^3	Annual mean	31.12.2005
Particles (PM_{10})	50¤g/m^3	24-Hour mean (not to be exceeded more than 35 times a year)	31.12.2004
	40¤g/m^3	Annual mean	31.12.2004
Particles ($PM_{2.5}$) Exposure Reduction	25¤g/m^3 Target of 15% reduction in concentrations at urban background (UK Urban areas)	Annual mean	2020 Between 2010 and 2020
Sulphur Dioxide	350¤g/m^3	1-hour mean (not to be exceeded more than 24 times a year)	31.12.2004
	125¤g/m^3	24-hour mean (not to be exceeded more than 3 times a year)	31.12.2004
	266¤g/m^3	15-minute mean (not to be exceeded more than 35 times a year)	31.12.2005

Figure 1. Air Quality Objectives

3.2 Reading Borough Council Policy Context

3.2.1 Reading has a strategic aim that commits to developing Reading as a green city, and promotes a safe and healthy environment for all. This is delivered via the medium term priority and community strategy theme of maintaining and enhancing greener and cleaner environments. Reading's Environmental policy statement (2006)

requires that we "…meet and where possible, go beyond our legal obligations, statutory duties and codes of practice with regards to the environment, and where no such obligations, duties or codes of practice exist, work to develop our own environmental standards…"

3.3 Local Transport Plan 2006-2011 (LTP2)

3.3.1 LTP2 contains all objectives, policies and plans for improving transport in Reading over the period 2006-2011. Reading's LTP objectives for this period are a concise reflection of the national and regional context within which we are working and our local vision for Reading, and include 'to protect and enhance the natural and built environment'. The plans and programmes contained within the LTP are important to the delivery of all of the Government's shared priority areas including that of better air quality.

3.4 Independent Transport Commission

3.4.1 In June 2007 Reading Borough Council announced its intention to set up a wide-ranging Public Commission to examine both the current and projected traffic problems in central Reading, including the Inner Distribution Road (IDR). The brief for the Commission was agreed by full Council on 26 June 2007.

3.4.2 The Commission is independent of the Council and reserved the right to call evidence from any individual, group or organisation. The Commission reported to Council on 26 June 2008 with its findings and recommendations. Therefore some of the actions contained in this plan have been subject to the findings of the transport commission.

3.4.3 Full details of the Transport Commissions findings can be located at www.reading.gov.uk/consultations/Category.asp?cat=1708.

3.5 Climate Change Strategy

3.5.1 In recognition of the links and potential conflicts between actions to improve air quality and strategies to address climate change, this air quality action plan has been developed jointly with the Climate Change Strategy (CCS). Reading Borough Council, as a signatory to the Nottingham Declaration, has a commitment to addressing climate change. The consultation on the AQAP and CCS has been carried out jointly in order to identify policy areas where the two issues can be linked, and those where a clear choice needs to be made as to which should be prioritised. Where possible we have aimed to develop a "win/win" approach where actions taken to address air quality will also benefit or have a neutral impact on climate change actions and vice versa. Preference will be given to air quality actions that also reduce emissions of greenhouse gas emissions. However, it should be noted that the main sources of CO_2 emissions are different to the main sources of air pollution, in that transport only makes up 16% of CO_2 emissions while the main source of CO_2 (51%) is from industrial, commercial and retail premises.

3.6 Planning Policy

3.6.1 Air quality is a material consideration in preparing development documents and taking decisions on individual planning applications. More weight will generally be given to air quality considerations where a development would have a significant impact on air quality inside or adjacent to an AQMA, or would result in a new AQMA needing to be declared due to the introduction of new receptors to an area of poor air quality. The findings of air quality reviews and assessments are therefore important in the siting of certain types of development.

3.7 The priorities detailed have resulted in many existing policies that address air quality being introduced in Reading, all of which were consulted on when those plans and policies were being drawn up. Therefore a significant proportion of this air quality action plan draws on measures which already exist in council policy but which will help to tackle air quality within the air quality management areas. However, the plan also identifies additional proposals that have arisen as part of the consultation process, and through ongoing developments within Reading Borough Council.

3.8 The aim of the Environment Act 1995 is to reduce air pollution levels to below the air quality objectives. However, some of the most effective technological measures, such as improved vehicle emissions levels, are outside of the control of local authorities. Within this air quality action plan we have considered all aspects of local air quality, including bonfires, domestic fuels, and pollution from industrial processes, and we have also included links with climate change. However, it is recognised that the main source of air pollution in Reading is from vehicular road traffic.

4. AIR QUALITY IN READING

4.1 Monitoring Air Quality

4.1.1 Reading Borough Council has an extensive network of nitrogen dioxide passive diffusion tubes, as well as 3 roadside continuous monitoring stations (Caversham Bridge, Kings Road and Oxford Road, each measuring levels of NO_2 and PM_{10}). We also run a background continuous monitoring station on behalf of Defra located in the cemetery at Cemetery Junction, measuring NO_2, PM_{10} and Ozone (O_3).

4.1.2 Generally air quality in Reading is good, although, as can be expected, in areas close to busy roads the pollutant levels can be higher than in the rest of Reading.

4.1.3 Levels at the background site are well below the AQO for nitrogen dioxide and PM_{10}. The diffusion tubes that have been located in other parks and background areas in Reading reflect this. Although Reading retains some industrial activity, and has 46 premises regulated under the Pollution Prevention and Control Regulations, all of these are small and well controlled and do not contribute significantly to local air quality.

4.1.4 As part of the air quality management process described above we have identified six areas close to busy roads, where levels of nitrogen dioxide are above the national annual mean air quality objective. Initially these were identified by the use of diffusion tubes, and then computer modelling was used to look in more detail at the areas predicted to be affected.

4.1.5 The six areas are:

1. **Prospect Street/Henley Road junction to Caversham Road/Vastern Road roundabout**
2. **Caversham Road from Abbattoirs Road to Vachel Road**
3. **Gosbrook Road junction of George Street to Queens Road, Caversham**
4. **Castle Hill from Castle Hill roundabout to Tilehurst Road/Coley Avenue junction**
5. **Southampton Street from Upper Crown Street/West Hill to Oracle roundabout**
6. **Kings Road/London Road from A329M down both London Road and Kings Road until Sidmouth Street junctions**

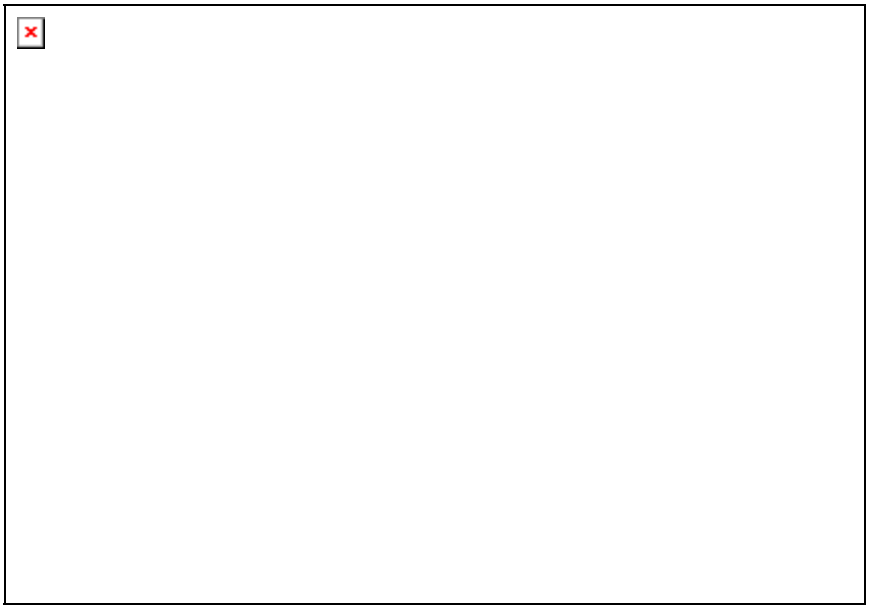

Figure 2 – Reading Borough Council Air Quality Management Areas

4.1.6 These six areas (marked in Green) have been declared as air quality management areas, and are the central focus of this air quality action plan. All areas have been declared due to an exceedance of the annual mean for NO_2, and so this action plan focuses on measures to reduce the annual mean levels.

4.2 Review and Assessment

4.2.1 The 2006 updating and screening assessment indicated that there were parts of Oxford Road where exceedances of the AQO for NO_2 may occur. A detailed assessment was carried out in 2007 to verify this and recommended that further monitoring be carried out. As the modelling and monitoring in this area is showing levels close to the AQO, it is the intention of Reading Borough Council to declare an Air Quality Management Area for a section of Oxford Road. The boundaries of this have not yet been consulted on, however actions to address air quality affecting the Oxford Road area have also been included in this action plan

4.3 Trends in Air Quality

4.3.1 When the National Air Quality Strategy was introduced, it was anticipated that with improved technology resulting in cleaner fuels and more efficient vehicles, levels of pollution associated with traffic would decrease over time as shown in the Figure 3 and Figure 4 to follow.

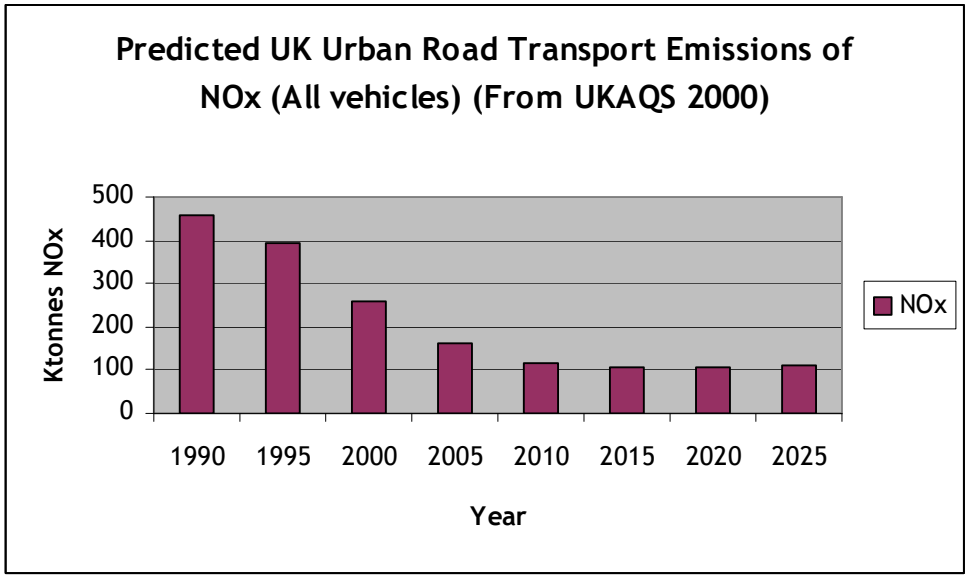

Figure 3 – UK Air Quality Strategy 2000 – predicted NOx emissions from traffic.

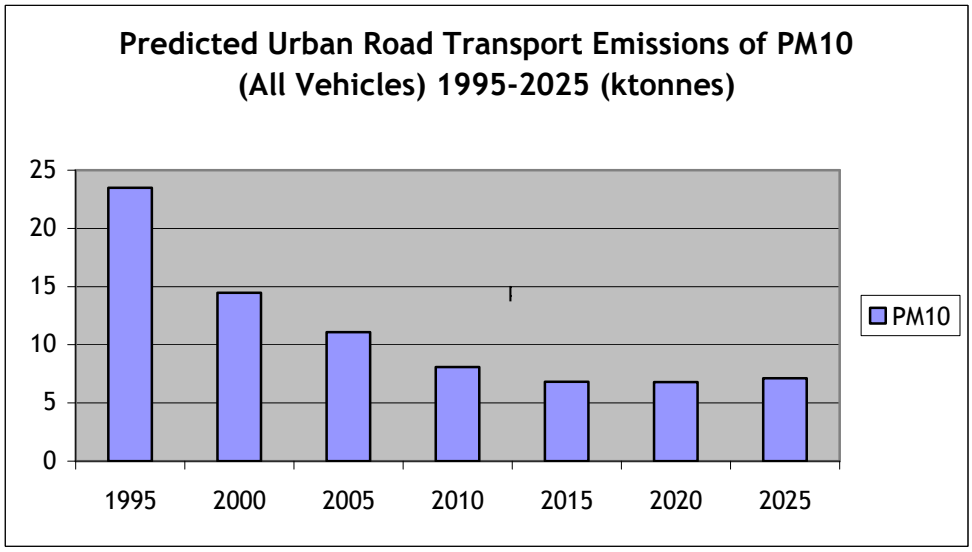

Figure 4 – UK Air Quality Strategy 2000 – predicted PM10 emissions from traffic.

4.3.2 However, the observed trends in Reading in recent years have not appeared to followed these trends.

4.4 Nitrogen Dioxide

4.4.1 The above estimates (Figure 2) relate to NOx emissions, of which NO_2 is just one factor. We monitor NO_2 because this is the chemical associated with the health effects described in paragraph 2.2. The predicted reduction in NO_2 levels was being seen at the urban background site at Cemetery Junction, and therefore across most of Reading from 2004-2006.

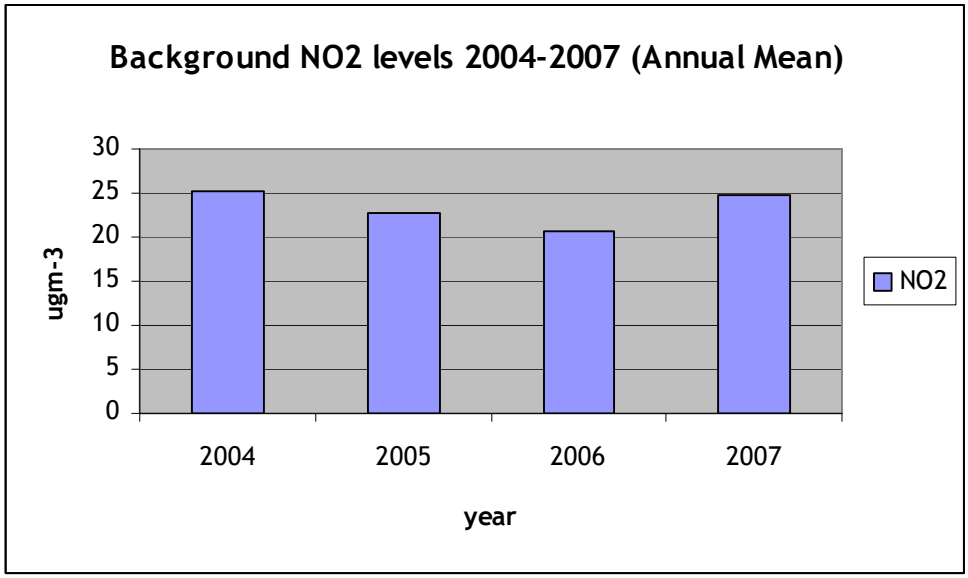

Figure 5 – Background levels of NO2

4.4.2 Across the UK it is now being reported that levels of nitrogen dioxide are not continuing to fall as sharply as was originally predicted, and in some cases they are rising. This is being particularly noted in large urban areas and at road side sites. It can be seen in Figure 5 that levels of NO_2 in Reading actually increased in 2007, although further monitoring is required to find out whether this was a temporary increase.

4.4.3 At some of our roadside diffusion tube sites we are also seeing a reversing or stabilising of levels of NO_2, and not the expected decrease. The areas where this effect is most marked are in and around the AQMAs, in areas close to busy, congested roads. The diffusion tube data for 2005-2007 can be seen in figure 7.1 and 7.2. These show all diffusion tube sites for these three years, although some sites only have one or two years worth of data, and it is recognised that this does not give sufficient data to establish a trend.

4.4.4 The Air Quality Expert Group recently published a report[4] on the reasons for observed unexpected increases in nitrogen dioxide, which have been seen in London, and across some other parts of the UK and Europe. There are a number of possible reasons, the most likely one being that some of the newer vehicles are emitting different proportions of pollutants resulting in these higher levels of NO_2.

4.5 Small Particulates (PM_{10})

4.5.1 The data recorded at the background site at Cemetery Junction shows a similar trend for PM_{10}, (figure 6) which again is not in line with the trends within the Air Quality Strategy. Again, similar trends

[4] Trends in primary nitrogen dioxide in the UK, Air Quality Expert Group, 2007

of stabilising PM_{10} concentrations have been seen in and around London. However, the background levels in Reading are significantly below the AQO for PM_{10}. The results for 2007 may be affected by the change in monitoring equipment (from a Tapered Element Oscillating Microbalance (TEOM) to TEOM with FDMS (Tapered Element Oscillating Microbalance Filter Dynamic Measurement System) introduced in early 2007, and so these results should be viewed with some caution. The TEOM - FDMS system provides information about the nature and concentration of airborne particulate matter and has been shown to meet the requirements of the European Method for Determining Equivalence for Particulate Matter. TEOM-FDMS agrees with the European Gravimetric Standard Method and provides results, which are both accurate and precise without the use of a 'correction factor' for both PM10 and PM2.5.

4.5.2 Emissions of PM_{10} can come from numerous sources, including industry, domestic fires, bonfires and construction works, as well as traffic (for example diesel engines and brake and tyre wear) and at this stage it is not possible to determine which of these are making the most significant contributions. These measurements are also affected by particles that are transported due to meteorological conditions from Europe and Africa.

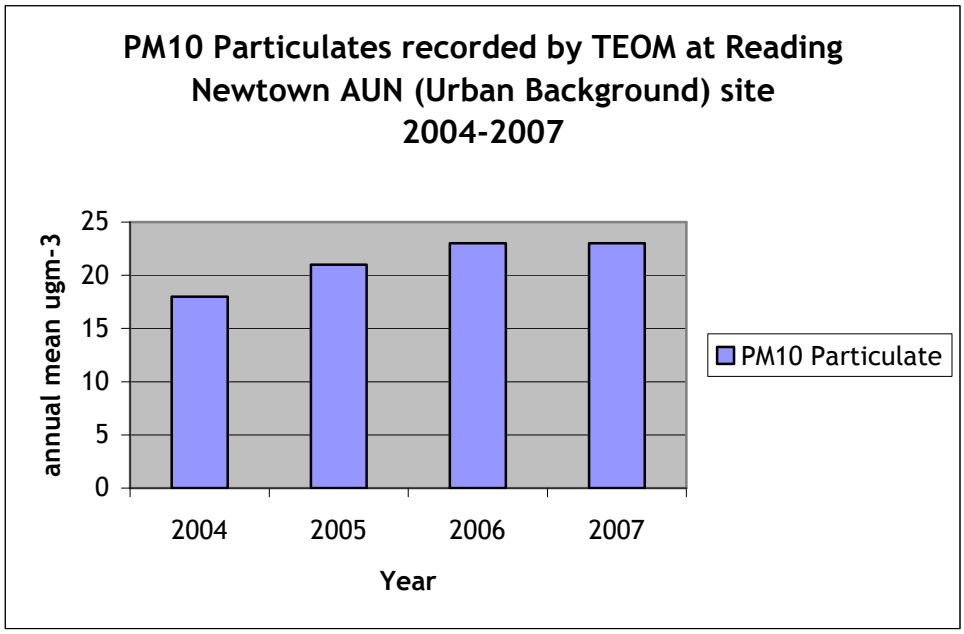

Figure 6 Background PM10 levels (Annual mean)

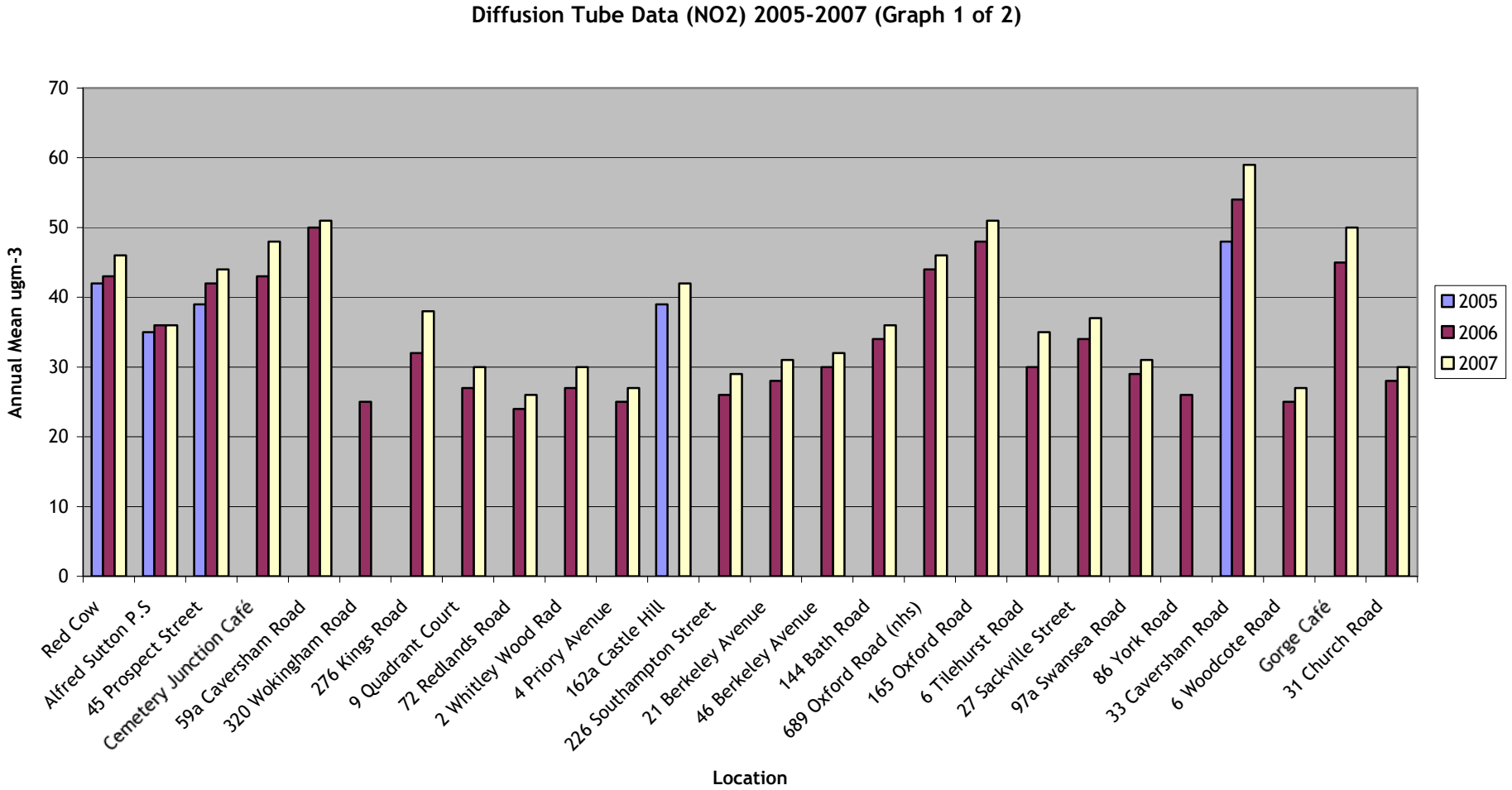

Figure 7.1 Diffusion Tube Data

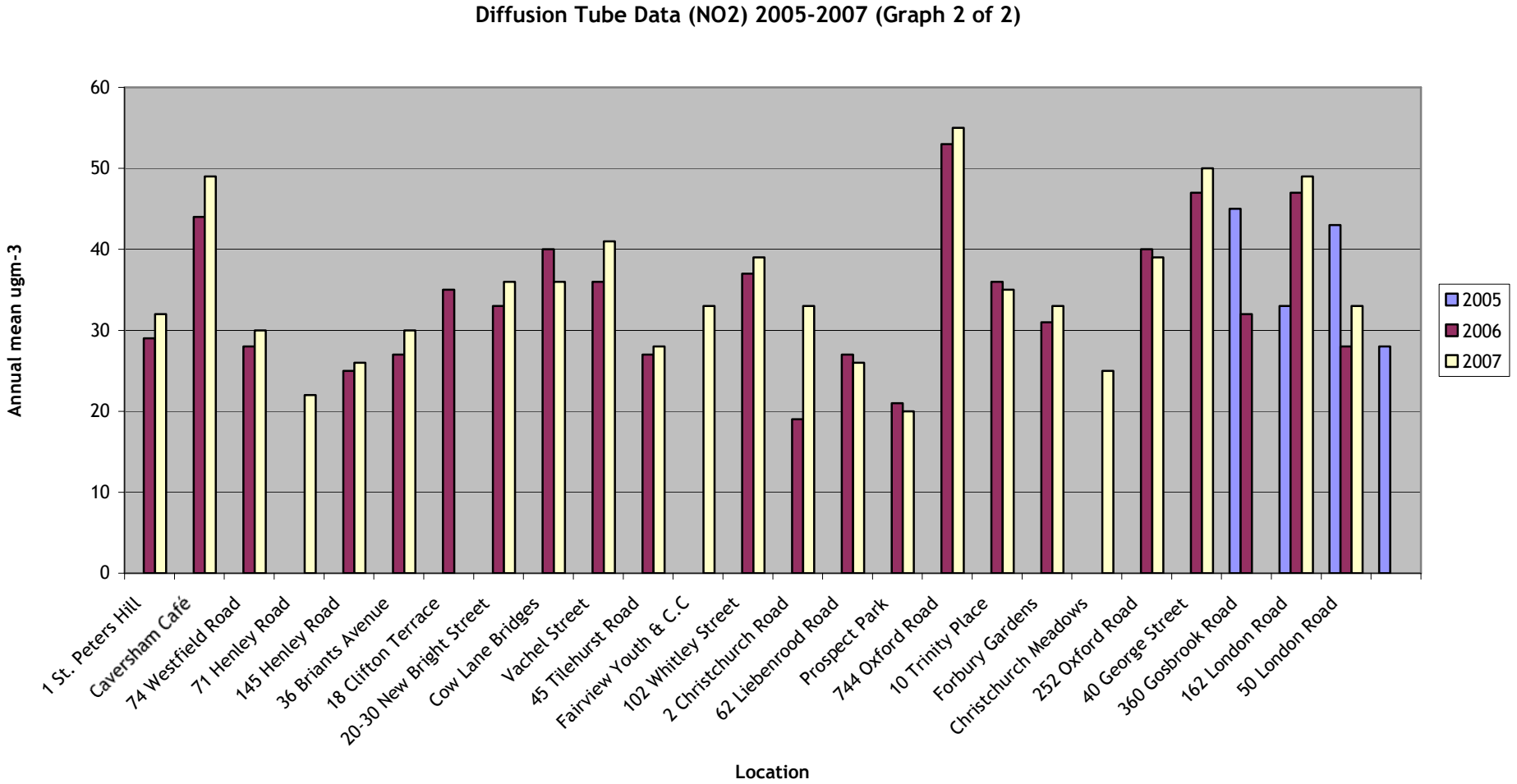

Figure 7.2 Diffusion Tube Data

4.5.3 It appears that concentrations of PM_{10} began to increase in early 2005, but there is no clear explanation for this apparently significant rise in levels.

4.5.4 We cannot say that these results are entirely due to road traffic, due to the various sources of PM_{10} in urban environments but it would be reasonable to assume that traffic is a major contributory source.

4.5.5 Although to date our monitoring has shown that the current AQO for PM_{10} is being met, measures to control PM_{10} have also been considered for inclusion within the action plan on the basis that the Committee on the Medical Effects of Air Pollutants (COMEAP[5]) guidance has indicated that there is no known safe level for PM_{10}, and that relatively small increases in levels of $PM_{2.5}$ (which Reading began to monitor for at the background site in November 2008) have significant impacts on health and mortality. Particulates are the pollutant with the most significant potential adverse health effects and so are a priority for reduction. This is reflected by the new Air Quality Objective for exposure reduction to particulates ($PM_{2.5}$) and so measures to reduce levels of PM_{10} have been incorporated into this plan.

4.6 Further Assessment of Air Quality

4.6.1 The Further Assessment of air quality was submitted to DEFRA in September 2008. The main findings of the further assessment indicate that in AQMAs 1-5, a significant proportion of emissions are attributable to HGVs (30-45% in some areas). The second most important source is cars. In AQMA 6, the split is much more even between cars and HGVs.

4.6.2 The other significant finding is that background levels make a substantial contribution to overall levels.

4.6.2 The Further Assessment has also indicated that the boundaries of some of the AQMAs need to be extended. Work is currently being undertaken to determine the exact boundary of the amended area. However, this will not make a significant difference to the action plan measures.

[5] Long –term exposure to air pollution: effect on mortality, COMEAP, 2007 (draft report for comment)

5. Development of The Action plan

5.1 Following the results of the detailed assessment that indicated the need for the six air quality management areas, an Air Quality Steering Group was formed. This group consists of representatives from

- Environmental Protection – Reading Borough Council
- Transport - Reading Borough Council
- Planning – Reading Borough Council
- Sustainability - Reading Borough Council
- Berkshire West PCT

5.2 The steering group meets on a quarterly basis.

5.3 In discussing the baseline for the air quality action plan it was highlighted that there were already a significant number of planned actions that would benefit air quality in existing plans and policies that had already been subject to extensive public consultation. It was therefore decided that it was inappropriate to consult again on those aspects. Instead we began by seeking the views of the local community on air quality and climate change as environmental issues, to help identify local priorities and concerns, and areas where the council needs to provide and target information more effectively. The consultation was designed to look at the interlinked issues of climate change and air quality so that in the areas where these have synergies and conflicts these could be addressed.

5.4 The first phase of the consultation, which aimed to raise awareness of the issues, was launched at the Forbury Fever World Environment Day event in July 2007. "Postcards" with the taglines "there's something in the air" or: "the heat is on" – what do you think" were distributed at the event, through libraries, community centres, leisure centres, and community group talks. The postcards asked people for their initial comments about air quality and climate change, and whether they would like to be involved in any further consultations on these issues. 74 postcards were returned.

5.5 The second phase of the consultation was carried out in partnership with the Air Quality Management Research Centre (AQMRC) at the University of West England. This consisted of a questionnaire survey and two participatory workshops. The questionnaire surveys were distributed in various ways including a stand in a local supermarket, a double page spread in the local newspaper, through libraries and leisure centres and by post to people who had requested further contact through the postcard consultation. In total 155 questionnaires were returned and 24 people attended the workshops.

5.6 The consultation was not based on seeking approval on draft documents, but was intended to help assess the viewpoint of Reading citizens with regard to their perception of the problems of poor air

quality and climate change, how much of a priority the council should give to addressing these problems, and what sort of measures and actions they would want to see taken, or given encouragement and support to take themselves.

5.7 AQMRC analysed the responses to the consultation with the following findings:

5.8 People involved in the consultation indicated that they wanted to see:

- **Better information** - on the causes and effects of climate change and air quality, on what individuals can do, and what the council and others doing about the problems
- **The Council taking a lead** both in terms of managing their own estate and in encouraging, supporting and enforcing better practice.
- The Council trying to **resolve the traffic issue** mainly through demand management.
- **Non-car transport given a higher (perceived) priority** so that people don't feel that these modes are more dangerous, more expensive or less convenient than using a car.
- **Businesses taking action** both to improve their energy efficiency, but also to help individuals perform better by, for example, reducing packaging.
- **More attention to greenspaces** to provide pleasant transport corridors for walking and cycling, to help increase fitness and well-being and to help mitigate and adapt to climate change,
- **Better housing development** that ensures high quality low carbon properties at affordable prices and uses appropriate land (not gardens, playing fields and other previously greenspace).
- **Regulation and enforcement** to ensure that individual actions take place on a level playing field and so that environmental protection is seen as a necessity rather than an option.

5.9 The Air Quality issues are addressed within this action plan. However, it should be noted that some actions will require further study on their feasibility before they can be implemented.

5.10 Issues with road traffic dominated much of the consultation process. This focussed almost exclusively on personal transport issues, and there was little specific mention of goods traffic and measures to address this. The further assessment has identified HGVs as a significant issue in most of Reading's AQMAs and so this is an area that requires further work and consultation.

6. Measures relating to Transport Sources

6.1 Background

6.1.1 Reading Borough Council's vision for transport is that people should be able to travel in and around Reading – to and from home, work, leisure or the services they need – easily, safely, comfortably and sustainably. This involves both providing facilities locally and providing good transport opportunities for longer journeys.

6.1.2 The aims of the LTP are driven by current government policies, in particular the 'shared priorities' for transport, which are closely linked to the objectives outlined in the Community Strategy above. The shared priorities in relation to air quality include:

- To reduce the impact of congestion on the transport network
- To protect and enhance the built and natural environment
- Reduce the need to travel and enhance alternatives

6.1.3 The basic levels of funding, targets for trips to the centre of Reading include:

- To increase bus passenger journeys by 20%
- To increase walking trips by 20%
- To increase cycling trips (area-wide) by 20%
- As a result it is expected to reduce road traffic flows to central Reading during the peak period by 1.5%

6.1.4 Reliable, convenient and safe public transport will contribute to a cleaner environment and provides a realistic alternative for travelling in and around Reading. Priority access to the centre of Reading will be secured for pedestrians, cyclists, public transport and necessary car users.

6.1.5 '*Making it connect*' is the transport theme of our community strategy, and will improve overall quality of life in Reading through policies and measures which also deliver the Government's shared priorities for transport: improving accessibility and safety and tackling congestion and air quality issues.

6.1.6 With continued investment in a high quality transport system, we can deliver better services and enable growth, which fulfils our role as the economic and retail capital of the Thames Valley. Our infrastructure will be developed based on the theme of "Quality travel for Reading". This involves a range of seamless, informed travel options through a network of high quality transport services linking major centres and interchange points.

6.2 Local Transport Plan (LTP)

6.2.1 The LTP proposes a number of schemes and strategies to meet the objectives, which include a package of measures under the theme of 'Quality Travel for Reading', which are the basic package of measures that will be applied area-wide. 'Quality Travel for Reading' introduces main strategy themes, which contribute to one or more of the transport shared priorities. The table below indicates the contribution each of these strategic themes makes to delivery of the wider air quality shared priority.

6.2.2 The specific objectives for each strategic theme relevant to air quality are given.

Table X: LTP - summary of contribution to Air Quality shared priority (adapted from *RBC (2006) Local Transport Plan 2006-2011*)

STRATEGIC THEME	CONTRIBUTION TO AIR QUALITY AS IDENTIFIED IN THE LTP	OBJECTIVE OF STRATEGIC THEMES IN RELATION TO AIR QUALITY
Improving Accessibility		
Accessibility Strategy*	✓	▪ Improve access to new developments – especially if they have the potential to generate additional or redistributed journeys to work ▪ Enhance access to central Reading – reducing congestion, unnecessary car journeys and encouraging more sustainable modes of travel; ▪ Improve access to schools - journeys to school represent considerable potential for reducing congestion, as well as having health implications and impact on lifelong travel habits. ▪ Improve access to local centres for pedestrians, cyclists and public transport users
Tackling Congestion Encouraging bus use, cycling, walking and travel by other sustainable modes to reduce the growth of congestion on Reading's transport network contributes to enhancing the environment by reducing transport-related noise and air pollution.		
Bus Strategy*	✓	▪ Improve the quality of bus services in Reading; ▪ Improve access to bus and rail services ▪ Promote the use of alternative fuels in public transport and public service vehicles; ▪ Improve interchange facilities between all modes of travel.
Rail	✓	▪ Enhancing rail services ▪ Improve track approaches and capacity at Reading Station; ▪ Improve the facilities at Reading

		Station; ▪ Encourage the provision of appropriate additional rail services; ▪ Increase the level of supporting facilities for public transport; ▪ Improve the quality and accessibility of information available to public transport users in Reading;
Interchange Strategy* and Bus / Rail Partnerships		o Continue to work on improving interchanges and building on improvements made to date
Cycling*	✓✓	▪ To improve the cycling environment; ▪ To provide better facilities; ▪ To influence travel behavior; and ▪ To develop skills and capacity. The cycling policies and schemes aim to deliver better outcomes for congestion and pollution
Walking Strategy*	✓✓	▪ Make conditions more safe, convenient, attractive and pleasurable for pedestrians; ▪ Decrease the use of the car for short trips, and encourage walking as a viable alternative; ▪ Decrease the difficulties encountered by walkers (real and perceived) and reduce conflicts with other road users; ▪ Present and promote benefits of walking to both the individual and to the community as a whole.
Community & Voluntary Transport	✓✓	Co-ordinate the delivery of schools, social services and voluntary sector transport, to make the best use of the available resources for specialist transport provision;
Taxis and Private Hire	✓	RBC continues to work with the Safer Reading campaign on initiatives to encourage safe use of taxis and private hire cars.
Powered Two Wheelers	✓	Reading's policies on PTWs principally relate to road safety. The LTP recognizes that PTWs have the potential to deliver reductions in congestion when used as a substitute to the car, occupying less road space and being permitted to use selected bus lanes in Reading where it is safe to do so.
Mobility Management*	✓	▪ To encourage a change of attitude and behaviour, at both an individual and corporate level, that results in greater use of sustainable transport modes and

		reduced levels of car use; ▪ To improve sustainable access for everyone by improving conditions for sustainable modes of transport; ▪ To satisfy mobility needs via a more efficient and integrated use of transport and land use infrastructure; ▪ To improve the quality and accessibility of information for bus users, cyclists and pedestrians; ▪ To increase the economic efficiency of the transport network.
Journey to school strategy	✓	▪ To work in partnership with schools, helping them to introduce travel plans to promote travel awareness and encourage a shift to more sustainable modes of transport.
Travel Information & Marketing Strategy*	✓	▪ To consult and promote to all residents and stakeholders the short and long term transport strategy for Reading; ▪ To facilitate and promote smarter travel choices for all transport users and all modes across the network; ▪ To improve the quality and accessibility of information available to public transport users, car and delivery drivers, pedestrians and cyclists in Reading; ▪ To provide comprehensive real-time information and static information to complement one another.
Managing Transport Demand – This part of our strategy focuses on tackling congestion through demand management measures		
Parking Strategy* and Enforcement	✓✓	▪ An agreed maximum number of public parking spaces in the town centre (including on-street parting); ▪ Promotion of Park and Ride ▪ Pricing of town centre parking to reflect availability of alternatives ▪ Improved management and enforcement of on-street parking; ▪ Accommodation of seasonal peaks in demand.
Sustainable Distribution	✓✓	We continue to develop proposals to improve sustainable distribution through a number of strategies such as the Intelligent Transport Systems Strategy

Network Management - The Network Manager will co-ordinate existing functions that have an impact on traffic flow: • Traffic management and regulation • Civil parking enforcement; • Liaison with promoters of special events (festivals etc); • Seasonal strategy development (especially in the run-up to Christmas).		
Intelligent Transport Systems Strategy*	✓✓	• To improve the operation, safety, efficiency and effectiveness of the local transport network; • To support other local transport policies aimed at encouraging a shift from private to sustainable modes of travel; • To improve the quality and reliability of travel information; • To improve conditions for pedestrians and cyclists; • To identify and allocate funding for investment in transport schemes.
Safer Roads		
Road Safety Strategy*	✓	
Local Safety Schemes and Safer Routes to School	✓	
Local Area Enhancements and Home Zones	✓✓	Key elements are the development of local area walking and cycling networks, and enhanced and accessible local public transport services. These initiatives are being focused through the Action Plans in the Accessibility Strategy.
Signing	✓	RBC is continuing to review all signing in the Reading area with the aim of making Reading a fully legible town.
Maintenance Plan	✓	Bridge and highways maintenance

6.3 Infrastructure projects

6.3.1 At the heart of the area wide approach and the area action plans are core infrastructure projects summarized as follows:

- **Cow Lane Bridges** – a major constraint to the west of the town centre will be removed to allow use of this strategic route for public transport and freight, provide safe pedestrian and cycle links, and a segregated Mass Rapid Transport (MRT) corridor;

- **Green Park Station and Multi Modal Interchange** – a new railway station will be built on the Basingstoke – Reading line reducing congestion and improving accessibility to major employment sites and future housing in south Reading;

- **M4 Junction 11 Improvements** – the main junction serving Reading from the M4 motorway and the south has begun its upgraded to

provide segregated pedestrian, cycle and public transport links, and a managed solution to traffic congestion.

- **Park & Ride** – a series of new Park & Ride sites and local transport interchanges will be provided on the main approaches to Reading as part of an integrated network management plan to reduce congestion and improve accessibility. The objectives are to
  - Provide transfer services that have priority over the private car;
  - Support the planned bus-based rapid transit network, providing interchange locations and benefiting from the high quality services

- **Quality Bus Corridors / Mass Rapid Transit** – high quality public transport connections will be provided between main travel generators and Park & Ride sites, reducing congestion and improving accessibility, linking to a subregional Thames Valley system.

- **Reading Station Interchange** – track and platform capacity will be increased to reduce this significant bottleneck on the national rail network;

- **Third Thames Crossing** – options for an additional crossing of the Thames will be developed to provide alternatives for north-south movement across the river.

6.4 Strategic Environmental Assessment (SEA) of LTP

6.4.1 The SEA was undertaken to ensure that environmental considerations have been integrated in the preparation and adoption of the LTP. The SEA assesses the plan and it's alternatives against agreed environmental objectives. Existing planning policy and documents have been incorporated and updated as appropriate, including RBC's updating and screening AQ assessment.

6.4.2 The objectives, which are used in the SEA against which to measure the effect of the LTP, included 'reduce the negative impacts of transport on air quality'.

6.4.3 The SEA assessed that measures included in 'Quality Travel for Reading' are aimed at reducing the impact of congestion on our transport network, where most of the air quality 'hotspots' are located. Easing congestion would be expected to result in improvements to local air quality in the area as well as resulting in a potential reduction in CO_2 emissions if measures to reduce vehicle kilometres traveled are successful.

6.4.4 The main air quality benefit of the Mass Rapid Transport (MRT) as a high quality public transport system is that it aims to reduce car use as people are more likely to transfer to public transport alternatives.

In addition the MRT vehicles will use low emission engines. The provision of Park & Ride sites also aims to bring about a modal shift and may also result in air quality benefits in terms of CO_2 emissions and local air quality. It should however be noted that P&R would require careful siting and an awareness of the potential for introducing air quality problems to new areas.

6.4.5 The SEA assessed that impacts of the J11 proposal on air quality (NO_2 and PM_{10}) and CO_2 emissions are likely to be insignificant although congestion is expected to be relieved during peak periods.

6.4.6 The Reading Station improvement scheme is likely to have an effect on local air quality if trains are idle for shorter periods in the vicinity of sensitive receptors, but it is unlikely to result in a significant impact on CO_2 emissions.

6.4.7 The Third Thames Crossing is likely to result in the most beneficial impact on air quality of all the major schemes considered in LTP. This proposal was suggested and discussed at length in the air quality and climate change workshops. Through-traffic is expected to reduce in existing areas of poor air quality and the scheme offers an opportunity to dedicate one of the existing bridges to buses, cycling and walking.

6.4.8 There may be a short-term adverse impact on air quality (primarily dust) during construction of the major schemes however this should be mitigated by good practice on site, as is the case for all types of major infrastructure construction. A separate action plan measure to address construction site dust is proposed in section 8.4.

6.4.9 Progress on achieving the environmental objectives will be monitored and reported within future LTP Delivery Reports and AQAP progress reports.

6.4.10 The Council published a new cycling strategy for Reading in October 2008. The strategy forms part of the overall transport strategy for Reading set out in the Local Transport Plan 2006-2011.

6.4.11 Responses to the climate change and air quality consultation indicated that giving non-car transport a higher perceived priority would encourage people to walk and cycle more. Key areas highlighted as being desirable included higher priority at junctions (especially for cycles on mixed use footpaths), provision of more properly separated cycle paths, well managed and well publicised network of foot and cycle routes and the provision of more secure cycle parking in the town centre and station; and the use of green spaces to form pleasant non-motorised corridors. These issues and other consultation comments have been considered in the new strategy.

6.4.12 One of the Cycling Strategy targets that relates to the aim of the Air Quality Action Plan by reducing pollution is that to increase the mode share of cyclists entering the town centre from 3.4% (2007 cordon count) to 5% by 2011.

Air Pollution Transport Measures (APTM)

APTM1
We will continue to progress the core infrastructure projects detailed in and arising from the Local Transport Plan 2006-2011, specifically

- Cow Lane Bridges
- Green Park Station and Multi Modal Interchange
- M4 Junction 11 improvements
- Park and Ride
- Quality bus corridors/Mass Rapid Transit
- Reading Station Upgrade
- Third Thames Crossing
- Oxford Road relief road

APTM2
We will continue to implement the strategic themes of "Quality Travel for Reading" including the new cycling strategy and monitor for the increase of cyclists to 5% by 2011.

6.5 Transport Planning Policy

6.5.1 The transport policies are supported by a wide range of planning policies, either saved from the Local Plan or introduced in the Local Development framework. The action plan measures relating to land use planning are discussed in chapter 8, but the action plan has been developed in the context of the following policies:

- Policy TRN1: A Balanced Transport Strategy

'The borough council will…ensure that a balanced transport strategy is implemented which seeks to restrict the growth of car usage and to make alternatives to the use of private cars such as public transport, cycling and walking attractive, particularly in congested conditions.'

- Policy TRN2: Bus Priority and Interchange

'The borough council will …help achieve a network of effective bus priority routes throughout the borough and efficient links with other forms of transport.'

- Policy TRN3: Park and Ride

'The borough council will assist in the development of Park and Ride schemes'

- Policy TRN4: Cycle Routes

'The borough council will. …promote the provision of a network of cycle routes throughout the borough. It will encourage the provision of facilities for cyclists as part of major developments.'

- Policy TRN5: Cycle Parking

'The borough council will require that an adequate number of appropriately positioned parking places shall be provided for cyclists.'

- Policy TRN6: Pedestrians

'The borough council will. …promote the provision of a safe and attractive network of pedestrian routes throughout the borough. It will seek to ensure that new pedestrian routes are provided through development and will resist development which causes inconvenience or danger to pedestrians.

- Policy TRN7: Rail Travel

'The borough council will promote the use of rail travel as part of a balanced transport strategy. It will encourage development to be directed to locations where rail travel and transport are attractive options and will look for opportunities to improve facilities for rail travellers.'

- Policy TRN8: Major Highway Schemes and Associated Works

'The borough council will seek to ensure that any major highway scheme implemented is instrumental in achieving substantial environmental benefits and/or improvements in public transport services.'

- Policy TRN10: Provision of Car Parking

'The council considers that the total parking stock within the town centre should not exceed its current level and will not normally support proposals which involve the substantial expansion of car parking in the town centre.'

APTM3
We will continue to use the planning processes to ensure that whilst encouraging the economic development of Reading this remains sustainable and within a balanced transport strategy.

6.6 Green Fleets, Work Travel Plans & School Travel Plans

6.6.1 The Council intends to lead by example in reducing our own contribution to air pollution. The Borough Council published a Staff Travel Plan in March 2008 and is currently considering the recommendations of a green fleet review, while also going through a fleet procurement process. Staff car parking is already limited with 63% traveling to work by public transport, bicycle or on foot (October 2007). The Council is looking at replacing 90% of the 173 vehicles owned to euro4 standard or better by December 2010. We are also exploring new ways of working and more flexible work options to reduce staff travel further.

6.6.2 The climate change strategy specified the following actions linking climate change and air quality and tackling the council's own fleet emissions:

- Commission and implement a 'Green Fleet Review' with the help of the Energy Saving Trust.
- Monitor fleet fuel usage as accurately as possible using an appropriate fuel management system.
- Review vehicle procurement and set high environmental standards in the contract specification, meeting European legislation as a minimum standard and exceeding it where practical to do so.
- Set up Green Fleet Officer group, with clear remit to reduce costs and environmental impact from fleet operations.
- Achieve 10% – 20% reduction in CO2 equivalent emissions of RBC fleet use from 2005/6 baseline by 2013.

6.6.3 We also encourage the development of green travel plans for the many businesses in and around Reading as part of the planning process. 49 travel plans were secured in this way throughout the first Local Transport Plan 2001-06 period (indicator B6). We are also currently working closely with 8 large employers who are developing Workplace Health Plans through the "Healthy Workplace Challenge"

initiative and for which traveling to work by cycling and walking are a key feature (see below). With 12058 businesses within Reading we would aim to build on the 1.5% uptake of business travel plans so far.

6.6.4 We are working closely with schools across Reading to introduce "School Travel plans" which are aimed at encouraging staff and pupils to walk, cycle and use public transport on their journey to school. The plans are tailored to each school and include initiatives such as the provision of secure cycle parking facilities and also participation in cycle training and/or walking buses schemes. To date, 46 schools out of 62 schools within Reading have completed travel plans and we are aiming to meet the Department for Education and Skills and the Department for Transport National target for all schools to have these by 2010.

6.7 Encouraging non-motorised travel

6.7.1 An important part of the LTP, Climate Change Strategy and this action plan is to encourage non-motorised forms of transport. Walking and cycling in particular have additional benefits of improving health through physical exercise, increasing fitness and reducing obesity, and risk of heart disease. The Sport Reading Partnership is involved in a number of comprehensive walking, cycling and workplace health initiatives and through this we will continue to support Reading employers to improve the health and wellbeing of their workforce, and encourage Reading residents to be more physically active before, during and after work.

6.8 In town without my car day

6.8.1 Reading supported "In town without my car day" (Car free day) for the first time in 2007 and have continued to support the day in subsequent years. The event is run by partners including the Sport Reading Partnership as well as the Transport, Sustainability, Environmental Protection and Reading Buses whom in 2008 provided discounted fares.

6.8.2 The day is a great opportunity for promoting alternatives to using the car to travel around Reading, and ongoing support of it is proposed as part of this action plan.

6.9 BikeWeek

6.9.1 The Council continues to support this annual event in June with our partners. BikeWeek 2008 was led by the CTC (Cyclists Touring Club) Community Cycling Development Officer. This post is jointly funded by the Big Lottery Fund and the Council's Sport Reading and Transport teams, and the remit is to increase participation in cycling for adults. We look forward to future BikeWeeks and having the support of the Community Cycling Development Officer to see the week and its objectives succeed.

6.10 Forbury Fever

6.10.1 Forbury fever is a local one-day environmental event that is linked to World Environment Day, staged at Forbury gardens in the town centre at the end of May/beginning of June. The event is held with the support of numerous stakeholders and is themed each year. We will continue to support this event, giving information about air quality and the ways in which local residents can contribute to reducing air pollution and carbon emissions.

6.11 Reading Buses

6.11.1 Reading Buses is a Reading Borough Council subsidiary company. Working together we will continue to set high standards for the procurement of modern, fuel efficient vehicles. In appropriate Reading Buses vehicles a 5% sustainably sourced biodiesel mix has been used since 2006. The aim is to reduce greenhouse gas and emissions that impact on air quality per passenger kilometer, setting targets for emissions reduction.

6.11.2 In May 2008 the entire No 17 bus fleet was replaced with a fleet of 14 buses run on bioethanol (sourced from Norfolk sugar beet). It is hoped that these will reduce particulate emissions as well as keeping the carbon footprint of the fuel as small as possible as its tailpipe carbon emission is 80 per cent lower than a diesel bus. Further work is being undertaken to improve Reading's bus fleet by replacing the older more polluting models.

6.11.3 An Air Quality Monitoring Station (AQMS) has been installed on Oxford Road to monitor the impact of this service on air quality in the area, to complement the AQMS at the other end of the route on Kings Road.

6.11.4 As part of the Local Transport Plan Progress Report Reading is also set to increase the annual figure for bus boardings within RBC by 20% in the year 2010/11. With a baseline figure set in 2003/04 of 16,644,746 this makes the projected figure for the year 2010/11 an increase to 19,973,695. These figures will be monitored by bus boarding's using agreed methodology with the Department of Transport.

APTM4
We will continue to lead by example in reducing our own emissions of air pollutants and finding innovative ways to reduce our impact on the environment.

APTM5
We will reduce greenhouse gas and air quality impacting emissions from RBC fleet use, setting targets for emissions reduction, and linking these to other strategic targets (e.g. Local Area Agreement) where appropriate. This will involve replacing 90% of the 173 fleet vehicles with Euro 4 rating or better by the end of 2009.

APTM6
We will continue to work with local businesses and schools to assist them in reducing their environmental impact through green/school travel plans and other measures. We will ensure all 62 schools within Reading meet the National Target for School Travel plans by 2010.

APTM7
We will continue to work with Reading buses to reduce air quality impacting and greenhouse gas emissions per passenger kilometer from Reading buses fleet use, setting targets for emissions reduction.

APTM8
We will continue to support 'In town without my car day' and other environmental awareness/sustainable travel events to promote more sustainable travel and air quality information

6.12 Hackney Carriages and Licensed Drivers

6.12.1 Reading has approaching 200 licensed Hackney Carriages ("Black Cabs") and around 450 licensed private hire cars. Many of the Hackney Carriage vehicles are several years old. The further assessment was limited in assessing the impact of licensed vehicles on air quality due to the lack of detailed information recorded on the engine details of the current fleet. Anybody currently eligible for a new Hackney Carriage licence must buy a brand new vehicle and the 50 vehicles licensed in 2008 have all been TX4s, which are Euro IV. It is proposed that through the use of licensing powers and a green fleet review, changes will be made to licence conditions to phase out older vehicles and encourage a cleaner, low emission fleet.

APTM10
We will introduce new licence conditions in 2009 to improve emissions and produce a cleaner fleet of licensed vehicles.

6.13 Freight and HGVs

6.13.1 The further assessment has shown that the greatest contribution to NO_2 emissions in the majority of our AQMAs relates to freight/HGV emissions.

6.13.2 Tackling HGV emissions would have a significant impact on air quality in the AQMAs, however, this is an area where a great deal of resources will need to be focused in order to move forward. To begin this work we will work with the Reading UK CIC and Connect Reading Partnership and other economic partnerships to develop solutions to reduce the impact of goods vehicles.

APTM 11
We will encourage local businesses to reduce their greenhouse gas and air quality emissions and prepare for climate change. We will work with Reading UK CIC, Connect Reading, key businesses and business organisations to develop practical local actions.

APTM12
We will investigate mechanisms to reduce the impact of HGVs on local air quality in Reading, producing a report with recommendations within 18 months of the publication of this action plan.

7. Measures relating to other sources

7.1 Reading Festival

7.1.1 In September 2006 Reading BC installed a continuous monitoring station at Caversham Bridge in Reading. The station records levels of nitrogen dioxide and particulates at this busy roadside location, which is also close to the site of the annual Reading Festival – a music festival which attracts around 80,000 people each year. Reading Festival is a 3-day music event, although festival goers arrive at the campsite up to two days before it starts. Management of the event has improved year on year, but the Council receives complaints each year about various issues including the smell from the campfires from the campsites.

7.1.2 In 2007 with the new air quality monitoring station it was the first time that we were able to measure the effects on air quality from the campfires. The graph below (figure 8) shows the PM_{10} levels (hourly) measured before, during and after the 2007 event.

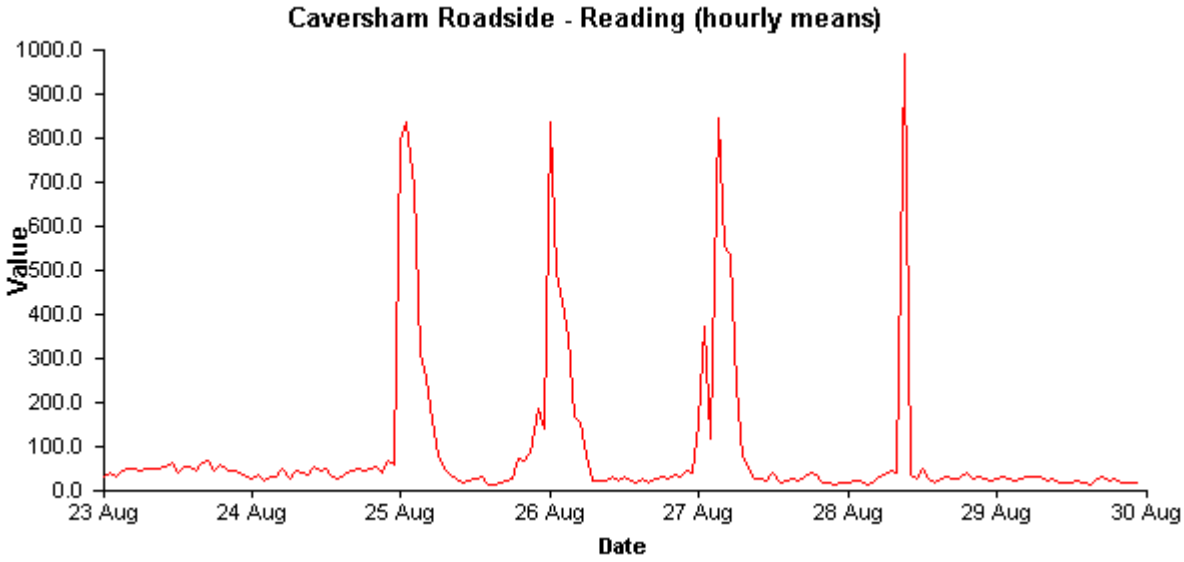

Figure 8; Hourly mean concentrations of PM_{10} during Reading Festival

7.1.3 The weather conditions in 2007 were thought to have contributed to these high levels, with temperature inversions each evening preventing dispersal of particulates and subjectively a smog/fog effect was noticed from 10 pm until 3-4 am each night of the event.

7.1.4 The 24 hour mean Air Quality Objective (AQO) for PM_{10} is 50μgm^{-3} and this must not be exceeded more than 35 times in a calendar year. In 2007 this AQO was met, however the 50μgm^{-3} daily mean was exceeded 19 times, with 4 of these due to the Reading Festival (3 of which were between 105 and 140μgm^{-3}).

7.1.5 As a result of this we are working with the festival organisers, Festival Republic, to reduce the impact of festival fires on air quality in Reading. For 2008 Festival Republic are introducing a range of measures to reduce the number of fires and their air quality impact. The Environmental Protection team will review these measures and the monitoring results in 2008. Should further action need to be taken the Council will consider the powers under the Licensing Act 2003 licensing objective "Prevention of Public Nuisance" to control smoke nuisance from the event and therefore reduce the impact on air quality.

Air Pollution Other Sources (APOS)

APOS1
The council will continue to work with Festival Republic (Reading Festival) to reduce the impact and/or numbers of campfires during the Reading Festival on air quality in Reading.

7.2 Home Energy Use (smoke control areas, home insulation)

7.2.1 Most of the Reading area has been declared a smoke control area under the provisions of the Clean Air Acts. However, much of the housing stock in Reading is late 19th/early 20th century with open fireplaces, and it is possible that many people are using the original fireplaces but not using authorised fuels. Officers have noted a number of shops offering non-authorised fuels and wood for sale in recent months. More subjectively the smell of solid fuels being burned has been noticed on cold evenings. This issue was raised at one of the workshops as part of the consultation exercise. A campaign to raise awareness of the smoke control areas, and the environmental effects of burning solid fuels is proposed to address this issue, which will also help to reduce domestic CO_2 emissions.

7.2.3 We will work with the United Sustainable Energy Agency, Energy Saving Partnership, and other partners as appropriate as part of the climate change strategy and the Heat Seekers Scheme to give householders easy access to discounted or (in the case of those on certain qualifying benefits) free loft and cavity wall insulation and ensure that residents have easy access to advice on energy efficiency and funding opportunities that arise for energy saving measures. Although these measures are designed to have the greatest effect on reducing household energy use and thereby CO_2 emissions, they will also have an impact on reducing NOx emissions from home energy sources, and therefore provide a benefit to air quality as well.

APOS2
Subject to available funding we will carry out an awareness raising campaign related to Reading's smoke control areas including advice to stores selling non authorised fuels.

APOS3
We will work with British Gas and Thames Valley Energy Centre to give Reading householders easy access to discounted or free home insulation and free energy efficiency advice.

8. Measures relating to Land Use Planning

8.1 Background

8.1.1 In 2004, changes to the system of preparing development plans were introduced in the Planning and Compulsory Purchase Act 2004. Among a number of other changes, Local Plans were replaced by Local Development Frameworks (LDF). Whilst the Local Plans were generally single documents containing the planning policies for a local authority area, a Local Development Framework can be thought of as a 'folder' of various planning policy documents.

8.1.2 The Council adopted our Statement of Community Involvement in July 2006 and our Core Strategy in January 2008. Work is underway on the Reading Central Area Action Plan, a Development Management Document and a Site Allocations Document.

8.1.3 The Core Strategy forms the most important planning document in Reading's Local Development Framework. It sets out the overall planning strategy and broad principles for development in Reading. All other planning documents that are part of the LDF need to conform with the Core Strategy. The document has 'development plan' status, which means that it will be one of the main considerations in deciding planning applications within the central area.

8.1.4 There are a number of objectives and policies within the LDF that relate to air quality and climate change. The Environmental Protection background paper to the core strategy highlighted that there are pockets of poor air quality within Reading caused by vehicle emissions, and states that it is therefore important to "…ensure that future development does not result in any futher deterioration of air…quality and where possible, results in an improvement in overall quality…"

8.1.5 The "Living within Environmental Limits" (Environmental Objectives) of the Core Strategy include: "…Minimise air, water, soil/ground and noise pollution and address the factors that contribute to climate change, recognising the heightened knowledge of climate change related impacts…"

8.1.6 While the "Ensuring a Strong, Healthy and Just Society" (Social and Economic Objectives) include: "…Reduce the need for travel and transport particularly by car or lorry while providing good physical access for all to services, facilities and other people…"

8.1.7 Policy CS 34 of the local development Framework Core Strategy states that: "development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution… Proposals for development that are sensitive to the

effects of air, noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution…"

"Planning permission will not normally be granted for major development proposals unless there is a commitment to implement measures to promote and improve sustainable transport facilities, such as through provision to encourage walking, cycling and the use of public transport and through agreed travel plans, safe routes to school and parks and similar measures".

8.1.8 Additionally, environmental impacts including air quality impacts from major developments are addressed. The LDF core strategy states that
"Major developments should be located in areas of high accessibility where it does least harm to the environment and delivers most benefit to the wider community".

8.1.9 Policy CS 4 of the core strategy states that "sites will be assessed in terms of their level of accessibility to a defined district or local centre with a good range of facilities by pedestrian routes, and to a bus stop served by a strategic bus service".

8.1.10 In addition to the LDF documents above, there is also the forthcoming Development Management Document that will include a more detailed policy relating to the environment and pollution.

8.2 Air Quality Assessments

8.2.1 With the support of these policies, and having regard to Environmental Protection UK (formerly National Society for Clean Air) guidance, all planning applications within or adjacent to an AQMA, or which would be expected to have a potential adverse effect on air quality, are required to submit an air quality assessment.

8.2.3 The Environmental Protection team will assess planning applications in respect of air quality to determine whether:

- The development will have an impact on air quality
- The development will bring new receptors to an area of poor air quality.

8.2.4 Developers need to have regard to ensuring that adequate ventilation is provided where mitigation against poor air quality is implemented, particularly in respect of rapid ventilation in hot weather. We would not normally encourage the use of mechanical ventilation but where this may be required for air quality reasons the most energy efficient

measures should be used, and the developers may be expected to off-set carbon emissions in other areas of the development.

Air Pollution Development Control (APDC)

APDC1
We will ensure through the planning process that future development does not result in any futher deterioration of air quality and where possible, results in an improvement in overall environmental quality.

APDC2
We will use planning processes to

- minimise environmental impacts from major new developments
- ensure that major development should not result in increased emissions that contribute to air quality and climate change problems.
- locate major development in areas that are highly accessible by sustainable modes of transport in order to reduce the number of car journeys that need to be made within the Borough

8.3 Use of section 106 agreements

8.3.1 The Council is currently developing an supplementary planning document relating to section 106 of the Town and Country Planning Act.

8.3.2 Annex 1 to PPS 23 makes it clear that in certain circumstances it can be appropriate to enter into a planning obligation under s106 of the Town and Country Planning Act. Properly used section 106 agreements can improve air quality and make other environmental improvements before a development goes ahead, or offset the subsequent environmental impact of a proposed development. Planning obligations should be relevant to planning in land use terms and directly related to the proposed development if they are to influence a decision on a planning application.

8.3.3 The guidance states that the following measures may be considered for section 106 agreements:

- Limiting car parking, car-free developments, supporting public transport, other transport infrastructure such as walking and cycling routes/paths
- The purchase, installation, operation and maintenance of air quality monitoring equipment or provision of other assistance or support to enable authorities to implement any necessary monitoring or other actions in pursuit of an Air Quality Action Plan.

8.3.4 Section 106 agreements are already used extensively and have secured provision of green travel plans, cycling provision and car clubs among other measures. Using a combination of planning conditions and section 106 agreements we have secured actions such as:

- A bus service for Kennet Island (which started in April 2008)
- A car club scheme at Kennet Island
- Bus services for GreenPark and Reading International Business Park are supported by those developments via S106 agreements.
- Kenavon Drive development will have a bus service and each home will be given a bicycle by the developer
- Battle Hospital site has a residential travel plan (each house being given an information pack)
- Various upgrades to pedestrian facilities, cycle facilities new bus stops/shelters as and when we can achieve these.

8.3.5 We will seek to extend this to include air quality monitoring and implementations of actions within this action plan.

APDC3
We will continue to seek financial contributions for improving air quality, air quality monitoring and in pursuit of the implementation of this action plan in line with PPS 23.

8.4 Construction site dust & bonfire control

8.4.1 There is a significant potential for particulate emissions from construction sites, during demolition, earthworks and construction phases of development. There is currently no statutory guidance or national codes of practice in relation to controlling particulate emissions from construction sites, although the London Authorities have produced a locally agreed code of practice for construction. Reading Borough Council has applied planning conditions requiring a construction method statement detailing methods of dust and particulate control for some time. However, methods and levels of effectiveness can vary from site to site.

8.4.2 We will work with local developers and construction companies to develop a local protocol for dust and particle control, including a restriction on bonfires.

APDC4
We will work with local developers and construction companies to develop a local code of practice for dust and particle control, including a restriction on bonfires.

9. Other measures

9.1 Background

9.1.1 A number of measures have also been identified that, while not directly reducing emissions of air pollutants will raise awareness of air quality issues or reduce exposure to poor air quality and its effects.

9.2 SMS Alerts

9.2.1 During the consultation exercise, a significant number of respondents mentioned the effects of pollution on asthma as a concern. Over two thirds of people knew somebody whose health had been affected by the environment, and from the open question, this was predominantly related to asthma. A third of the workshop responses to the question "What is the first thing you think of, about air quality" specifically mentioned health effects, particularly asthma. The percentage of the GP registered population with asthma is 6.3% in the Berkshire West PCT area (Reading, Wokingham and West Berkshire) compared to 5.8% nationally.

9.2.2 There are currently two schemes in the South of England that seek to address the effects of air pollution on respiratory health; AirText (London Authorities and Slough BC) and airALERT (Sussex Air Quality Partnership). The aim of both schemes is to send SMS messages to members of the public who have joined the scheme to let them know when air pollution levels are forecast to be higher and advise on what action they should take.

9.2.3 This differs from the air quality alerts given on news/weather programmes and websites as it is proactive, the alert is sent **before** the onset of the pollution episode, targeted to sensitive populations and gives advice to the recipient that is relevant to their health condition. For example, Asthma UK estimate that over 80% of asthma sufferers find that air pollution makes their asthma symptoms worse, therefore patients carrying their medication with them during pollution periods can help to reduce the impacts on their health. Alternatively, during hot summer weather when ozone levels can be elevated in the afternoon, they may be able to plan their day to carry out activities such as exercise earlier in the day when pollution levels may be lower.

9.2.4 Patients and carers using the Sussex AQ partnership airALERT scheme reported that the scheme gave them peace of mind, helped them to make choices and manage their own health and know whether pollution induced attacks for them personally.

9.2.5 Asthma in particular has a short time lag response to environmental changes of, 1-24 hours, and so the airALERT scheme forecasts levels for the next day or the weekend, which are delivered daily direct to

the patient. Other lung conditions such as chronic obstructive pulmonary disease react with a time lag of up to a week to triggers such as cold snaps, but awareness in advance can allow patients to plan for periods where they may need to take additional measures to manage their condition.

9.2.6 The scheme however, relies on uptake by patients and health providers (PCT, GP surgeries, asthma nurses, schools etc.) therefore we propose to undertake a study into the feasibility of a similar scheme for Reading, taking into consideration the level of support from health care providers and patients.

Air Pollution Other Measures (APOM)

APOM1a
We will carry out a feasibility study into introducing a scheme to alert vulnerable members of the Reading community when air pollution episodes are forecast and advising them on possible appropriate action to take. The study will consider the number of pollution events (moderate or higher for particulates, ozone and nitrogen dioxide) in Reading from previous years monitoring, likely support from the PCT and healthcare providers and support from patients who would want to receive the alerts. The study will be undertaken with a view to introducing a scheme in 2009 provided adequate support and funding is identified.

APOM1b
In partnership with the Climate Change Strategy we will also consider the feasibility of "cold snap" and "heatwave" forecasting for people with conditions affected by extremes of weather within this study.

9.3 Air quality monitoring programme

9.3.1 Consultation responses indicated that many respondents did not know what Reading Borough Council is doing to monitor air quality.

9.3.2 Reading BC has carried out a significant expansion of our air quality monitoring programme over the past 4 years. Since 2004 when we had 20 diffusion tubes, and the Defra owned "AURN" station at the cemetery, we now have almost 60 diffusion tube sites and 3 roadside monitoring stations each monitoring NO2 and PM10[6]

[6] PM10 at the roadside sites is measured using a Beta Attenuating Mass Oscillator (BAM) while the AURN uses a TEOM with FDMS.

9.3.3 This progress is set to continue, subject to funding being available, with plans for monitoring along the railway lines to assess the impacts of rail traffic on local air quality, as well as examination of air quality outside the train station at the bus and taxi rank. As already discussed in section 8.3 we are also seeking that developments taking place inside or adjacent to our AQMAs will need to make relevant s106 contributions towards air quality monitoring schemes within the AQMAs.

APOM2
We will install further continuous monitoring stations at key locations within our AQMAs or to monitor the resultant effects on air quality where new projects are proposed, where funding is available i.e. through Defra grants, s106 funding or other funding.

9.4 Reading BC website information

9.4.1 Since 2007 we have vastly improved the information about air quality made available to the public on the council website. Supported by the Environmental Research Group at Kings College, London, we now have twice-daily polling of all our continuous monitoring stations so that local residents can check on the latest pollution bulletins close to them. These bulletins are combined with air pollution forecasting across the south to give the current up to date pollution index for the time of day. All air quality data and statistics are available so that comparison with the air quality objectives can be made, and students, consultants and local residents can access local air quality data.

9.4.2 However, the consultation responses indicated that more needs to be done to ensure that local residents are aware that this information is available and how to access it and understand it. The most common response to the questionnaires (around 25%) was that respondents did not know what the council was doing, or thought that the council was doing nothing to tackle air quality and climate change. An additional 13% were not sure what the council was doing or thought that we were doing little or not enough.

9.4.3 The consultation also asked what would help respondents do more about air quality and climate change, and the responses indicated that better information was key. For example, information on

- Why people should act
- What they could do
- What the benefits would be
- What others were doing

9.4.4 Although the request for information can be a standard response which justifies individuals current behaviour, we are keen to improve the quality and flow of information to help people make informed decisions. We will therefore review how information is made available on the website, and also promote these web pages more widely.

APOM3
We will continue to expand and improve air quality data on the RBC website to improve the accessibility of information.

APOM4
We will add information relevant to the school curriculum on the website so that local information is available for school and college science activities.

APOM5
We will make air quality information easier to find on the website and use opportunities such as "In town without my car day" and "Forbury Fever" to raise awareness of the availability of air quality & climate change information on the council website.

9.5 Climate Change and Air Quality

9.5.1 The links between Air Quality and Climate Change have been a significant focus within the development of this action plan. Whilst we recognise the links between these two issues we also recognise that there are actions that can be taken to benefit one issue that would cause a negative impact for the other.

9.5.2 The consultation on the Air Quality Action Plan took place jointly with the consultation on the climate change strategy. Over 84% of respondents felt that improved air quality and climate change adaptation and mitigation should be either "top" or "high" priorities for Reading Borough Council. However, reducing contributions to climate change was seen as the higher priority.

9.5.3 We will work to ensure that measures to address local air quality do not conflict with climate change actions, by considering the interlinked causal factors, identifying conflicts and promoting mutually beneficial solutions. To achieve this we will

- Link the development of the action plans for air quality and climate change.
- Link consultations and communications on air quality and climate change.

- Give preference to solutions for reducing air pollutant emissions that also reduce contributions to climate change.

APOM6
We will ensure that measures to address local air quality do not conflict with climate change actions, by considering the interlinked causal factors, identifying conflicts and promoting mutually beneficial solutions.

10 Future Proposals and Statements of Intent.

10.1 Targets and key Performance Indicators (PI) have been set out where possible within each section of this Action Plan. It is the intention of RBC to employ an Air Quality Officer in 2009 to further the action plan and to commit to identifying further targets and PI's for all other aims of the action plan. This will clearly focus action and performance success towards meeting the overall aims of RBC's Action Plan.

10.2 The aims of the action plan are deemed sufficient to work towards achieving the air quality objective within the AQMAs by 2015. 2015 is an appropriate timescale because the 2008 EU Air Quality Directive (2008/50/EC) permits deferring the achievement of the EU limit value for NO_2 until 2015 subject to certain requirements. It also takes into account the time required to implement significant changes in traffic levels.

Air Pollution Measures Table

REF	MEASURE	LEAD	AQ IMPACT	AQMA IMPACTED	NON AQ IMPACT	COST	TIMESCALE
APTM1	We will continue to implement the core infrastructure projects detailed in and arising from the Local Transport Plan 2006-2011, subject to the findings of the independent transport commission, specifically o Cow Lane Bridges o Green Park Station and Multi Modal Interchange o M4 Junction 11 improvements o Park and Ride o Quality bus corridors/Mass Rapid Transit o Reading Station Upgrade o Third Thames Crossing o Oxford Road relief road	Transport	✓✓	Boroughwide	Improvements in noise and climate change emissions	High, funded through LTP process	2006-2011
APTM2	We will continue to implement the strategic themes of "Quality Travel for Reading" including the new cycling strategy.	Transport	✓✓	Boroughwide	Improvements in noise and climate change emissions, improved facilities for pedestrians, cyclists and users of public transport	High, funded through LTP process	2006-2011
APTM3	We will continue to use the planning processes to ensure that whilst encouraging the economic development of Reading this remains sustainable and within a balanced transport strategy.	Planning, Transport and Env Protection	✓✓✓	Boroughwide	Improvements in noise and climate change emissions, improved facilities for pedestrians, cyclists and users of public transport	Low	Ongoing

APTM4	We will continue to lead by example in reducing our own emissions of air pollutants and finding innovative ways to reduce our impact on the environment.	Sustainability	✓	Boroughwide	Improvements in climate change emissions and savings to council	Med	Ongoing
APTM5	We will reduce greenhouse gas and air quality impacting emissions from RBC fleet use, setting targets for emissions reduction, and linking these to other strategic targets (e.g. Local Area Agreement) where appropriate.	Sustainability	✓	Boroughwide	Improvements in climate change emissions and savings to council	Med	Ongoing
APTM6	We will continue to work with local businesses to assist them in reducing their environmental impact through Travel Plans/School Travel Plans and other measures.	Transport/ sustainability	✓✓	Boroughwide	Improvements in climate change emissions	Med	Ongoing
APTM7	We will continue to work with Reading buses to reduce air quality impacting and greenhouse gas emissions per passenger kilometer from Reading buses fleet use, setting targets for emissions reduction.	Transport/ Reading Buses	✓✓	Boroughwide	Improvements in climate change emissions, improvements to bus fleet.		
APTM8	We will continue to support in town without my car day and other environmental awareness/sustainable travel events to promote more sustainable travel and air quality information	Env. Protection, Transport, Sustainability	✓	Boroughwide	Improved availability of information on air quality and climate change	Low	Ongoing
APTM9	We will encourage the choice of non-motorised transport options emphasising positive health benefits as well as climate change and air quality benefits.	Transport/ Sustainability/ Sport Reading	✓✓	Boroughwide	Improved fitness, lower obesity and health benefits. Reduction in climate change emissions	Med	Ongoing

APTM10	We will introduce new licence conditions in 2009 to improve emissions and produce a cleaner fleet of licensed vehicles.	Licensing/ Env. Protection	✓✓	Boroughwide	Reduction in climate change emissions	Med-High	2008/2009
APTM11	We will encourage local businesses to reduce their greenhouse gas and air quality emissions and prepare for climate change. We will work with Reading UK CIC, Connect Reading, key businesses and business organisations to develop practical local actions.	Sustainability, Transport, Env Protection	✓✓	Boroughwide	Reduction in climate change emissions	Med	Ongoing
APTM12	We will investigate mechanisms to reduce the impact of HGVs on local air quality in Reading, producing a report with recommendations within 18 months of the publication of this action plan.	Transport, Env Protection	✓✓✓	Boroughwide, esp areas 1 and 3, and 2, 4 & 5 to a lesser extent	Reduction in climate change emissions, reduced noise levels	Med	2009/2010
APOS1	The council will continue to work with Festival Republic (Reading Festival) to reduce the impact and/or numbers of campfires during the Reading Festival on air quality in Reading.	Env Protection/ Licensing	✓✓✓	Areas 1, 2 & 3		Low	2008/2009
APOS2	Subject to available funding we will carry out an awareness raising campaign related to Reading's smoke control areas including advice to stores selling non authorised fuels	Env. Protection	✓	Boroughwide		Low, funding sought through Defra grant	2008-2010 dependent on funding
APOS3	We will work with Partners to give Reading householders easy access to discounted or free home insulation and free energy efficiency advice.	Sustainability	✓	Borough wide	Reductions in climate change emissions, improved home energy efficiency, and savings to residents	Med	Ongoing
APDC1	We will ensure through the planning process that future development does not result in any futher deterioration of	Planning, Env Protection, Transport,	✓✓✓	Boroughwide		Low	Ongoing

	air quality and where possible, results in an improvement in overall environmental quality.	Sustainability					

APDC2	We will use planning processes to • minimise environmental impacts from major new developments • ensure that major development should not result in increased emissions that contribute to air quality and climate change problems. • locate major development in areas that are highly accessible by sustainable modes of transport in order to reduce the number of car journeys that need to be made within the Borough	Planning, Env Protection, Transport, Sustainabilty	✓✓✓	Boroughwide	Reductions in other pollution – noise, land, light etc., and climate change emissions	Med	Ongoing
APDC3	We will continue to seek financial contributions for improving air quality, air quality monitoring and in pursuit of the implementation of this action plan in line with PPS 23	Planning, Env Protection, Sustainability	✓✓✓	All AQMAs		Low	2008/2009 to develop policy, then ongoing
APDC4	We will work with local developers and construction companies to develop a local code of practice for dust and particle control, including a restriction on bonfires.	Planning. Env Protection, Sustainabillity	✓✓	Boroughwide	Reduce statutory nuisance complaints about smoke and dust	Low	2008/2009 then ongoing
APOM1a	We will carry out a feasibility study into introducing a scheme to alert vulnerable members of the Reading community when air pollution episodes are forecast and advising them on possible appropriate action to take. The study will consider the number of pollution events (moderate or higher for particulates, ozone and nitrogen dioxide) in Reading from previous years	Env Protection, PCT	✓	Boroughwide	Improved health, and better management of respiratory conditions	High	2008 for study, introduce 2009 subject to funding

	monitoring, likely support from the PCT and healthcare providers and support from patients who would want to receive the alerts. The study will be undertaken with a view to introducing a scheme in 2009 provided adequate support and funding is identified.						
APOM1b	In partnership with the Sustainability Team we will consider the feasibility of "cold snap" and "heatwave" forecasting for people with conditions affected by extremes of weather within this study.	Env Protection, Sustainability, PCT	✓	Boroughwide	Improved health, and better management of respiratory conditions	High	2008 for study, introduce 2009 subject to funding
APOM2	We will install further continuous monitoring stations at key locations within our AQMAs or to monitor the resultant effects on air quality where new projects are proposed, where funding is available ie through Defra grants, s106 funding or other funding.	Env Protection	✓	All AQMAs		High	Ongoing

APOM3	We will continue to expand and improve air quality data on the RBC website to improve the accessibility of information.	Env Protection	✓	Boroughwide		Low	Ongoing
APOM4	We will add information relevant to the school curriculum on the website so that local information is available for school and college science activities.	Env Protection	✓	Boroughwide		Low	Ongoing
APOM5	We will make air quality information easier to find on the website and use opportunities such as "In town without my car day" and "Forbury Fever" to raise awareness of the availability of air quality & climate change information on the council website.	Env Protection, Sustainability	✓	Boroughwide		Low	Ongoing
APOM6	We will ensure that measures to address local air quality do not conflict with climate change actions, by considering the interlinked causal factors, identifying conflicts and promoting mutually beneficial solutions.	Env Protection, Sustainability	✓✓✓	Boroughwide		Low	Ongoing

Monitoring Progress

Table to show indicators to monitor progress in improving AQ. Specifically within the declared AQMA.

	Baseline	**Baseline**	**Target**	**Target**	**Target**	**Target**
AQMA Locations	2003	2007	2008	2009	2010	2015
Oxford Rd Annual Mean (NO2)	N/A	49				<40
Castle Hill Annual Mean (NO2)	N/A	39			<40	
Caversham Road Annual Mean (NO2)	N/A	55				<40
Cavesham Centre Annual Mean (NO2)	N/A	48				<40
Southampton Street Annual Mean (NO2)	N/A	48				<40
Kings Road Annual Mean (NO2)	N/A	47				<40
Transport Related PI's						
Bus Patronage (APTM7)	16,644,746				19,973,695 an increase of 20%	
Number schools with travel plans (APTM6)	N/A		46 of 62 Schools 67%	82%	All 62 Schools 100%	
Council Vehicle Fleet	N/A	0 of 173	-	-	156 of the 173 Vehicles to meet	

(APTM6)					Euro 4 Standard or Better	
Green Fleet Review for Licensed Vehicles	N/A	N/A	N/A	Complete Review Implement initial findings and incorporate PIs into AQAP		
Reduce Traffic Flows to Central Reading during Peak Periods	Need starting figure from Transport				1.5%	
Increase the mode share of cyclists entering the town centre. (LTP2 & APTM2)		from 3.4%			to 5%	