Action Plan Appraisal

from

followed by the

Joint Air Quality Action Plan

for the Cambridgeshire Growth Areas

from

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Department for Environment Food and Rural Affairs

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19 January 2011

Dear Ms Lewis

LOCAL AIR QUALITY MANAGEMENT: JOINT AIR QUALITY ACTION PLAN

Thank you for consulting the Secretary of State for Environment, Food and Rural Affairs on the joint Air Quality Action Plan for the Cambridgeshire Councils. Please find attached our comments on the Action Plan.

The Plan provides comprehensive background to the review and assessment work undertaken by Cambridge CC, Huntingdonshire DC and South Cambridgeshire DC. It provides an overview of other relevant plans and policies that are likely to have a bearing on local air quality.

The appraisal report highlights a number of issues that should help the local authorities maintain the objectives of the Action Plan, namely the improvement of air quality within the AQMAs. These issues can be addressed through progress updates that will be reported on the Air Quality Action Plan. We look forward to receiving updates on the implementation of the Action Plan.

If you have any specific queries about the comments contained in the appraisal report, we would advise that you initially contact the help desk. Details on how to contact the help desk can be found in the appraisal report.

Yours sincerely

Tutu Aluko
ATMOSPHERE AND LOCAL ENVIRONMENT PROGRAMME

Ref: AP2-227

Action Plan Appraisal

Report Prepared by: Cambridge City, Huntingdonshire, South Cambridgeshire District Councils and Cambridgeshire County Council

Date Progress Report Issued**: 17th May 2010**

This Appraisal Report covers the Air Quality Action Plan report submitted by the collective Cambridgeshire Councils.

The Action Plan sets out information on air quality obtained by the collective "Partnership Councils" as part of the Local Air Quality Management process required under the Environment Act 1995 and subsequent Regulations.

The overall plan is clear, concise and generally follows the guidance outlined in LAQM PG(09). The plan provides comprehensive background to the review and assessment work undertaken by the involved Councils. This includes the findings of the source apportionment exercise undertaken in the further assessment and required reductions in pollutant concentrations for the AQMA. The plan also provides an overview of other relevant plans and policies that are likely to have a bearing on local air quality. Measures which have been estimated to have a high impact on air quality and are high priority measures include;

- Creating Low Emission Zones;
- Implementation of Air Quality policies in the Local Plan;
- Implementing a Quality Bus Partnership;
- Improving quality of taxis;
- Implementation of the Local Transport Plan; and
- Adopting a Long Term Transport Strategy.

This Appraisal Report covers the Air Quality Action Plan report submitted by the Council.

On the basis of the information provided by the local authority, the action plan is **accepted**.

Ref: AP2-227

Commentary

1. Each Local Authority should be commended on the work put into creating the Joint AQAP.

2. The AQAP clearly outlines the air quality improvement that will be required in order to meet the National Air Quality Standards throughout each AQMA. The highest reduction required in NO_2 emissions throughout all three authorities ranges from 26% around 96 Orthwaite, Huntingdon, 18% around the Bus Station Area in Cambridge and 7% around the Bar Hill area of South Cambridgeshire.

3. Source apportionment data have been included which demonstrate that road vehicle emissions are the dominant source, and within that the vast majority is due to Heavy Duty Vehicles. We therefore concur that measures to reduce emissions from freight and buses should be prioritised.

4. It is clear that controlling bus and HGV emissions within each AQMA is one of the three most important measures aimed at tackling air pollution. The report clearly outlines the Council's decision to implement a Quality Bus Partnership and Freight Transport Partnership through each AQMA and work towards an improved public transport system throughout Cambridgeshire County. The Council aim to achieve a more efficient fleet of buses operating throughout the area and encourage a modal shift in transport away from cars and single passenger journeys and move towards more reliance on efficient public transport. In future version of the AQAP it would be helpful to include information on the number of buses operating along routes, are there any bus stops in the AQMA (idling bus emissions are significantly higher than those at constant speed), are the buses mainly peak time runs? Good information has been presented on the Euro standard of the bus fleet within the borough. The reduction in pre-Euro and Euro 1&2 is welcome, along with an increase in Euro IV buses.

Each stakeholder involved in the creation of the Joint AQAP should be commended on the progress to date, particularly in defining the steps required in order to implement the six priority measures outlined above.

The Joint AQAP contains suitable timescales, targets and indicators. In many cases air quality targets are specified and reinforced with surrogate indicators. For

example, measures that relate to improving bus transport and the Quality Bus Partnership have a target of reducing NO_2 by 20% associated with them. However it is also made clear that an increase in bus patronage can also be used an indicator of the measures success, which can then be related to savings in vehicle emissions.

This commentary is not designed to deal with every aspect of the Action Plan. It highlights a number of issues that should help the local authority in maintaining the objectives of its Action Plan, namely the improvement of air quality within the AQMA. Issues can be followed up through the Air Quality Action Plan helpdesk as follows:

Action Planning Helpdesk telephone: 0870 190 6050

Action Planning Helpdesk email: lasupport@aeat.co.uk

Action Planning Web-site: www.airquality.co.uk/archive/actionplan.php

Air Quality Action Plan

for the Cambridgeshire Growth Areas:

Cambridge City Council

Huntingdonshire District Council

South Cambridgeshire District Council

2009

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Executive Summary

This Joint Air Quality Action Plan produced through partnership between Officers from Cambridge City, Huntingdonshire, South Cambridgeshire District Councils and Cambridgeshire County Council formalises the next step in Local Air Quality Management. The document clearly sets out the nature of air quality problems across the south of the county, assesses the causes and solutions in some detail and sets out clear priority areas for action over the next five years.

Cambridgeshire authorities have worked together on air quality since 1997 and this document represents the culmination of Air Quality Review and Assessment work over the last twelve years. Whilst resources and local circumstances have led to differing timescales for the authorities involved in the production of this Action Plan, all partners have now established a legal and compelling case for local action on air quality.

The three Districts and County Council in this partnership are linked by transport issues, which are the primary source of pollutants of concern across the sub-region. There are two main themes causing excessive transport related pollution in our area. These are firstly the importance of Cambridge as an employment, education and tourist centre, and secondly the prevalence of long-distance freight on the A14 east-west corridor. These factors lead to high numbers of longer than average commutes to and from Cambridge and a very high proportion of heavy goods vehicles on the trunk roads. The resulting congestion on trunk routes and the centres of Cambridge and the surrounding market towns also exacerbates the problems associated with high traffic flows. For these reasons six Air Quality Management Areas have been declared.

This Action Plan has reviewed all of the existing air quality information across the region, identified the key causes in each management area and assessed the necessary actions needed to improve pollutant levels in those areas. Where sufficient data was unavailable, the partnership successfully sought external funding to look in detail at emissions across the sub-region and to model the impacts of growth and

congestion charging. This review has enabled the degree of improvement for each pollutant of concern to be quantified in each of the management areas.

The plan also looks in detail at the many ongoing and planned projects, which will impact upon air quality. Following targeted consultation with a broad range of residents and stakeholders, through specific workshops, a series of priority actions for each affected area has been produced. These actions have been assessed for costs and benefits and where possible a clear, quantified set of targets has been produced and monitoring methods specified. In some cases the use of derived targets has been specified where measurement of pollutant concentrations may not immediately reflect the benefits of action. Risks to delivery are also explored in some detail. High priority actions include progressive improvement of emissions from the Cambridge bus fleet, the realignment of the A14 and detailed planning policy work.

The Action Plan is both ambitious yet deliverable and, if implemented in full, will improve air quality over the plan period which will run to 2015. In conjunction with Central Government and European actions this should lead to a significant reduction in the number of AQMAs in southern Cambridgeshire.

1. Introduction

1.1 Legislative background

Part IV of the Environment Act 1995 provides the framework for Local Air Quality Management (LAQM) in England and Wales whereby all local authorities are required to annually review and assess the air quality within their boundaries. The details were later established in the Air Quality Strategy (2000)[(12)] and Air Quality Regulations (2000 and 2002)[(13)]. The latest guidance on procedures was published by the Department of Environment, Food and Rural Affairs (Defra) in 2009[(11)(14)].

Following the review, local authorities must assess the air quality against the objectives specified for the pollutant of concern. Where Air Quality Objectives are unlikely to be met by a specified date, Air Quality Management Areas (AQMAs) must be declared and Air Quality Action Plans (AQAPs) developed to demonstrate how the local authority intends to work towards meeting the objectives.

Since air quality within AQMAs is likely to be influenced by factors beyond local authority boundaries, Action Plans may often need to complement those of adjoining authorities. Some local authorities have recognised this fact and have chosen to develop regional AQAPs. In fact, Defra recommend that local authorities should consider drawing up regional AQAPs, where appropriate, and have endorsed preparation of a Joint Air Quality Action Plan for the AQMAs within Cambridge City, Huntingdonshire District Council and South Cambridgeshire District Council.

Government guidance[(11)] specifies that an AQAP must include the following:

- Quantification of the source contributions to the predicted exceedences of the objective allowing the Action Plan measures to be effectively targeted.
- Evidence that all available options have been considered on the grounds of cost-effectiveness and feasibility.
- How the local authority will use its powers and also work in conjunction with other organisations in pursuit of the Air Quality Objectives.

- Clear timescales in which the authority and other organisations and agencies propose to implement the measures within its plan.

- Quantification of the expected impacts of the proposed measures and, where possible, an indication as to whether the measures will be sufficient to meet the Air Quality Objectives.

- How the local authority intends to monitor and evaluate the effectiveness of the plan.

1.2 Joint approach

Local Authorities within Cambridgeshire have been working together on Air Quality Review and Assessment (AQR&A) processes since 1997. As a result of the AQR&A process, Cambridge City Council, Huntingdonshire District Council and South Cambridgeshire District Council have declared AQMAs for nitrogen dioxide (NO_2) and PM_{10} (particulate matter with diameter of less than ten microns). High resolution maps of the Air Quality Management Areas are in Appendix 1[(A1)].

The Councils have established that the main source of air pollution for the areas under the jurisdiction of all three Councils is vehicle emissions. The nature of the road network and spatial distribution of housing and industry in the region exacerbate the air quality problems experienced and, because of this regional problem, Officers from the three Councils decided to work together to produce a Joint Action Plan.

Additionally, the three Councils have commissioned local consultants, CERC (Cambridge Environmental Research Consultants), to produce an Emissions Inventory[(10)] to assist with the development of this Action Plan.

The Councils also work together on initiatives to raise awareness amongst key partners and stakeholders.

1.3 Description of area covered by the Joint Air Quality Action Plan

Cambridge is the sub-regional centre and main hub, or trip attractor, in the south of Cambridgeshire. The population of Cambridge is around 115,000 (2007 data). The main centres in Huntingdonshire are Huntingdon (10,000), St Ives (15,000) and St Neots (26,000). There are more than 100 villages in South Cambridgeshire, some with populations over 5,000 (Cambourne, Cottenham and Sawston).

The county's settlement pattern is strongly influenced by the city of Cambridge, which accounts for nearly 20% of the total population. Cambridge has an important regional role and is of national and international importance for its outstanding historic character, as a centre of excellence for learning and research and thus for high technology industries.

The development of key transport infrastructure networks across the county has lagged behind the rapid population and economic growth. This has meant high growth in car use and movement of freight across the county by road, which has adversely affected Cambridgeshire's environment.

The main transport routes through the area are:

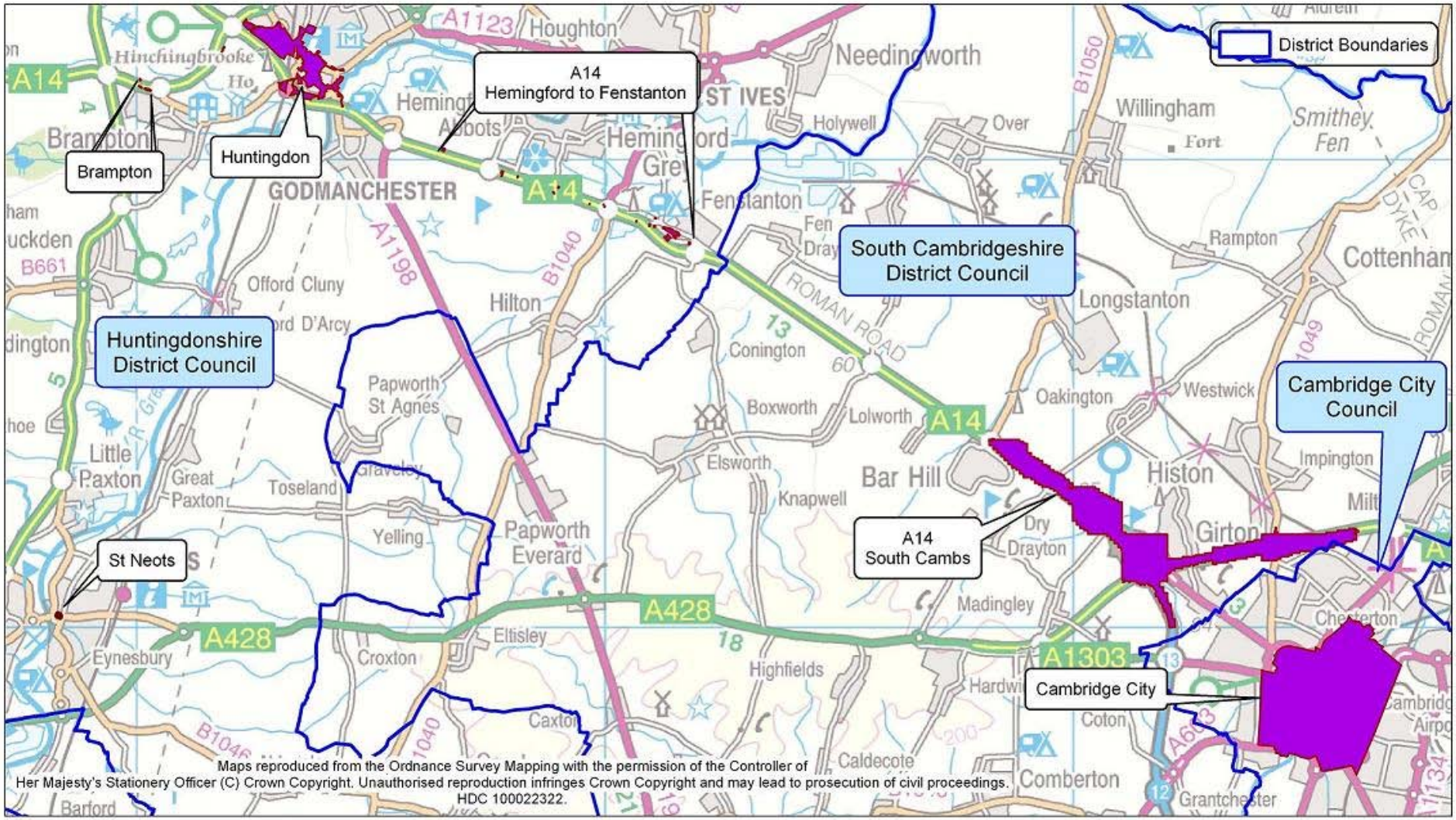
- The A14, which runs from Harwich and Felixstowe ports in the east to the M1 and the Midlands to the west, is located to the immediate north of the City/District boundary and passes through both South Cambridgeshire and Huntingdonshire. It is also the principal route for local traffic between Huntingdon, St Ives and Cambridge as well as part of a Northern Cambridge Bypass.

- The M11, which runs from the A14 south to Stansted Airport (planned for expansion) and the M25/London, located in South Cambridgeshire to the immediate west of the City/District boundary.

Many sections of the A14 are currently operating close to capacity, with an average of 65,000 to 90,000 vehicles per day using the route. Up to 25% of the traffic is made up of heavy goods vehicles (HGVs). The road is subject to severe congestion on a regular basis, particularly during peak hours.

Figure 1.1 - Location of the Local Authorities

Figure 1.2 - Air Quality Management Areas in the south of Cambridgeshire



1.4 Air quality activity timeline

The following table summarises the air quality actions taken so far in southern Cambridgeshire. These are discussed in more detail in Section 2.

Table 1.1 - Air quality activity timeline

CCC = Cambridge City Council

County Council = Cambridgeshire County Council

HDC = Huntingdonshire District Council

SCDC = South Cambridgeshire District Council

2004	CCC	Cambridge City Council (2004) Detailed Assessment of NO_2[(3)]
2004	CCC	Declaration of AQMA for NO_2
2005	CCC	Agreement to integrate AQAP into Cambridgeshire County Council's provisional Local Transport Plan (LTP)
2005	HDC	Declaration of AQMAs for NO_2 – Huntingdon and St Neots
2006	County Council	LTP 2006 – 2011[(7)] finalised
2006	CCC	Stage 4 Further Assessment[(5)]
2006	HDC	Declaration of AQMAs for NO_2 – Brampton and A14
2007	CCC	Sustainable Design and Construction Supplementary Planning Guidance published
2007	HDC	Stage 4 Further Assessment of AQMAs and subsequent amendments based on modelling
2007	SCDC	Detailed Assessment of NO_2 along the A14 Corridor[(22)]

2007	SCDC	Declaration of AQMA for NO_2 along the A14 between Bar Hill and Milton
2007	CCC, HDC, SCDC	Preparation of AQAP commences
2008	SCDC	Detailed Assessment for PM_{10} along A14 corridor
2008	SCDC	Revocation of AQMA for NO_2 and declaration of a new AQMA for NO_2 and PM_{10} - A14 between Milton and Bar Hill
2008	SCDC	Stage 4 Further Assessment of NO_2 and PM_{10} along the A14 Corridor[(24)]
2008	CCC	Air Quality in Cambridge: Developers Guide[(6)] finalised
2008	SCDC	Local Air Quality Strategy completed
2009	CCC, HDC, SCDC	Air Quality Action Plan finalised

1.5 The growth agenda

The Cambridge and Peterborough Structure Plan (2003)[(27)] identified a number of locations in Cambridgeshire suitable for development up to 2016. These areas of growth are needed to support the local economy and have been identified as the most sustainable locations for development.

The Cambridge Sub-Region encompasses Cambridge and the ring of market towns within, approximately, fifteen miles that surround it including; St Neots, Huntingdon and St Ives. However, the influence of the Cambridge Sub-Region extends beyond the boundary of Cambridgeshire to include parts of Essex (Saffron Walden), Hertfordshire (Royston) and Suffolk (Newmarket and Haverhill).

It plans for 47,500 new homes in the Cambridge Sub-Region, 50,000 new jobs and more than £2.2bn of infrastructure and improvements needed to create sustainable communities. Some of these homes are already in the pipeline or planned and approximately 10,000 were built between 1999 and 2004. The plan's overall

approach to development in the Cambridge Sub-Region makes sequential provision for housing and related development at locations in the following order of preference:

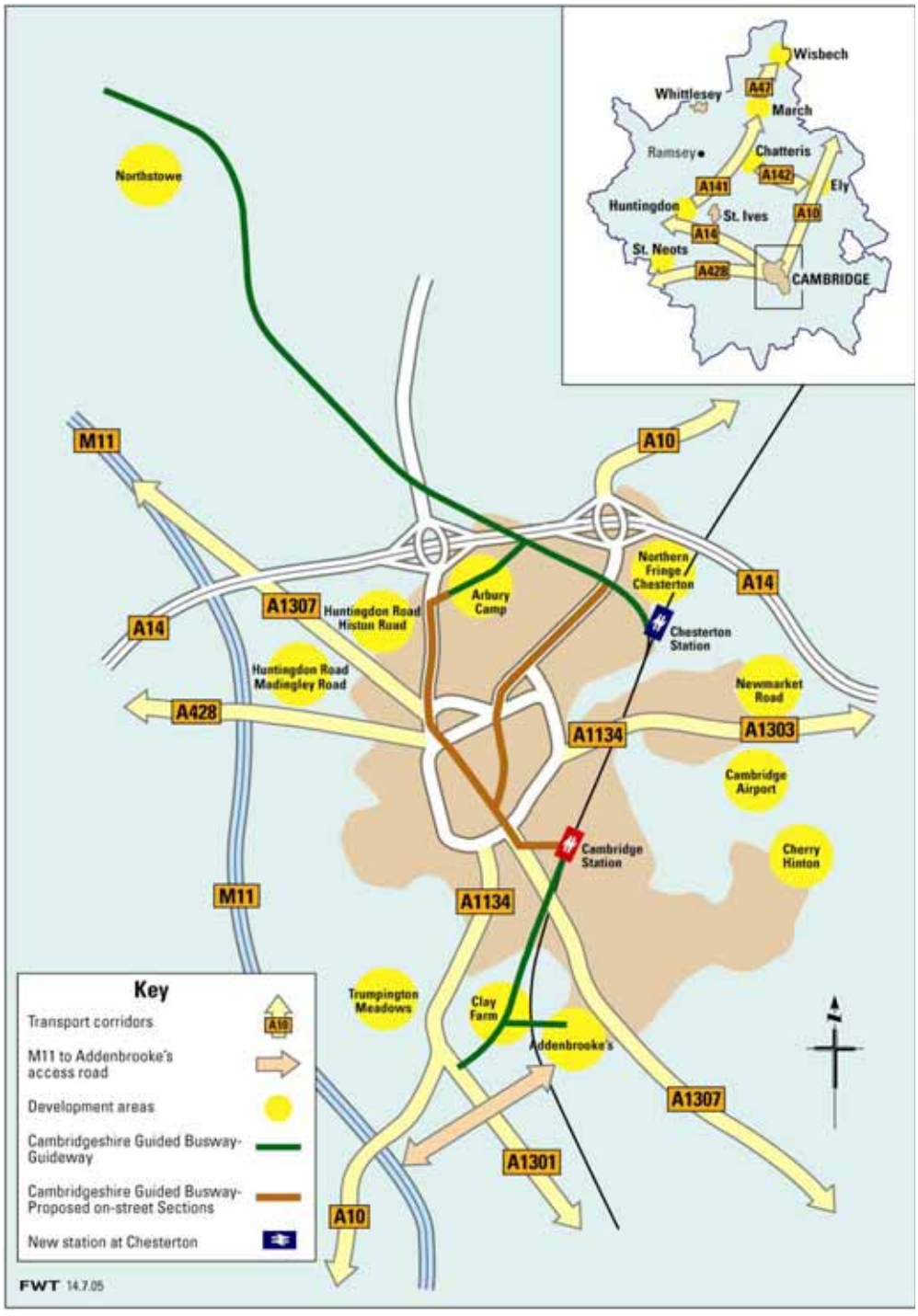
- Within the built-up area of Cambridge.
- As an extension to Cambridge on land to be released from the Green Belt.
- In the new town of Northstowe.
- Within or as an extension of the surrounding market towns.

The Structure Plan aims to redress the imbalance between job opportunities, earnings and affordable housing. Development is planned where good public transport services exist, or where they can be provided, to minimise the need for use of the private car in order to create more sustainable communities with better access to jobs and services. The Structure Plan identifies the necessary transport infrastructure improvements to support this development and states that developments dependent on these cannot go ahead until such improvements are in place.

The Structure Plan is being replaced with Local Development Documents and the East of England Regional Spatial Strategy (RSS)[(16)]. The RSS covers the period up to 2021, with the strategies that had been contained within the Structure Plan for the Cambridge sub-region carried forward largely unchanged. Dwelling estimates in the RSS indicate that this level of growth is expected to continue.

In addition, plans exist to upgrade the A14, including widening of the existing carriageway and the creation of a new route, to alleviate both existing traffic congestion and provide the infrastructure to accommodate the new housing developments that are planned for Cambridge and its sub-region. All growth needs to be managed carefully to ensure that there are no negative impacts on air quality associated with the increase in population.

Figure 1.3 - Major new developments envisaged in the RSS/Structure Plan



(Reproduced from the LTP[(7)])

1.6 Links with Local Transport Plan

Where road traffic is the primary source of pollution leading to declaration of an AQMA, Defra and Department for Transport (DfT) recommend that Action Plans are

integrated into Local Transport Plans (LTP) so that as much synergy as possible is achieved between transport planning and air quality management at a local level, such that air quality is dealt with in a more corporate and multi-disciplinary way.

The Cambridgeshire LTP 2006 - 2011[(7)] was completed in March 2006. It is one of a number of planning and transport plans and strategies for Cambridgeshire and the East of England aimed at ensuring that large-scale development can take place in the county in a sustainable way. It also looks at existing transport issues and seeks to address them.

Cambridge City Council was the first of the three councils to declare an AQMA (in 2004) and its draft Action Plan was incorporated into the LTP (2006-2011)[(7)] with Action Plans for the other AQMAs being incorporated into the LTP Annual Progress Reports (APR). An update on the production of this joint Action Plan has been included in the first LTP Delivery Report 2008[(8)].

The traffic-related work described in this document (a combination of individual and joint actions from Cambridgeshire County Council, Cambridge City Council, Huntingdonshire District Council and South Cambridgeshire District Council) will continue to be incorporated into appropriate future LTP documents.

1.7 Air quality and climate change

Most measures taken to mitigate climate change will also have a positive impact on air quality. These are known as win-win measures. However, there are some exceptions: Vehicles with diesel engines are more fuel-efficient than those with petrol engines so they emit less carbon dioxide per mile travelled, but they emit more particulates; Biomass boilers can emit amounts of particulate matter that are significant in urban areas, although they are almost carbon neutral. The clearest synergies are related to the reduced use of resources; that is, reducing demand, energy efficiency measures or switching to low/no-carbon fuels with appropriate abatement technologies.

When considering options for the AQAP, Officers have given a greater weighting to those actions which benefit air quality because improvements in air quality will lead to

better health outcomes for southern Cambridgeshire residents, working population and visitors in both the short and long term.

1.8 Air Quality Action Plan and Inequalities

Air pollution is currently estimated to reduce the life expectancy of every person in the UK by an average 7-8 months. The measures outlined in this document aim to improve air quality and thus the quality of life of those individuals exposed to vehicle emissions within the AQMAs.

A Government research paper into links between air quality and social deprivation in the UK found that in many areas the least affluent members of society are exposed to the highest level of pollution(1). Further, AQMAs declared for NO_2 and PM_{10} in England cover a significant number of the census areas that are considered to be high deprivation areas. This is because most AQMAs are related to road traffic, which is concentrated in urban areas, and because most deprived communities live in urban areas.

This inequality is further compounded by the greater susceptibility of children to poor air quality and the finding that most economically deprived groups have a greater proportion of children. Children display higher rates of asthma (1 in 10, according to an Asthma UK report in 2004), the symptoms of which can be exacerbated by poor air quality.

Successful AQMAs, where the necessary reductions in emissions are realised, may be an effective means of reducing such inequalities in the future. This AQAP is therefore an important strand for reducing health inequalities in these districts.

2. Air Quality Actions to December 2008, district by district

2.1 Cambridge City Council

2004	Declaration of AQMA for NO_2
2005	Agreement to integrate AQAP into LTP
2006	LTP 2006 – 2011[(7)] finalised
2006	Stage 4 Further Assessment[(5)]
2007	Sustainable Design and Construction Supplementary Planning Guidance published
2007	Preparation of AQAP commences
2008	Developers Guide to Air Quality[(6)] finalised

Cambridge City Council declared an AQMA in August 2004 based on predicted exceedences of NO_2 in 2005. In August 2005 the City Council's Environment and Scrutiny Committee agreed that the City and County Councils should integrate the AQAP into the LTP. It was considered that this integrated approach would enable the City and County Councils to tackle traffic-related emissions effectively and minimise consultation costs for both authorities. Officers of the City and County Councils worked closely in preparation of the LTP and reached agreement on the key issues and their means of implementation. This enabled a draft Action Plan to be included.

The Council also undertook a Stage 4 Further Assessment[(5)] of air quality in and around the AQMA, looking at sources of pollutants and monitoring results in more detail. This work was completed in November 2006. The Further Assessment confirmed that heavy-duty vehicles (principally buses) are the largest single source of air pollution in the AQMA (Cambridge City Council, 2006). This work (source apportionment) is discussed in more detail below.

2.1.1 Cambridge draft AQAP - integration into the Local Transport Plan

A provisional Action Plan was agreed by the City and County Councils, and included the following measures with a timetable for their implementation, which also formed an integral part of the Cambridge Access Strategy programme as part of the LTP[7].

Table 2.1 - AQAP measures in the LTP

Measure		Timescale
Low Emission Zone (LEZ) in core area.	A quality bus partnership setting emission criteria for all PSVs entering the Core Area LEZ, regulated by rising bollard transponder entitlement, and permits to use bus stops in the zone. Initial criteria to be Euro II with Reduced Pollution Certification.	Baseline by January 2007, Euro II by January 2009
	8-year age limit on taxis and private hire vehicles in the zone, with twice-yearly emission testing – regulated by rising bollard transponder entitlement.	2007
	Expansion of the core traffic scheme to further limit access to the city centre. (Stage 5 subject to public consultation and Member approval).	Stage 4 – 2006-2009 Stage 5 – 2008-2010
	A 20mph speed limit in core area.	2007
Cambridge Local Plan Policy	Technical guide for developers, based around full implementation of PPS23 and National Society for Clean Air (NSCA) Guidance Planning For Clean Air.	Policies already in place
	Car parking strictly limited in the Core Area by the City Council adopted car-parking standards.	
	Traffic movements generated by new development will be assessed and in accordance with the Area Transport Plans; developers are expected to militate against any adverse impact.	
Continued support and expansion of the Park & Ride scheme		Cowley Road site relocation 2007/08
Twice yearly Roadside Emission Testing of private vehicles in association with the Vehicle Inspectorate		In place
Full implementation of the City Council's Pedestrian and Cycling Strategies.		Throughout LTP period

Reproduced from the LTP[7]

A Low Emission Zone (LEZ) was recommended for the Core Area, the central part of Cambridge[25]. This involves controls on vehicle emissions in the centre of the city, which is the area with poorest air quality.

The County Council entered into negotiations with the bus companies whose vehicles enter Cambridge and established the terms of the Quality Bus Partnership (QBP). Proposed measures include stricter emission standards for buses and the requirement to make year-on-year improvements to their fleet. It would be necessary for bus operators to make such reductions in vehicle emissions to retain their permits to use city centre bus stops and their transponders to operate the rising bollard closure points. An initial target for 90% of buses using stops in the Core Area was to achieve, as a minimum, the basic European Union emissions standard (Euro 2) with Reduced Pollution Certificate (effectively Euro 3) by January 2009 – although this was not ultimately agreed.

To ensure that taxis also contribute towards lower emissions, it is proposed that all taxis using the Core Area closure points adopt Cambridge City Council's vehicle licensing requirements (8-year age limit and twice yearly MOT) to achieve a consistent standard in taxi emissions entering the city.

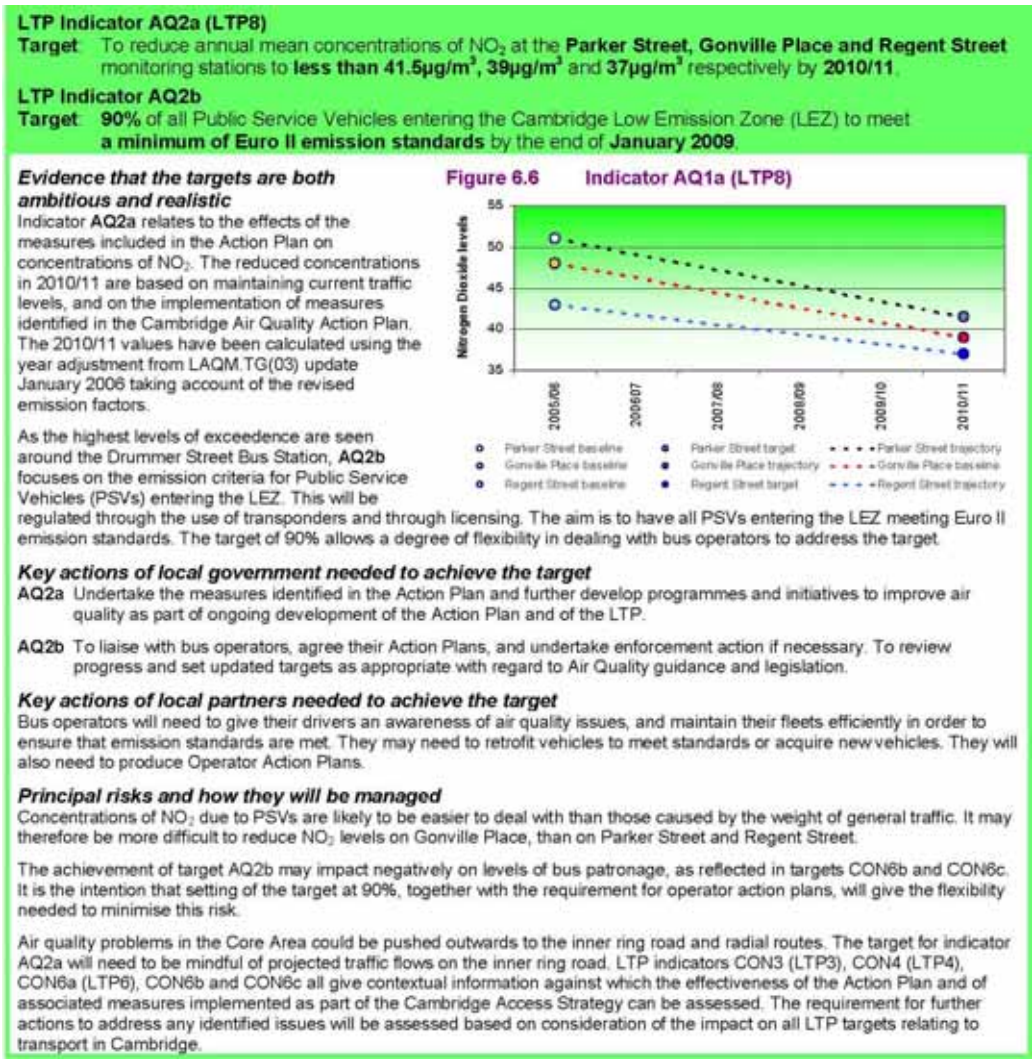
Controls on goods vehicles using the Core Area to ensure air quality targets are proposed. Cambridgeshire County Council are proposing to set up an air quality partnership with city centre groups to discuss ways of reducing emissions from delivery vehicles.

The County Council will also continue to expand the Park and Ride Scheme.

2.1.2 LTP Action Plan targets

Targets for the Action Plan are included in LTP 2006 - 2011[(7)]; these relate to levels of pollutants (AQ2a) and bus emission standards (AQ2b) in the LEZ.

Figure 2.1 - LTP indicators



LTP Indicator AQ2a (LTP8)
Target To reduce annual mean concentrations of NO_2 at the **Parker Street, Gonville Place and Regent Street** monitoring stations to **less than 41.5µg/m³, 39µg/m³** and **37µg/m³** respectively by **2010/11**.

LTP Indicator AQ2b
Target **90%** of all Public Service Vehicles entering the Cambridge Low Emission Zone (LEZ) to meet **a minimum of Euro II emission standards** by the end of **January 2009**.

Evidence that the targets are both ambitious and realistic
Indicator **AQ2a** relates to the effects of the measures included in the Action Plan on concentrations of NO_2. The reduced concentrations in 2010/11 are based on maintaining current traffic levels, and on the implementation of measures identified in the Cambridge Air Quality Action Plan. The 2010/11 values have been calculated using the year adjustment from LAQM.TG(03) update January 2006 taking account of the revised emission factors.

Figure 6.6 Indicator AQ1a (LTP8)

As the highest levels of exceedence are seen around the Drummer Street Bus Station, **AQ2b** focuses on the emission criteria for Public Service Vehicles (PSVs) entering the LEZ. This will be regulated through the use of transponders and through licensing. The aim is to have all PSVs entering the LEZ meeting Euro II emission standards. The target of 90% allows a degree of flexibility in dealing with bus operators to address the target.

Key actions of local government needed to achieve the target
AQ2a Undertake the measures identified in the Action Plan and further develop programmes and initiatives to improve air quality as part of ongoing development of the Action Plan and of the LTP.

AQ2b To liaise with bus operators, agree their Action Plans, and undertake enforcement action if necessary. To review progress and set updated targets as appropriate with regard to Air Quality guidance and legislation.

Key actions of local partners needed to achieve the target
Bus operators will need to give their drivers an awareness of air quality issues, and maintain their fleets efficiently in order to ensure that emission standards are met. They may need to retrofit vehicles to meet standards or acquire new vehicles. They will also need to produce Operator Action Plans.

Principal risks and how they will be managed
Concentrations of NO_2 due to PSVs are likely to be easier to deal with than those caused by the weight of general traffic. It may therefore be more difficult to reduce NO_2 levels on Gonville Place, than on Parker Street and Regent Street.

The achievement of target AQ2b may impact negatively on levels of bus patronage, as reflected in targets CON6b and CON6c. It is the intention that setting of the target at 90%, together with the requirement for operator action plans, will give the flexibility needed to minimise this risk.

Air quality problems in the Core Area could be pushed outwards to the inner ring road and radial routes. The target for indicator AQ2a will need to be mindful of projected traffic flows on the inner ring road. LTP indicators CON3 (LTP3), CON4 (LTP4), CON6a (LTP6), CON6b and CON6c all give contextual information against which the effectiveness of the Action Plan and of associated measures implemented as part of the Cambridge Access Strategy can be assessed. The requirement for further actions to address any identified issues will be assessed based on consideration of the impact on all LTP targets relating to transport in Cambridge.

Reproduced from the LTP[(7)].

As well as specific actions in the Action Plan aimed at improving air quality, there are other actions that should have a positive effect on air quality. These are the actions that are intended to encourage a modal shift towards public transport, cycling and walking. A reduction in the number of private vehicles will reduce the overall volume of traffic and improve the traffic flow, which will improve air quality as well as reduce congestion. These actions are listed in Table 2.2.

Table 2.2 - LTP targets and indicators that will help to improve air quality[(7)(8)]

Indicator	Cambridgeshire LTP Targets	Baseline (2003/04 unless stated)	Latest position (LTP Delivery Report[(8)])
Bus patronage	CON1 More than 22.5M boardings in Cambridgeshire in 2010/11.	16.81M	21.62M
Cycling Trips (Annualised Index)	CON3 Increase cycling trips in Cambridgeshire by 10.6% by 2010/11 (as measured at a representative number of counting points and expressed relative to an index, baseline 100 in 2003/04).	100 (2004-05)	114
Mode Share of Journeys to School	CON4a To reduce the proportion of journeys to school made private car to 20% by 2010/11.	20%	22.15%
Bus Services running on time	CON5a/b More than 76% of non-frequent bus services to be on time in the period to 2010/11.	Not stated	70%
	CON5c No more than 53 seconds excess waiting time for frequent bus services in the period to 2010/11.	Not stated	53s
Changes in peak period traffic flows to urban areas	CON6a No more than 8,700 peak hour (7am-10am) inbound vehicular trips across Cambridge inner ring road cordon in 2010/11.	8,689 (2004/05)	8,255

Indicator	Cambridgeshire LTP Targets	Baseline (2003/04 unless stated)	Latest position (LTP Delivery Report[8])
Trends in travel in Cambridge	CON6b Less than 191,700 motor vehicles per day crossing the Cambridge Radial Cordon in 2010/11. Con6c More than 62,400 passengers per day using Cambridge bus services in 2010/11 (entering/leaving the Cambridge cordon and single bus journeys on Stagecoach services within but not crossing the cordon). CON6c LPSA More than 56,000 passengers per day using Cambridge bus services in 2006/7.	191,700 62,400 56,000	189,000 62,800
Pedestrian Crossing facilities	ACC2 More than 65% of crossings to have facilities for disabled people meeting the standards set by BV165 by 2010/11.	34.6% (2004/05)	81.6%
Accessibility of footpaths	ACC3 More than 67% of footpaths and other rights of way to be easy to use by members of the public by 2010/11.	58%	69.4%
Condition of surface footway	AM2 Less than 19.2% of the footway network with a notional residual life of less than 0 years by 2010/11.	20.9%	37.0%

2.1.3 Cambridge City Council strategies, plans and policies

The Cambridge Local Plan Policy was adopted in 2006. It is one of the documents that form the Cambridge Local Development Plan 2008-2011. Policy 4/14 of the Cambridge Local Plan covers AQMAs. The policy states:

"Development within or adjacent to an Air Quality Management Area will only be permitted if: a) it would have no adverse effect upon air quality within the AQMA, or b) air quality levels within the AQMA would not have a significant adverse effect on the proposed use/users."

Section 4.51 of the Local Plan explains further:

"Development proposals within or adjacent to an AQMA will be controlled so as to prevent a further deterioration of air quality within the AQMA, and to protect the occupiers of proposed development from the potential adverse effects of poor air quality. Development proposals outside and not directly adjacent to an AQMA, but which may have an impact on the AQMA by generating significant pollution within this area, will also be considered in relation to this policy. All applications will need to be supported by such information as is necessary to allow a full consideration of the impact of the proposal on the air quality of the area and developers may be required to provide appropriate pollution prevention or mitigation measures."

Further detail of the planning policy has been developed and incorporated into the Sustainable Design and Construction Supplementary Planning Guidance document, which was formally adopted in May 2007. In addition, supplementary guidance in the form of a technical guide for developers was published in September 2008. The guidance is based around full implementation of central government's PPS23 (Planning Policy Statement 23: Planning and Pollution Control[(28)]) and the National Society for Clean Air (NSCA) Guidance Planning For Clean Air.

Car parking will continue to be limited in the Core Area by the adopted car parking standards which define the maximum levels of car parking permitted for various types of development in different areas of Cambridge City. The introduction of Local Authority Parking Enforcement Officers has discouraged illegal car parking, thus improving traffic flow and decreasing congestion – which will have a positive impact on air quality.

Full implementation of the City Council's Walking and Cycling Strategy[(4)] includes promotion of walking and cycling; development of a safe convenient, attractive transport infrastructure which encourages and facilitates cycling and walking; implementation of planning policies which give high priority to the needs of pedestrians and cyclists and, where possible, reduce the need to travel; improvement of the integration between cycling and walking and public transport; reduction in the actual and perceived risk of crime to pedestrians and cyclists.

Roadside Emission Testing of private vehicles (cars, vans and HGVs), taxis and buses, in association with the Vehicle and Operator Services Agency (VOSA) (during spring and autumn) has been carried out. Roadside Emission Testing itself is not considered to have a noticeable effect on air quality, however, the advertising campaign and the highly visible presence of VOSA vehicle examiners does raise public awareness of air quality issues.

In addition, the City Council runs publicity campaigns to highlight the solutions to poor air quality, such as Walk-It, recently launched in partnership with the County Council. Walk-It is an innovative website designed to encourage walking by providing a route planner – including low pollution routes. The route planner shows how long it should take, based on approximate walking speed, also the amount of CO_2 avoided should the journey have been taken by bus, car or taxi.

2.2 Huntingdonshire District Council

2005	Declaration of Huntingdon and St Neots AQMAs (NO_2 annual mean)
2006	Declaration of Brampton and A14 (Hemingford to Fenstanton) AQMAs (NO_2 annual mean)
2007	Further Assessment of AQMAs and subsequent amendments to Huntingdon, Brampton and St Neots AQMAs based on modelling of 2004 and 2005 data

2.2.1 Introduction

Huntingdonshire District Council declared parts of Huntingdon and St Neots as AQMAs in 2005 due to predicted exceedences of the annual NO_2 objective. As can be seen in Section 3 the main contributors to the NO_2 in Huntingdon were heavy

duty vehicles (HDVs) on the A14 and local traffic. The main contributor to the relatively small AQMA in St Neots is traffic in the High Street and adjoining roads in the centre of the town. The dispersion of pollutants in the centre of St Neots is inhibited by the canyon-like historic streets.

AQMAs were declared for small parts of Brampton, to the east of Huntingdon, and at receptors along the A14 to the west of Huntingdon in 2006. By far the most significant source of NO_x at these locations is traffic on the A14, particularly HDVs.

Since the identification of the AQMAs Huntingdonshire District Council has sought to encourage reductions in those NO_x (oxides of nitrogen) emission sources which most affect these areas. Traffic congestion is a problem in both St Neots and Huntingdon centres and reduction in this congestion results in a reduction in NO_2 concentrations.

In 2007 a contra-flow bus lane was introduced around a section of Huntingdon Inner Ring Road to minimise the distance buses have to travel in the town centre. Also in 2007 Huntingdonshire District Council removed the free parking facility for its staff at its Head Quarters in the centre of Huntingdon. Four low-emissions pool cars were provided for staff use and improved cycle parking facilities were provided. In April 2008 Huntingdonshire District Council implemented its new Car Parking Strategy introducing tariffs at all of the Council owned car parks in the market towns, further encouraging the use of alternative transport choices in these areas.

Two emerging areas of Huntingdonshire District Council policy clearly have the potential to have a significant affect on the AQMAs. They are the Environment Strategy and draft planning policy documents which include the draft Core Strategy, draft Development Control Policies and draft Planning Obligations Supplementary Planning document. Furthermore the re-routing of the A14 by the Highways Agency will have a very significant affect on three of the AQMAs.

2.2.2 The Environment Strategy

In autumn 2008 Huntingdonshire District Council produced its Environment Strategy. This strategy commits the Council to a number of measures that will reduce emissions of NO_x. These include the following measures:

- a Council Travel Plan and site specific travel plans,
- a review of the employee lease car scheme to provide incentives to drive smaller vehicles,
- rescheduling of refuse collection and recycling rounds to reduce fuel usage,
- development of a Green Fleet Review,
- development of the Huntingdonshire Car Parking Strategy and
- development of a Council Emission Inventory.

2.2.3 Planning Policy

The draft Core Strategy

The development of new Planning Policy in Huntingdonshire was delayed when the first draft Core Strategy had to be withdrawn at the end of 2006. The current draft Core Strategy is currently expected to be adopted in September 2009.

The Development Control Polices are also at a draft stage and are expected to be adopted autumn 2010. The proposed policy on air quality comes under the subject of Sustainable Development and reads:

“Minimising and reducing greenhouse gas emissions, oxides of nitrogen, fine particles and other forms of pollution”.

The draft Development Control Policy

Development proposals within or adjacent to an AQMA should not have a significant adverse effect on air quality within the AQMA. A formal assessment will be required where it is suspected that a development proposal is likely to result in a negative impact on air quality. Where the assessment confirms this is likely, planning permission will only be granted if suitable mitigation measures can be secured by condition or through a Section 106 Agreement.

Development proposals within or adjacent to an AQMA will only be permitted where the air quality within the AQMA would not have a significant adverse effect on the proposed development or its users.

Policy Context:

This approach supports the Core Strategy policy CS1 Sustainable Development in Huntingdonshire.

Reasoned Justification:

Huntingdonshire District Council currently has four AQMAs all designated due to excessive annual mean levels of NO_2. The largest of these is in Huntingdon covering an area around the ring road, Ermine Street and parts of Stukeley Meadows. A much smaller AQMA is designated in St Neots town centre focussed on the High Street and part of New Street. Emissions from HGVs are the greatest contributor to high NO_2 levels in the District resulting in two smaller AQMAs being designated at Brampton, in close proximity to the A14, and along the A14 from Hemingford to Fenstanton.

2.2.4 The re-routing of the A14 trunk road

The rerouting of the A14 was first proposed by the Highways Agency in the spring of 2005. Huntingdonshire District Council was active at the consultation stage but, following a public enquiry into the consultation, the Highways Agency was required to start the process again.

A further consultation stage was commenced in 2006 and Huntingdonshire District Council supported the 'Orange Route' which was announced as the preferred route in October 2007.

The Highways Agency has continued with consultation as the scheme has progressed and junction detail has been developed. Huntingdonshire District Council has continued to be active as a consultee liaising directly with the Highways Agency's specialist contractors on air quality, WS Atkins.

All of the dispersion modelling conducted on the proposed route will be carried out incorporating requests made by Huntingdonshire District Council and using software compatible with Huntingdonshire District Council's own modelling facilities.

If the preferred route progresses to construction it is envisaged that there will be a net improvement in air quality in the AQMAs and it is thought that it will be possible to revoke the AQMA on the existing A14 between Hemingford Abbots and Fenstanton.

2.3 South Cambridgeshire District Council

2007	AQMA declared for a stretch of the A14 between Milton and Bar Hill for NO_2. Completion of detailed assessment for PM_{10} along the A14 corridor. Start of work on the Air Quality Action Plan.
2008	Revocation of the existing AQMA and the declaration of new AQMA for NO_2 and PM_{10}. Completion of Further Assessment of NO_2 and PM_{10} along the A14 corridor[(24)]. Completion of a Local Air Quality Strategy.

South Cambridgeshire District Council declared an AQMA for NO_2 in July 2007 based upon monitored and modelled exceedences of the national air quality objective for annual mean NO_2. This is along a stretch of the A14 between Bar Hill and Milton. Following this, a detailed assessment of PM_{10} along the A14 corridor was completed in December 2007[(23)]. The detailed assessment identified exceedences of the 24-hour mean objective for PM_{10} and concluded that, under present conditions, an AQMA is required for PM_{10} along the A14 between Bar Hill and Milton. Therefore, the existing AQMA for NO_2 was modified to include PM_{10}.

The cause of the exceedences of the annual mean NO_2 objective and the 24-hour mean PM_{10} objective is undoubtedly emissions from traffic along the A14.

South Cambridgeshire District Council is within the eastern region growth area and is therefore subject to a significant amount of new mixed-use development. This high level of growth stands to introduce many new receptors to areas close to the A14 and will cause an increase in local traffic on both trunk and distributor roads. Therefore, all applications received are screened to ensure that any impacts on air quality are identified and mitigated as far as possible. Whilst applications are awaited for most of the growth area schemes, work is continuing in supplying information for the production of environmental statements and assessments.

The outline application for the new town of Northstowe was submitted to South Cambridgeshire District Council in December 2007, together with three full road applications for highway improvements in order to serve the development. The application site includes the redevelopment of 605 hectares of land, a large part of

which previously formed part of Oakington Airfield. The core area of 427 hectares contains retail and business uses in addition to approximately 9,500 new homes and associated infrastructure and open space.

An air quality impact assessment has been submitted by the developer with the application and its conclusions will inform the decision making process. It is thought likely that there will be an impact on local air quality but discussions are still taking place to determine its significance.

The potential for significant impact is magnified by the proximity to the development of the A14 corridor, subject of an AQMA for NO_2 and PM_{10}. It is the location of these transport links that led to the identification of the proposed site for development. Improvements to the road network are proposed by the Highways Agency but may not be brought forward prior to commencement of development. In-depth negotiations are currently underway to determine the exact nature of the impact of both projects and to phase development accordingly to mitigate pressure on the highway and ensure that current service levels are maintained.

In addition, an outline planning application was submitted in 2007 for the development of Upper Cambourne. This is to include up to 950 dwellings, a community centre, open space and play areas. Owing to the recent improvements on the local road network it is thought that traffic movements will not cause a significant impact.

2.3.1 South Cambridgeshire District Council Planning Policy

The Local Development Framework (LDF) was adopted in July 2007 and replaces the previous Local Plan, published in 2004. It contains a series of Development Plan Documents (DPDs), which set out visions of the future of South Cambridgeshire and the objectives and targets that must be met in order to achieve that vision.

The overall environmental aim of the Local Development Framework is to preserve the biodiversity, historic interest and special character of the landscape and settlements of South Cambridgeshire and to achieve new development, which respects and reinforces local distinctiveness. In doing this, a contribution will be made towards the protection of the regional, national and global environment. This overall aim is delivered by a number of supporting objectives. Of these, the

objective to protect and improve the quality of the land, water and air environments, is directly relevant to this AQAP.

The LDF makes up just one part of the Development Plan which itself is made up of statutorily adopted plans within the Council. Policy NE/16, directly linked to air quality reads:

"1. Development proposals will need to have regard to any emissions arising from the proposed use and seek to minimise those emissions to control any risks arising and prevent any detriment to the local amenity by locating such development appropriately.

2. Where significant increases in emissions covered by nationally prescribed air quality objectives are proposed, the applicant will need to assess the impact on local air quality by undertaking an appropriate modelling exercise to show that the national objectives will still be achieved. Development will not be permitted where it would adversely affect air quality in an Air Quality Management Area."

This policy aims to protect human health and the environment from possible negative effects on air quality caused as a direct result of development and satisfied the requirements of the Regional Spatial Strategy.

The LDF is broken up into the major areas of development called Development Plan Documents (DPDs). The DPDs give the principles and policies to be achieved for the different areas of development, including: Northstowe, Cambridge Southern Fringe and Cambridge East. Each DPD contains a site specific Area Action Plan for the developments and includes policies that will have a direct impact upon air quality issues, such as sustainable development, cycling and car parking provisions. The guidance on air quality implications of development are currently being incorporated into the sustainable design guide which forms part of a suite of supplementary planning documents to be adopted by Council. The sustainable design guide will be consulted upon in late 2009 and is due to be adopted as a supplementary planning document in early 2010.

3. Source apportionment and degree of improvement

Before identifying the options available for improving air quality, the local authorities need to know the contribution of different source types to air pollution so that the effectiveness of different control options can be assessed.

In addition, the local authorities must determine the overall level of improvement required. NSCA (2001a)[(18)] provides guidance regarding calculation of this improvement in absolute and percentage terms.

- Required Improvement = Predicted Concentration – (Objective - margin for error)
- % Improvement = (Required Improvement/ Predicted Concentration) x 100

AQMAs are spatially defined using a model output and the defined area includes two model standard deviations below the objective to allow for possible model error. These standard deviations typically amount to 3µg/m^3 resulting in the defined area being declared on the 37µg/m^3 contour. In view of this the target modelled concentration for the purposes of the Action Plan will be 37µg/m^3.

The guidance emphasises that the point of maximum concentration, where exposure is likely, is used to calculate the required improvement and that consideration should be given to the need to allow for some headroom for future development or uncertainty in the overall assessment process.

Where the Councils are comparing historic results with the national objectives it is appropriate to use the actual concentration.

- Required Improvement = Concentration – Objective
- % Improvement = (Required Improvement/Concentration) x 100

Degree of improvement – PM_{10}

In addition to the assessment of NO_2, South Cambridgeshire District Council must also assess the impact of PM_{10}. The degree of improvement cannot be calculated in the same way as for NO_2, above, therefore, the source apportionment calculations are used to target the most polluting source to achieve an improvement in PM_{10} concentrations.

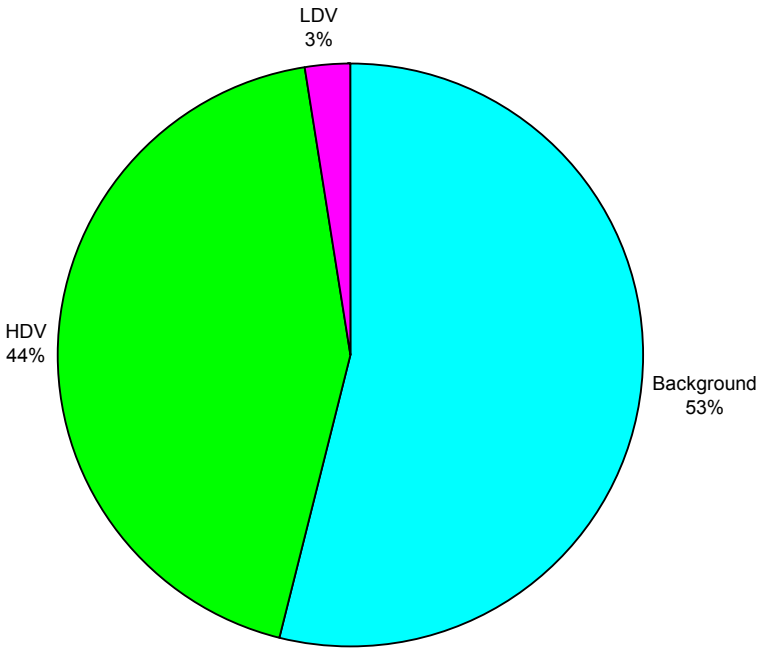
3.1 Cambridge City Council

Source apportionment

Source apportionment was carried out as part of the Further Assessment of NO_2[(5)]. Earlier AQR&A work had shown that Cambridge has two main areas of concern where exceedences of the annual mean objective for NO_2 appear likely to be a long-term problem. They are the areas around the bus station and the junctions between the inner ring road and the main arterial routes into the city.

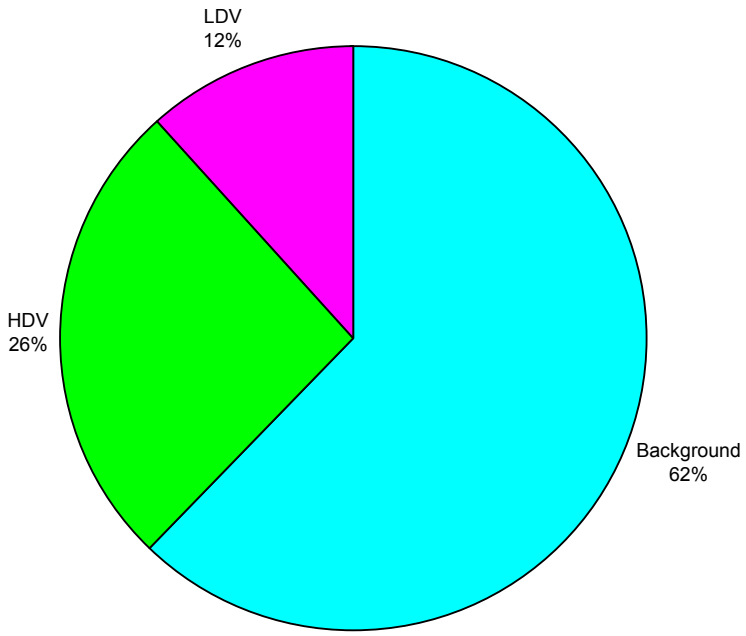
The Further Assessment demonstrated that the traffic component in the area around the bus station contributed 22.6 µg/m^3 NO_2, just under half of the total measured in 2005. HDVs (effectively PSVs) contributed 21.3 µg/m^3.

NO_2 Sources at the Bus Station



The Further Assessment also demonstrated that the traffic component at Gonville Place (a typical inner ring road junction) contributed 15.1 µg/m^3 NO_2 just over a third of the total measured in 2005. HDVs (PSV and HGV) contributed 10.4 µg/m^3.

Gonville Place Sources of NO_2



It should be noted that the 'background' component of NO_2 in central Cambridge is considerably higher than in suburban Cambridge or rural areas outside the city so if measures are taken to reduce traffic-related NO_2 levels in the central areas then the background NO_2 levels would also decrease. In addition, there is a relationship between PM_{10} levels and NO_2 levels, such that a reduction in traffic-related NO_2 levels should also be reflected in reduced PM_{10} levels.

Degree of improvement

Bus Station Area

The point of maximum concentration recorded at the continuous monitoring sites in 2005 (the year for compliance) was 51 µg/m^3 at Parker Street.

Required improvement = 51 - 40 = 11 µg/m^3

Percentage improvement = (11/ 51) x 100 = 21.6%

However, the point of maximum concentration in 2006 was 60 µg/m^3 at Parker Street.

Required improvement = 60 - 40 = 20 µg/m^3

Percentage improvement = (20/ 60) x 100 = 33.3%

However, the level of NO_2 recorded in the past 2 years has declined, probably related to the infrastructure changes around the bus station area. These changes have been made to accommodate an anticipated doubling of service frequencies in future years; strict emission controls agreed via the Quality Bus Partnership will be required to ensure that levels of NO_2 continue to fall.

The point of maximum concentration in 2007 was 54 µg/m^3 at Parker Street.

Required improvement = 54 - 40 = 14 µg/m^3

Percentage improvement = (14/ 54) x 100 = 25.9%

The point of maximum concentration in 2008 was 49 µg/m^3 at Parker Street.

Required improvement = 49 - 40 = 9 µg/m^3

Percentage improvement = (9/ 49) x 100 = 18.4%

Cambridge City Area

The point of maximum concentration recorded at the continuously monitoring sites in 2005 (the year for compliance) was 48 µg/m^3 at Gonville Place.

Required improvement = 48 - 40 = 8 µg/m^3

Percentage improvement = (8/ 48) x 100 = 16.7%

However, the point of maximum concentration in 2006 was 49 µg/m^3 at Gonville Place.

Required improvement = 49 – 40 = 9 µg/m^3

Percentage improvement = (9/ 49) x 100 = 18.4%

The point of maximum concentration in 2007 was 54 µg/m^3 at Gonville Place.

Required improvement = 54 - 40 = 14 µg/m^3

Percentage improvement = (14/ 54) x 100 = 25.9%

The point of maximum concentration in 2008 was 42 µg/m^3 at Gonville Place.

Required improvement = 42 - 40 = 12 µg/m^3

Percentage improvement = (2/ 42) x 100 = 4.8%

Initial model calculations indicate that if all PSVs were Euro 4, then levels of air pollution in the AQMA would be below the national objectives, both around the bus station and at the inner ring road junctions. This work will be discussed in Section 6 (Quantification) and the EMIT database will be used with ADMS-Urban to carry out scenario testing.

3.2 Huntingdonshire District Council

Source apportionment

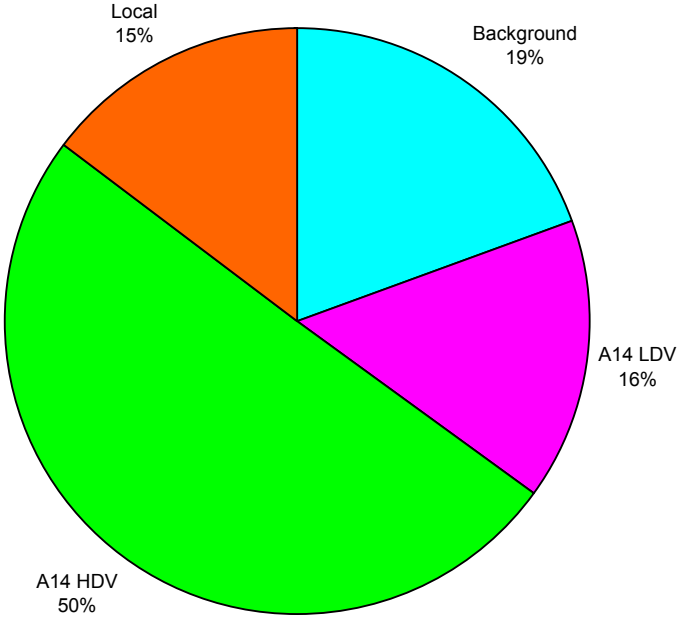
Source apportionment of total NO_x for all four of the Huntingdonshire AQMAs was carried out as part of the Further Assessment of NO_2 in 2007[(17)]. The study looked at source apportionment at seven locations using 2004 and 2005 data. There were two locations in each of the Huntingdon, Brampton and A14 Hemingford to Fenstanton AQMAs and a single location in the much smaller St Neots AQMA. The source apportionment findings are shown below.

A14 Hemingford to Fenstanton

2004. NO_x in µg/m^3					
Address	A14 LDV	A14 HDV	Local Sources	Rural Background	Total
Slipway	24	76	16	20	136
Connington Road	13	43	16	20	92

2005. NO_x in µg/m^3					
Address	A14 LDV	A14 HDV	Local Sources	Rural Background	Total
Slipway	20	64	15	20	119
Connington Road	11	36	14	20	81

The relative contributions of NO_x to the Fenstanton AQMA are shown below. The percentages are derived from the averages of the two locations and the two years (2004 and 2005) model outputs.

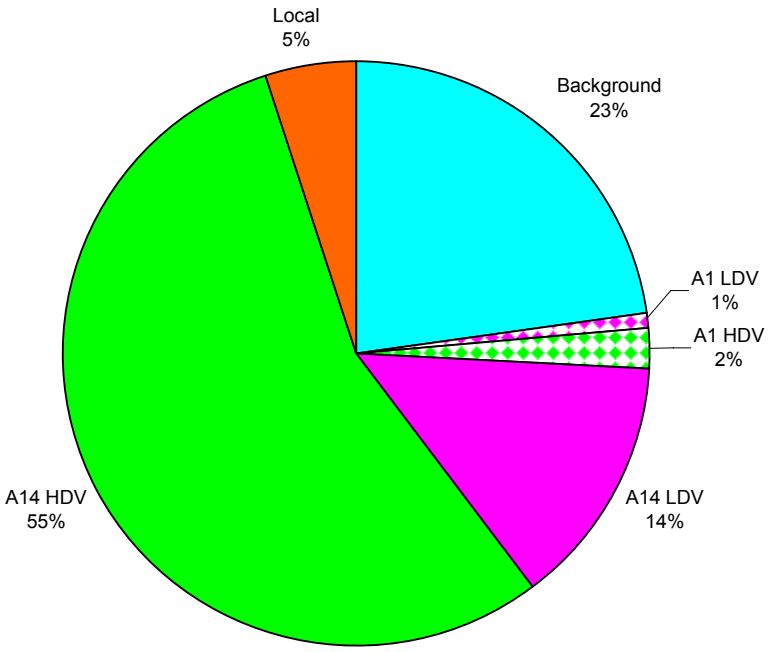


Brampton

2004. NO_x in µg/m^3							
Address	A14 LDV	A14 HDV	A1 LDV	A1 HDV	Local Sources	Rural Background	Total
16 Wood View	12	55	1	4	0	20	92
45 Flamsteed Drive	13	43	0	0	10	20	86

2005. NO_x in µg/m^3							
Address	A14 LDV	A14 HDV	A1 LDV	A1 HDV	Local Sources	Rural Background	Total
16 Wood View	12	55	1	3	0	20	91
45 Flamsteed Drive	12	40	0	0	8	20	80

The relative contributions of NO_x to the Brampton AQMA are shown below. The percentages are derived from the averages of the two locations and the two years (2004 and 2005) model outputs.

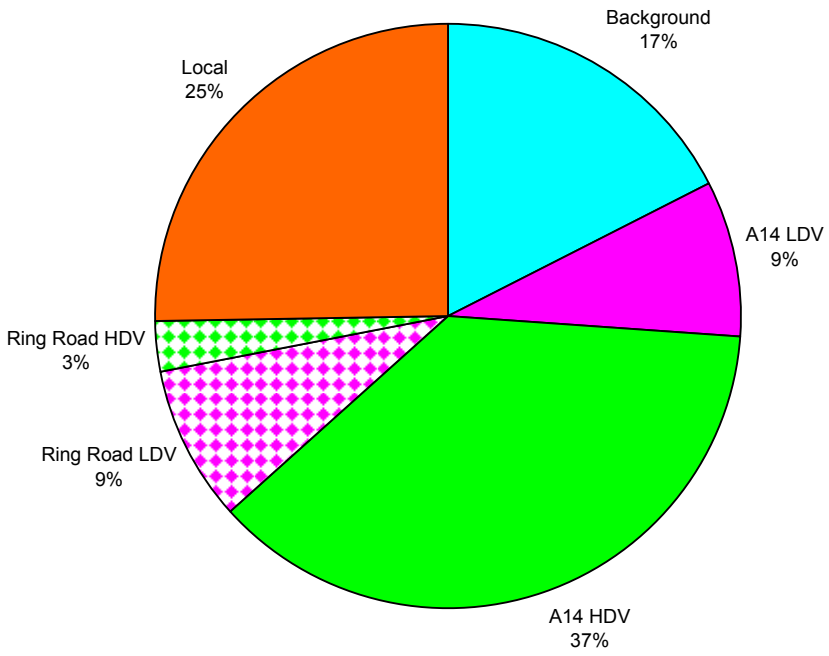


Huntingdon

2004. NO_x in µg/m^3								
Address	A14 LDV	A14 HDV	Ring Road LDV	Ring Road HDV	Escol (Industrial)	Local Sources	Rural Background	Total
96 Orthwaite	26	99	0	0	0	9	20	154
79 Ermine Street	3	12	12	4	1	44	20	95

2005. NO_x in µg/m^3								
Address	A14 LDV	A14 HDV	Ring Road LDV	Ring Road HDV	Escol (Industrial)	Local Sources	Rural Background	Total
96 Orthwaite	20	91	0	0	1	22	20	153
79 Ermine Street	2	10	20	5	1	31	20	90

The relative contributions of NO_x to the Huntingdon AQMA are shown below. The percentages are derived from the averages of the two locations and the two years (2004 and 2005) model outputs.

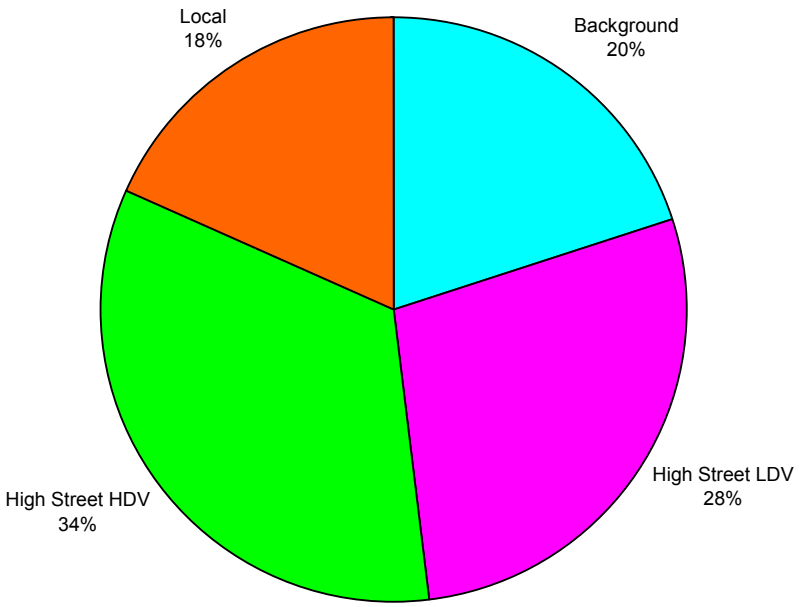


St Neots

2004. NO_x in µg/m^3								
Address	A1 LDV	A1 HDV	High Street LDV	Ring Road HDV	Little Barford	Local Sources	Rural Background	Total
High Street	0	0	29	35	1	20	20	104

2005. NO_x in µg/m^3								
Address	A1 LDV	A1 HDV	High Street LDV	Ring Road HDV	Little Barford	Local Sources	Rural Background	Total
High Street	0	0	27	33	1	17	20	99

The relative contributions of NO_x to the St Neots AQMA are shown below. The percentages are derived from the averages of the two locations and the two years (2004 and 2005) model outputs.



The degree of improvement required to achieve 37 µg/m^3 at each receptor location is as follows:

	Annual Mean NO_2 µg/m^3			Reduction Required	
Location	2004	2005	04/05	µg/m^3	%
A14 Hemingford to Fenstanton					
Slipway, Huntingdon Road	46.2	42.8	44.5	7.5	17
20 Connington Rd	39.5	37.1	38.4	1.4	4
Brampton					
16 Wood View	37.2	36.7	37	0	0
45 Flamsteed	35.4	33.5	34.5	0	0
Huntingdon					
96 Orthwaite	50.2	49.7	50	13	26
79 Ermine St	41.8	40.7	41.3	4.3	10
St Neots					
26 High Street	45.2	43.6	44.4	7.4	17

3.3 South Cambridgeshire District Council

Source apportionment

Source apportionment has been carried out as part of the Further Assessment of NO_2 and PM_{10}[(24)]. South Cambridgeshire has one area of concern along a stretch of the A14 between Bar Hill and Milton where exceedences of the annual mean objective for NO_2 and the 24-hour mean objective for PM_{10} appear likely to be a mid-term problem although with the forecast growth in the region, the potential for the exceedences to become long term problems cannot be ignored.

NO_2

There are two continuous monitors along the stretch of the A14 between Milton and Bar Hill, both measuring NO_2 and PM_{10}. Further Assessment demonstrates that the traffic component for NO_2 at the Bar Hill monitor is 28.1µg/m^3. HDV contributions were the highest of the traffic component, reaching 66.2% of the annual measured NO_x total.

At the Impington monitor, the traffic component for NO_2 has been calculated as 28.5 µg/m^3. HDV contributions were the highest of the traffic component, reaching 55.5% of the annual measured NO_x total.

PM_{10}

Further assessment of PM_{10} has demonstrated that the traffic component at the Bar Hill monitor is 5.1µg/m^3. HDV contributions were the highest of the traffic component, reaching 12% of the annual measured total.

At the Impington continuous monitor, the traffic contribution to the annual mean PM_{10} has been calculated as 6.7 µg/m^3 with HDVs contributing the highest of the traffic component at 14.4% of the total annual mean.

Source apportionment results – NO_x, Bar Hill

HDV Contribution µg/m^3	LDV Contribution µg/m^3	Background Contribution µg/m^3	Other (grid) µg/m^3
89.5	13.9	20.1	11.6
66.20%	10.30%	14.90%	8.60%

Oxides of Nitrogen Modelled annual mean = 135.1 µg/m^3

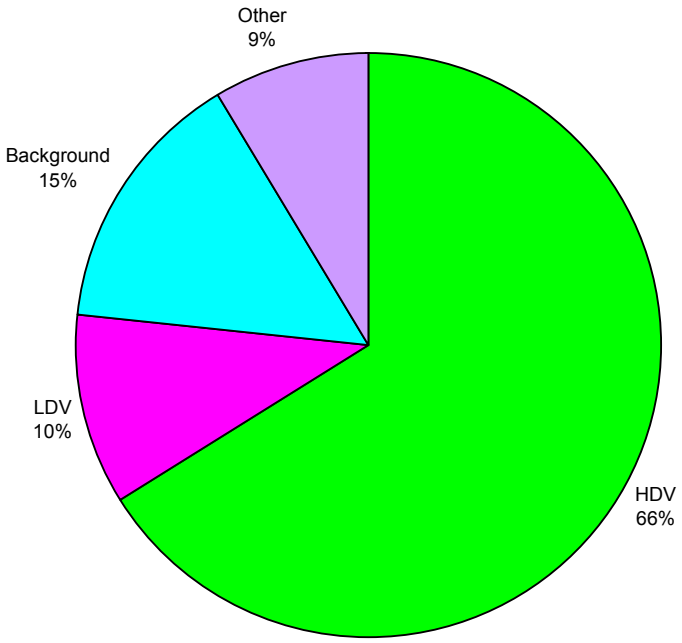
Contribution of road transport emissions to NO_2 (using Box 1 of "Deriving NO_2 from NO_x for Air Quality Assessments of Roads – Updated to 2006"):

$$NO_{2(road)} = ((-0.0719 \times Ln(NO_{x(total)})) + 0.6248) \times NO_{x(road)}$$

Where: $NO_{x(total)}$ = 135.1 µg/m^3

$NO_{x(road)}$ = 103.4 µg/m^3

Therefore: $NO_{2(road)}$ = 28.1 µg/m^3



The pie chart above gives the visual breakdown of contributions to the annual mean NO_x at Bar Hill. Traffic emissions give the largest contribution to the annual mean with 76.5% of the total, with HDVs contributing to 66.2% of this.

Source apportionment results – NO_x, Impington

HDV Contribution $\mu g/m^3$	LDV Contribution $\mu g/m^3$	Background Contribution $\mu g/m^3$	Other (grid) $\mu g/m^3$
72.1	31.7	20.1	6.0
55.5%	24.4%	15.5%	4.6%

Oxides of nitrogen modelled annual mean = 129.9 $\mu g/m^3$

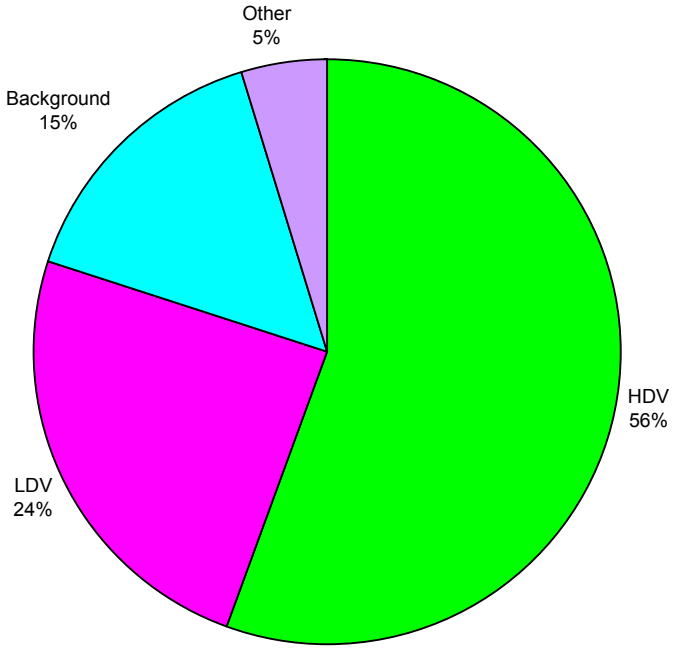
Contribution of road transport emissions to NO_2 (using Box 1 of "Deriving NO_2 from NO_x for Air Quality Assessments of Roads – Updated to 2006"):

$$NO_{2(road)} = ((-0.0719 \times Ln(NO_{x(total)})) + 0.6248) \times NO_{x(road)}$$

Where: $NO_{x(total)} = 129.9\ \mu g/m^3$

$NO_{x(road)} = 103.8\ \mu g/m^3$

Therefore: $NO_{2(road)} = 28.5\ \mu g/m^3$

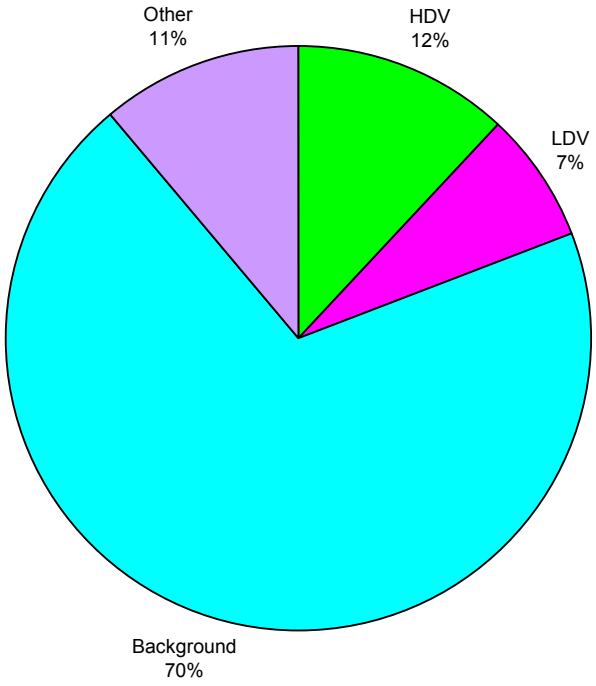


The pie chart above gives the visual breakdown of contributions to the annual mean NO_x at Impington. Traffic emissions give the largest contribution 79.9% of the total with HDVs contributing to 55.5% of this.

Source apportionment results – PM_{10}, Bar Hill

HDV Contribution µg/m^3	LDV Contribution µg/m^3	Background Contribution µg/m^3	Other (grid) µg/m^3
3.2	1.9	18.6	3.0
12%	7%	70%	11%

PM_{10} Modelled annual mean = 26.7 µg/m^3



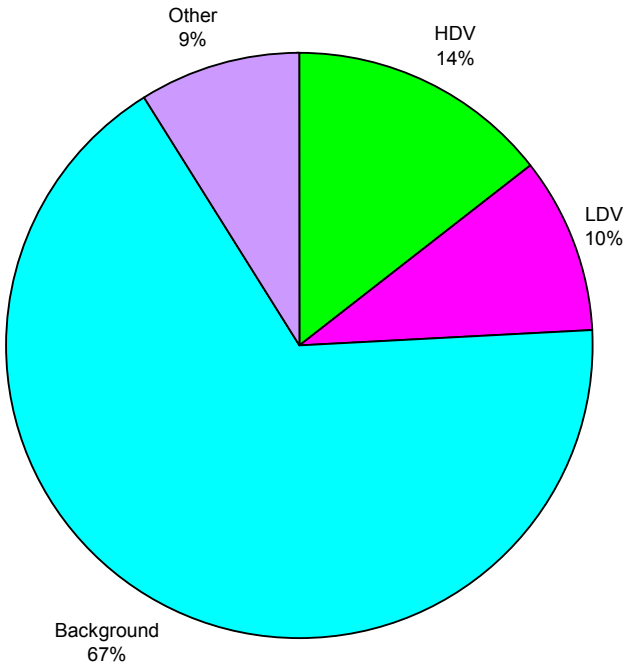
The pie chart above shows the annual contributions from the different sources of PM_{10} modelled at Bar Hill. The background concentration provides the largest contribution to the annual mean although traffic contributions provide 19% of the total, with HDVs contributing to 12% of this.

The annual mean PM_{10} is currently being achieved at this site. It is the 24-hour mean objective that is not. It is possible that the exceedences of the 24-hour mean objective are caused by queuing and congested traffic.

Source apportionment results – PM_{10}, Impington

HDV Contribution µg/m^3	LDV Contribution µg/m^3	Background Contribution µg/m^3	Other (grid) µg/m^3
4.0	2.7	18.6	2.5
14.4%	9.7%	66.9%	9%

PM_{10} Modelled annual mean = 27.8 µg/m^3



The pie chart above shows the annual contributions from the different sources modelled. The background concentrations of PM_{10} provide the largest contribution to the annual mean although traffic contributions provide 24% of the total, with HDVs contributing to 14.4% of this.

The annual mean PM_{10} is currently being achieved at this site. It is the 24-hour mean objective that is under threat. It is possible that the exceedences of the 24-hour mean objective are caused by queuing and congested traffic.

Degree of Improvement - NO_2

The point of maximum concentration recorded at the continuously monitoring sites in 2005 (the year for compliance) was 42 µg/m^3 at Bar Hill.

Required improvement = 42 - 40 = 2 µg/m^3

Percentage improvement = (2 / 42) x 100 = 4.8

However, the point of maximum concentration in 2006 was 43 µg/m^3 at Bar Hill.

Required improvement = 43 - 40 = 3 µg/m^3

Percentage improvement = (3 / 43) x 100 = 7

The point of maximum concentration in 2007 was 41 µg/m^3 at the Impington continuous monitoring station.

Required improvement = 41 - 40 = 1 µg/m^3

Percentage improvement = (1 / 41) x 100 = 2.4

Degree of Improvement - PM_{10}

Health effects of particulate matter are associated with the primary and secondary source categories. Primary PM_{10} is emitted direct to the atmosphere; secondary PM_{10} is formed by (amongst other things) NO_x in the atmosphere. Therefore, reducing emissions of NO_x will reduce the emissions of both NO_2 and secondary PM_{10}. For South Cambridgeshire, the contribution from the three source categories in 2007 has been calculated as:

Primary – 16.4µg/m^3, Secondary – 9.1µg/m^3 and Coarse – 10.5µg/m^3

The annual mean for PM_{10} at the Bar Hill and Impington continuous monitors has not been exceeded in recent years. It is the 24-hour mean objective that is currently exceeded. Degree of improvement for PM_{10} will be based upon targeting the most polluting source and continued monitoring.

3.1 - Summary table - indicative degree of improvement

Council	Required improvement $\mu g/m^3$	Required improvement %
Cambridge City Council - bus station area	20 $\mu g/m^3$	33%
Cambridge City Council - City Centre	9 $\mu g/m^3$	18%
Huntingdonshire District Council – A14	7.5 $\mu g/m^3$	17%
Huntingdonshire District Council – Brampton	0 $\mu g/m^3$	0%
Huntingdonshire District Council – Huntingdon	13 $\mu g/m^3$	26%
Huntingdonshire District Council – St Neots	7.4 $\mu g/m^3$	17%
South Cambridgeshire DC – Bar Hill (2006)	3 $\mu g/m^3$	7%
South Cambridgeshire DC – Impington (2007)	1 $\mu g/m^3$	2.4%

Source apportionment studies (Cambridge City Council, 2006), have shown that the major contribution to annual mean NO_2 in central Cambridge is emissions from HDVS, particularly in the bus station area, and the most improvement will be gained by tackling emissions from PSVs.

Source apportionment studies (Huntingdonshire District Council, 2007[(17)]), have shown that the major contribution to annual mean NO_2 in Huntingdonshire District Council is emissions from HDVs.

Source apportionment studies (South Cambridgeshire District Council, 2008[(24)]), have shown that the major contribution to annual mean NO_2 in South Cambridgeshire is queuing and congested traffic on the A14 and the most improvement will be gained in resolving this issue and tackling emissions from HGVs. Similarly the major contribution to the number of exceedences of PM_{10} daily means is queuing and congested traffic on the A14 and the most improvement will be gained by the same actions.

4. Consideration of Options

The Districts have compiled a table of more than 90 actions that will have a positive impact upon air quality, listed in Appendix 2(A2). These are currently in place or planned for the near future by the County and all District Councils. They have been arranged into the following themes:

- Managing the road or transport network – infrastructure changes.
- Managing the road network – public transport improvements.
- Managing the road network – demand management.
- Lowering vehicle emissions.
- Lowering emissions from buildings - commercial.
- Lowering emissions from buildings – domestic.
- Strategic Planning.
- Development Control.
- Promote Smarter Travel Choices.
- Raising Awareness.

A basic cost-benefit analysis has been carried out. Timescales are shown and simple quantification of the benefits has been estimated for most of the actions.

Some actions are specifically designed to improve air quality, but many of the actions have been initiated to tackle other areas, for example climate change or reducing congestion.

Officers from the District Councils consider that these actions will, if implemented in full, reduce the level of pollutants to below the national objectives. Therefore, each District initially produced a list of the five priority actions, or packages of measures, that will in their opinion have the most beneficial impact on air quality in their area. These actions are considered in more detail in Sections 4.3, 4.4 and 4.5.

Quantification of the impacts of infrastructure improvements and the planned growth scenarios is not straightforward because of the number of variables involved. Therefore the District Councils appointed CERC to provide an emissions inventory(10) for their districts. This is an up-to-date and comprehensive inventory that will be used as a base for further modelling; the Districts will be able to investigate the impact on emissions (and thus air quality) of various emissions reduction strategies.

Cambridge City Council and South Cambridgeshire District Council also appointed CERC to carry out a comprehensive modelling exercise for their areas to assess the impact on air quality of the proposed new developments. In Cambridge this included the Southern Fringe, West Cambridge and North-West Cambridge developments. Within South Cambridgeshire, the modelling included the potential impacts on air quality from the proposed new town of Northstowe (approximately 2km north-east of the boundary of the District's AQMA along the A14) and a proposed development in Hauxton. The modelling also included a comparison of the projected, with and without congestion charging, scenarios for the wider Cambridge area.

4.1 Cambridge City Council

Poor air quality in Cambridge is principally related to the volume and type of traffic in the frequently congested narrow streets in the historic city centre. Therefore we consider that the six actions from the AQAP measures that are most likely to show a benefit to air quality are:

1. Implementation of Air Quality policies in the Local Plan – new development not permitted to adversely impact on AQMA.

2. Implementation of the QBP - minimum emission criteria for all PSVs as well as targets for ongoing improvements in PSV emissions.

3. Maintain 8-year limit on taxis for all taxis licensed by Cambridge City Council and all taxis entering the transponder-controlled Core Area - to ensure that the fleet is continuously improving. Creation of a low-emission zone –

restricting access to the Core Area regulated by rising bollard transponder entitlement.

4. Creation of a Low Emissions Zone – restricting access to the Core Area regulated by rising bollard transponder entitlement.

5. LTP – policies to maintain current levels of traffic in City centre to 2011 – modal shift to public transport/cycling/walking.

6. Long-term Transport Strategy – complements Local Transport Plan to ensure that the scale of developments in Cambridgeshire can be accommodated in a sustainable way and runs to 2021.

Four of the six actions (2, 4, 5, 6) fall directly under the responsibility of the County Council; the City Council is dependent upon the ability of the County Council to carry out its planned activities and will continue to work closely with our County colleagues where possible to ensure that the importance of air quality is considered in any future plans.

We will use the EMIT database with ADMS-Urban dispersion model to carry out scenario testing of different growth scenarios/modal shift/changes in vehicle emissions/behaviour patterns in new communities so that the relative impact of these variations can be assessed. Therefore, the five priorities for the City Council may change.

Discussion of the proposed actions

Air Quality policies in the Local Plan/Local Development Framework

The first step was to introduce policies on air quality into the 2006 Cambridge City Council Local Plan. Air Quality Assessments are required for specified developments that might adversely impact on air quality in the AQMA or where air quality might affect the proposed end users. Development is not permitted that would have an adverse effect upon air quality within the AQMA or if air quality levels within the AQMA would have a significant adverse effect on the proposed use/users.

Further detail of the planning policy has been developed and incorporated into the Sustainable Design and Construction Supplementary Planning Guidance document, which was formally adopted in May 2007. In addition, supplementary guidance, Air Quality in Cambridge: A guide for Developers[(6)], was published in September 2008.

These policies have meant that planners and developers have properly considered air quality since 2005. District Officers have engaged in an informal and ongoing education for the development control officers, especially those involved in the consideration of planning applications for the Major Sites, which have the potential to have enormous impact on air quality.

Whilst the standard of Air Quality Assessments has been generally poor, for a number of reasons, they have provided a basis for discussion of air quality issues and provided the development control officers with some information, thus strengthening the case for requirements for mitigation measures, improved public transport contributions, redesign, travel plans, etc.

- Costs – Variable. The costs of a providing an Air Quality Assessment are typically low, but may rise with the size of the development, depending upon its strategic importance and location. Mitigation measures and/or contributions to public transport may cost considerably more.

- Impact on Air Quality – High. The impact of any single development might have a negative impact on air quality in Cambridge, especially larger schemes within the AQMA. The cumulative impact of schemes must also be addressed.

- Feasibility – High. This work is straightforward.

- Timescale – ongoing. The CERC project models the growth scenarios up to 2016, but Air Quality Assessments will continue to be required from developers until the air quality issues in Cambridge have been resolved.

- AQAP Priority – High. This will improve air quality and maintain the improvement in the long term.

- Wider Benefits. Infrastructure improvements should encourage cycling and walking; traffic reduction measures should lead to noise reduction and a more pleasant environment in affected areas of Cambridge.

- Risk. The principal risks arise from development control officers not considering air quality, considering that other planning issues are more important (such as aesthetics) or not being able to negotiate adequate levels of mitigation or S106 contributions.

Implementation of the Quality Bus Partnership

The Cambridge City Council Further Assessment of NO_2 in 2006[(5)] showed that HDVs (principally buses) are a main source of NO_2 air pollution in the AQMA – around 40% in the bus station area and 20% elsewhere in the City centre. The background component of air pollution in central Cambridge is considerably higher than in the suburbs or rural areas and this is partly made up of diffuse local bus emissions - such that the figure of 40% is an under-estimate of the real contribution, which is likely to be more than 50%.

The contribution of buses to air pollution as a proportion of the mix is unlikely to change as the frequency of bus services is increasing to accommodate the rise in population in and around Cambridge. A report to the County Council cabinet in July 2008 indicated that the number of buses in the City Centre is set to rise from 125 per hour (currently) to 228 – 267 per hour by 2021, effectively a doubling of service levels.

The original specification in the LTP was for 90% of PSVs to be Euro 2 + Reduced Pollution Certificate (RPC) (or better) by January 2009. Negotiations between County Officers and the bus operators have led to an agreement of 90% Euro 2 by January 2009 (the requirement for RPC was dropped). The latest data shows that 88% of the fleet was Euro 2 or better in January 2009. It is likely that most of the operators will be on target by the end of January 2010 (93%).

Air quality in the bus station itself has improved. The number of services using the bus station has been approximately level over the past five years but there have been some improvements in the quality of buses in service during that time. In

addition, congestion within the bus station has declined as improvements to the road layout adjacent to the bus station have been made, including the re-location of the long-distance coaches. These two factors have probably led to this distinct trend, which has not been seen elsewhere.

The overall trend in the bus station area appears to be slightly downwards over the last five years. The number of buses using the central area of Cambridge continues to grow with 397 buses in January 2007 and 476 in January 2009. Air quality has not deteriorated which is in part due the improving specification of buses used on Cambridge services and partly due to the recent infrastructure re-arrangement, which has greatly improved flow. All parties need to work together to ensure that continuing increases in bus services and frequencies do not re-congest the area and that high quality buses continue to be used to prevent deterioration in air quality.

Continuing partnership working is needed to ensure that projected increases in PSV volume do not re-congest the area and that high quality, low emission buses are in service to make improvements to air quality in the centre of Cambridge. A step-change in the rate of improvements is required to make any improvement in air quality, particularly if all of the proposed new services are implemented.

This is a key action for the improvement of air quality, but City Council Officers do not consider that it has yet been implemented as extensively as is needed. Therefore a more flexible approach is proposed, based on bus emissions in the Core Area. This will take the form of a Emission Reduction Commitment to be agreed with the operators through the Quality Bus Partnership.

- Costs – High. New buses can cost £100K or more.

- Impact on Air Quality – High. Initial modelling has shown that the impact of improving the quality of the bus fleet can lead to noticeable reductions in pollution levels. This work will be revisited for a more detailed quantification of the potential impacts.

- Feasibility – Medium. There is potential for some delay because of the long lead time for the supply of new buses. In addition, the bus operators would

like to see improvements in the City centre infrastructure to enable buses to move through the congested centre without delays to the service, before committing to further expenditure. The ongoing Core Schemes continue to work towards this aim. The largest operator also requires a new local site for their depot, which is proving difficult to source because of planning allocations.

- Timescale – within five years. Levels of air pollutants will be below the national objectives within the next five years if considerable improvements in the bus fleet are made to happen. This Action Plan will, through the QBP, set targets appropriately.

- AQAP Priority – High. Ambitious development of the QBP is one the two most important actions that can be made to improve air quality in Cambridge.

- Wider Benefits. The partnership should lead to a higher quality of bus on the streets of Cambridge, encouraging greater passenger use.

- Risk. The principal risk to this action is inability to obtain agreement with the bus operators and lack of commitment on the part of our County partners to implement sanctions where improvements are not forthcoming on a reasonable timescale.

Maintain 8-year limit on taxis

A significant proportion of the traffic in the centre of Cambridge is taxis and this proportion is increasing as further restrictions on traffic come into place under the Core Area scheme. Vehicular access to much of the historic city centre is only permitted with a transponder. Cambridge City Council already has an agreement that taxis licensed by this council are must not be more than 8 years old – it is important that this is maintained in future years.

- Costs – Low. The replacement schedule is what would be expected for a high mileage fleet.

- Impact on Air Quality – High. A high quality taxi fleet is an important strand in our work towards improving air quality.

- Feasibility – High. The agreement is already in place.
- Timescale – Ongoing. This action is in place and there is no end point to the agreement.
- AQAP Priority – High. It is important to ensure that taxis continue to be replaced so that a drift towards older and more polluting vehicles does not occur. To work towards improved air quality the fleet must be continuously improving.
- Wider Benefits. A new taxi fleet creates a good impression on Cambridge's many visitors and is a better experience for all passengers. In addition, the Environmental Services team receives fewer complaints.
- Risk. Low. Significant economic downturn leading to significant loss of business for the taxi trade, such that replacing vehicles becomes economically unviable.

Creation of a Low Emission Zone

Restricting access at certain times of day to the historic narrow streets of central Cambridge is linked in part to the Quality Bus partnership, but also applies to taxis. Delivery vehicles are currently not included.

- Costs – High. The infrastructure costs are high for this project but much has already been installed as part of the Core projects.
- Impact on Air Quality – High. The Core Area is the area that suffers most from poor air quality.
- Feasibility – High. Rising bollards are already in place and further traffic restrictions are planned under Core Scheme V. Transponders are already in use by buses and taxi drivers.
- Timescale – could be possible within five years.
- AQAP Priority – High.

- Wider Benefits. Reducing the volume of traffic in the central areas makes recreational shopping and leisure activities a more pleasant and quieter experience. This should make Cambridge a more attractive place to visit and have a positive impact on commercial activity.

- Risk. Lack of political will to continue with the development of the Core Schemes and lack of public acceptance of the consequences of further restrictions on the central streets.

Local Transport Plan 2

LTP contains two targets specifically aimed at lowering air pollution. The first is implementation of lower emissions from buses (part of the QBP, as discussed above). The second is a target to reduce levels of air pollution by maintaining current levels of traffic in the City centre. Improving emission standards, from all vehicles, should lead to lower levels of air pollution with time. As well as the ongoing Core Traffic Scheme to restrain traffic in the central areas of Cambridge, there are measures to encourage a modal shift away from private car use towards increased use of public transport, cycling and walking.

- Costs – High. The presence of an AQMA in Cambridge led to significant additional funds being made available to the County Council to deal with air quality as part of LTP.

- Impact on Air Quality – High

- Feasibility – High. The LTP is a programme of agreed measures.

- Timescale – to 2016

- AQAP Priority – High.

- Wider Benefits - Maintaining the volume of traffic in Cambridge prevents deterioration of the environment in terms of noise and safety, thus should make sure that Cambridge remains an attractive place to visit.

- Risk – the only known risk is political. Some businesses and residents are affected by road closures/restricted access.

Long-term Transport Strategy

The Long Term Transport Strategy (LTTS) runs until 2021 and provides the framework for current and future LTPs to deliver improvements to transport. It takes full account of regional strategies and plans and was developed by the County Council to meet the challenge of increased travel demand due to growth in population and the economy. The LTTS will be delivered through a number of means, primarily the LTPs, but also through the Transport Innovation Fund (TIF) and development planning processes for the new growth areas. A successful TIF bid is therefore crucial in maintaining the momentum towards improved air quality in the long run.

- Costs – High. Infrastructure and public transport improvements are high-cost projects.
- Impact on Air Quality – High. The impact of schemes can be modelled.
- Feasibility – High. Delivery via the LTP process means that the work is programmed.
- Timescale – until 2021.
- AQAP Priority – High. Implementation of transport infrastructure is important to accommodate the planned growth for the region.
- Wider Benefits – improved transport choices for the whole of Cambridgeshire; safer roads network.
- Risk – not obtaining funding to carry out the infrastructure improvements. Lack of political will and public acceptance for some aspects.

Additional/alternative measures

The City Council officers consider that the most effective measures that can be undertaken to bring levels of NO_2 in Cambridge below the national objectives are the network management measures (infrastructure changes, public transport improvements, demand management), land use and transport planning measures (strategic planning and development control) and the measures to lower PSV

emissions. However, other measures can play an important role in emissions reduction.

Emissions inventory data National Atmospheric Emissions Inventory (NAEI 2006) indicate that at least half of NO_x emissions in Cambridge are from road transport sources and around a third are from commercial, industrial and domestic combustion, which is confirmed by data compiled by CERC for the districts' emissions inventory(10).

Lowering emissions from other vehicles, such as taxis, private cars, commercial vehicles and our own fleets can contribute to improving air quality. The City Council has gathered and reported in 2009 information about emissions from our own fleet for the NI194 Air quality – Percentage reduction in NO_x and primary PM_{10} emissions through local authority's estate and operations. The City Council will look at the contribution to NO_x in Cambridge from our own fleet and seek to make emission savings.

Although the impact of lowering emissions from transport has the greatest potential to improve air quality, there can be a significant impact from reducing emissions from other sources. Lowering emissions from domestic and commercial buildings can be achieved by installing energy saving measures in existing properties and requiring high specifications for new build.

The City Council has also gathered information about emissions from our own property for NI194 and reported in 2009. The City Council will look at the contribution to NO_x in Cambridge from our property and seek to make emission savings. Defra and DECC have announced that there were errors in the spreadsheet which affected the air quality component, so the final figures are yet to be confirmed.

Studies have shown that promotion of Smarter Travel Choices could reduce peak urban traffic by around 21% and national traffic by around 11% according to a DfT study(15). The potential public expenditure saving from smarter travel choices is considerable with estimated cost of 1.5p per car kilometre removed and benefit of 15p per car kilometre removed. Thus, although the cost-benefit of individual

smarter travel initiative are difficult to quantify, the package of 'soft' measures is an important strand of the AQAP.

It is also difficult to quantify the impact of raising awareness about air quality issues but this is part of the overall plan to continue to educate and inform. In Cambridge this will take the shape of publicity around initiatives such as 'Walk-It' and updates on progress of the AQAP in Cambridge Matters magazine. Further campaigns could take place, for example, 'Switch Off', 'Leave your car at home day' or public transport travel promotions. These measures will take place on an *ad hoc* basis.

4.2 Huntingdonshire District Council

There are four AQMAs in Huntingdonshire. Those at Brampton and on the A14 Hemingford to Fenstanton both clearly result from traffic emissions from trunk roads, mostly the A14 itself. The Huntingdon AQMA is certainly affected by emissions from the A14 but local emissions from the congested Ring Road are also significant. The St Neots AQMA results almost entirely from local emissions from the congested canyon-like historic High Street.

Due to the differences between the AQMAs different actions are ranked differently for the AQMAs. For example, the proposed re-routing of the A14 is predicted to have very significant effects on three of the AQMAs but no significant effect in St Neots.

The top five measures that are most likely to show significant benefits to air quality within the three AQMAs affected by the A14 (i.e. not St Neots) are:

1. The rerouting of the A14 away from settlements.
2. Implementation of Air Quality policies in the Local Plan – new development not permitted to have a significant adverse impact on air quality within Air Quality Management Areas.
3. Development of an effective freight transport partnership between operators using the A14.

4. Inclusion of Huntingdonshire in the Quality Bus Partnership - minimum emission criteria for all Public Service Vehicles as well as targets for ongoing improvements in emissions.

5. Completion and opening of the Cambridgeshire Guided Busway.

Measure 1 will be implemented by the Highways Agency and is expected to have a net significant positive impact on air quality in three of the four Huntingdonshire AQMAs (it is not expected to have any effect in St Neots).

Measure 2 has been implemented by Huntingdonshire District Council and should have a positive impact on all of the AQMAs as new developments in or adjacent to AQMAs will be required to minimise emissions.

Measure 3 will be pursued by the District Council's and will attempt to minimise unnecessary mileage by HDVs on the A14 and influence driver behaviour.

Measure 4 would include Huntingdonshire within the QBP, which currently only covers the Core Area of Cambridge. Reservations have been expressed by the County Council over the effectiveness of extending the QBP coverage into areas where they have no physical controls, such as rising bollards. It is thought, however, that the inclusion of Huntingdonshire in the immediate future will enable benefits to be negotiated such as routing cleaner buses through certain areas of the AQMAs.

Measure 5 is likely to provide a positive impact to the three Huntingdonshire AQMAs within the A14 corridor, as it reduces private car use.

Measures 4 and 5 are led by Cambridgeshire County Council.

The top four measures that are most likely to show significant benefits to air quality within the St Neots AQMA are:

1. Inclusion of Huntingdonshire in the Quality Bus Partnership - minimum emission criteria for all PSVs as well as targets for ongoing improvements in emissions.

2. Changes to the traffic-light systems in St Neots High Street as specified in the St Neots Market Town Strategy.

3. Implementation of Air Quality policies in the Local Plan – new development not permitted to have a significant adverse impact on air quality within AQMSs.

4. Development of an effective freight transport partnership between operators accessing St Neots.

Measures 1, 3 and 4 are discussed above. Measure 2, which is clearly specific to St Neots, is expected to reduce NO_x emissions within St Neots High Street.

4.3 South Cambridgeshire District Council

The AQMA between Bar Hill and Milton within South Cambridgeshire is undoubtedly caused by the heavy flow of traffic and regular congestion on the A14. In addition, this stretch of road experiences a high through-flow of HGV traffic. HGV traffic along this stretch of the A14 makes up approximately 16% of the daily combined flows, which is higher than the national average of 14%.

The Highways Agency has already proposed improvements to this stretch of the A14, which will comprise widening of the existing carriageway to three lanes in each direction creating local access roads, alongside the widened A14, to separate local and strategic traffic. These proposals are currently subject to the approval of a Draft Order, which may then be subjected to a Public Enquiry. These improvement actions are included within this Action Plan and form two of South Cambridgeshire District Council's priority measures.

Cambridgeshire County Council is the lead authority on a further project, the Cambridgeshire Guided Busway, which will run from Huntingdon and Somersham to Trumpington Park and Ride, south of Cambridge, approximately parallel with the A14 and the M11 (see figure 4.1[(f)]). The initial phase of the Busway is due to open in December 2009. Currently, bus services between Huntingdon and Cambridge City must use either the A14 or local routes through the villages, which inevitably leads to buses sitting in traffic.

The Guided Busway service links Huntingdon to Cambridge via St Ives. It will make use of the disused railway line between St Ives and Cambridge, creating a dedicated guided bus route. Between Huntingdon and St Ives, the service will operate along the existing highways. It is predicted that this will improve the public transport network between Huntingdon and Cambridge and therefore attract many more passengers who would normally make private journeys along the A14. This too is considered as a priority measure for South Cambridgeshire within the Action Plan.

The following measures are considered to be the most likely to have a beneficial impact on air quality within the District:

1. Completion and opening of the Cambridgeshire Guided Busway.

2. Widening of the A14 carriageway between Fen Drayton and Histon - increasing the number of lanes from two to three on both eastbound and westbound carriageways should help to alleviate congestion and speed traffic through-flow.

3. Re-alignment of the A14 and the construction of a local road between the M11 and Bar Hill junctions during the A14 Improvement Scheme.

4. Become members of existing Freight Quality Partnership – the South Cambridgeshire District Council's Further Assessment of air quality along the A14 has identified HGVs as having the greatest impact on air quality in the District. If improvements in air quality are to be achieved on the A14 between Bar Hill and Milton it is vital that the Council seeks to give an understanding of local air quality issues to freight operators, who may in turn be able to offer invaluable input into reducing emissions from their fleet.

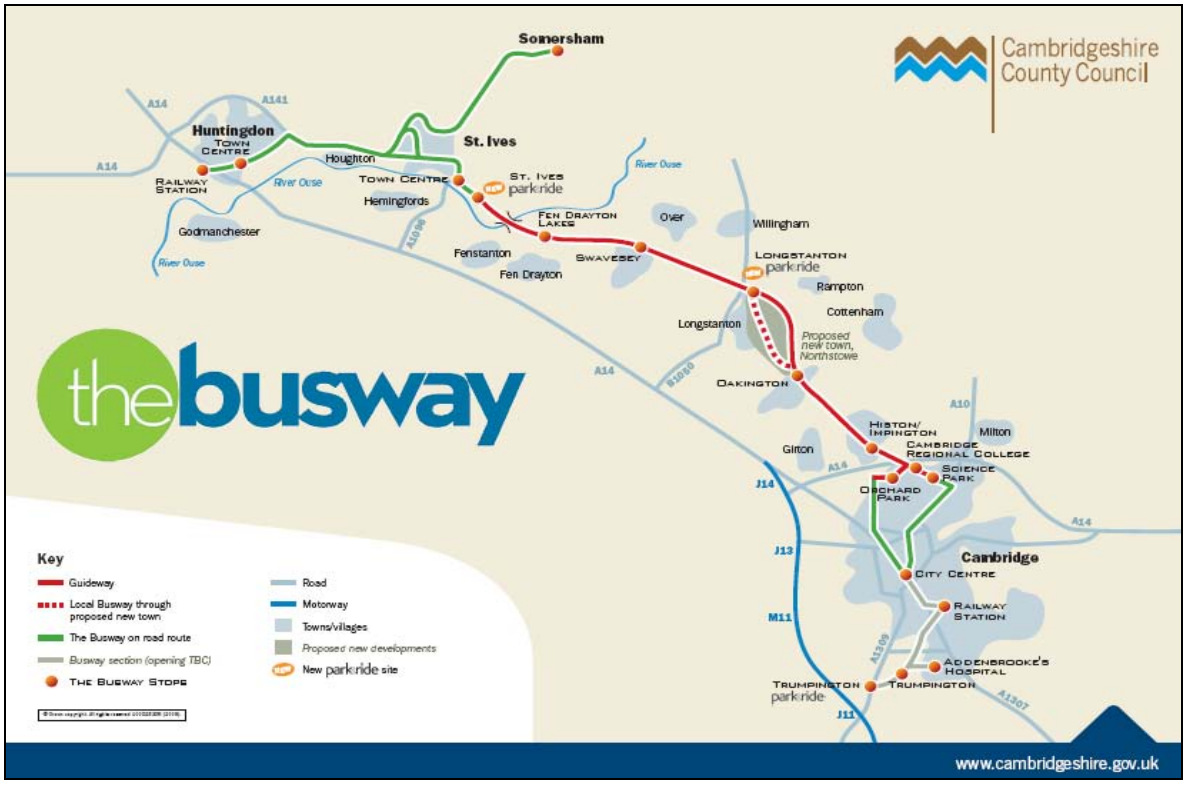
5. Embedding the Local Development Framework (LDF) Air Quality Policy in Supplementary Planning Documents – this will ensure that air quality is considered at the planning stage and therefore not adversely impacted by new development it aims to explore the implementation of a low emission strategy to mitigate the impact of growth.

Of the above actions, the Guided Busway falls under the responsibility of Cambridgeshire County Council whilst the improvements to the A14 are under the jurisdiction of the Highways Agency. In all circumstances, the District Council will seek to influence decisions made by both the County Council and the Highways Agency in order to bring improvements in air quality to the forefront of the decision-making processes.

Primary PM_{10} is a regional as well as a local problem and, therefore, actions taken by South Cambridgeshire District Council, Cambridge City Council or Huntingdonshire District Council targeting improvements in vehicle emissions will have a beneficial impact on local and regional primary particulate levels. As with secondary particulate matter, improving the emissions from vehicles will target both primary particulate matter and NO_2.

The priorities have been chosen due to the potential for them to have a dual impact on reducing both NO_x and PM_{10} emissions. These priorities will be reviewed as works progress and may change depending upon the results of the detailed modelling for the different scenarios.

Figure 4.1 - Route of the Cambridgeshire Guided Busway[(b)]



5. Consultation

Statutory consultation requirements are specified in Schedule 11 of the Environment Act 1995, which gives a list of prescribed consultees. Additional consultation can be undertaken with other bodies where appropriate. The consultation process should be open and transparent; communication needs to be an ongoing, inclusive procedure with all partners concerned including business and local communities involved so that they become an actively participating group in the air quality improvement process. The consultation for this AQAP builds on the consultation that has been undertaken at all stages of the AQR&A process.

The District Officers consider that the actions discussed in Section 4 and including the actions listed in Appendix 2(A2), will, if implemented in full, reduce the level of pollutants to below the National Objectives. Therefore, it was necessary to consult widely on these actions to highlight any wider implications of their implementation. Further, risk analysis has highlighted two principal risks to delivery of the improvements in air quality.

1. There is the possibility that the TIF funding might not continue. If this were the case, then some of the key projects would not be carried out and improvements to air quality would be at risk.

2. Another possibility is that these measures might not be as effective as we estimated, or that they might fail for another reason. (The most likely being that the residents (both current and new to the area) do not make the required modal shift to public transport/walking and cycling.)

In the event of such a failure it would be wise to have a number of alternative measures to consider for implementation, so we have used the consultation process to seek out such actions for potential consideration.

2009 Consultation

Two workshops with residents (one in Cambridge and one in Huntingdon) and one with stakeholders (in Cambourne) were held at the end of March 2009.

In all workshops, the District Officers gave the participants a presentation about local air quality and a summary of the priority actions identified within the Action Plan. An open discussion/question and answer session followed during which any ideas, concerns or comments were answered. The complete set of actions was available for all consultees to see the full range of actions already in place/planned.

5.1 Residents consultation

Consultants MRUK, commissioned by the 3 local authorities, recruited attendees with the aim of selecting an approximately representative cross-section of society. However, residents with children were under-represented at both workshops. MRUK led the residents' discussion on their views on tackling air pollution in the County. The District officers were not present so that the participants could speak freely, although the officers were on call in case of query.

The aims of the workshops with residents were:

- To raise awareness of local air quality issues.
- To consult residents on the presentation given to them by officers.
- To discuss the issues raised from the presentation.
- To determine what could be done to decrease air pollution in the region which would have the support of the residents.

Residents commented that they felt that overall air quality in Cambridgeshire was better than in the past and better than in areas of heavy industry, but were aware that there are problem areas locally.

Residents felt well-informed about climate change and carbon reduction issues, but felt less well informed about air pollution and its effects. They are concerned about the effects on human health at levels experienced locally. They would like more information about air quality issues and the effects of poor air quality and thought that the Councils should provide it.

Most residents are open to the idea of using different modes of transport but these should be convenient, safe and cost-effective.

Further comments are in the discussion Section 5.1.3.

5.2 Stakeholders consultation

The attendees at the stakeholder workshop were invited from various bodies, organisations and groups within Cambridgeshire, including the officers from the County Council, Cambridge City, Huntingdonshire District Council and South Cambridgeshire District Council, representatives from the bus companies, Cambridge University, Taxi Drivers, Friends of the Earth and Cambridge Cycling Fraternity as well as District and County Councillors. The main aims and objectives were slightly different from the residents' consultation workshop as these were all interested parties with some knowledge and interest in the subject. The presentation given was much more technical and in more depth. The stakeholders' discussion was also led by MRUK but the District officers were present.

The aims of the workshop were:

- To ascertain views on the proposed actions in the Air Quality Action Plan – by individually scoring all attributes from 1 to 5, where 1 is strongly support and 5 is strongly against.
- To discuss the options given in the AQAP.
- To gain an idea as to the level of support to the options given in the AQAP.
- To identify any barriers.
- To determine what could be done to decrease air pollution in the region.
- To identify areas where improvements in air quality could be achieved with cost effective mechanisms.

Results of consultation with stakeholders

As well as the presentation and discussion, stakeholder delegates scored the actions in the proposed Action Plan, centred on the perceived benefits or pitfalls of each action. Up to twenty three responses were recorded for each action. MRUK collated the worksheet results and ranked the actions by mean and median score. Overall, the stakeholders support our Action Plan.

The following actions are the top ten actions, number 1 being the most highly ranked:

1. Quality Bus Partnership (QBP) – continuously improving the bus fleet.
2. Increasing bus patronage by increasing punctuality and customer satisfaction.
3. Lower emissions from new commercial/industrial/public sector build.
4. Smarter Travel Choices - Travel for School.
5. Extend QBP to Huntingdon.
6. Opening of Cambridgeshire Guided Busway.
7. Smarter Travel Choices - Residential Travel Planning.
8. Taxi emissions - lowering emissions by introducing higher standards.
9. Lower emissions from existing public sector build.
10. A14 improvements – re-alignment and widening.

The following actions were also strongly supported, scoring a Median of 1.

1. Strategic Planning – Local Transport Plan.
2. Increasing public transport provision – more Park & Ride sites, improved capacity.
3. Cycle City - £7.2m cycling improvements in Cambridge and surrounding villages.
4. Lower emissions from existing domestic build.
5. New station at Chesterton.
6. Lower emissions from new domestic build.
7. Taxi emissions - compliance with existing standards.

Of the 100 proposed Actions on the final proposed list, 94 scored an average of 2.5 or less (strongly support, support). Three proposed actions scored an average of 3 or more (against or strongly against). They were:

- Road-side testing of exhaust emissions (3.0).
- Energy Efficiency Audit of Council property (4.07).
- Affordable Warmth Policy (4.31).

The two latter actions have co-benefits with the local authorities' carbon reduction strategies; so will be progressed under those work programmes.

Most popular actions

Public transport

QBP – continuously improving the bus fleet

Extend QBP to Huntingdon

Increasing bus patronage by increasing punctuality and customer satisfaction

Increasing public transport provision – more Park & Ride sites, improved capacity

Opening of Cambridgeshire Guided Busway

New rail station at Chesterton

Buildings

Lower building emissions from new commercial/industrial/public sector build, existing public sector build, existing and new domestic build

Sustainable travel

Smarter Travel Choices - Travel for School Plans and Residential Travel Planning

Taxi emissions

Lowering emissions by introducing carbon dioxide standards -compliance with existing standards

A14 improvements

Re-alignment and widening

Strategic Planning

Via the Local Transport Plan

Cycle City

Local cycle facilities improvements

The following actions were less popular by attendees, scoring a Median of 3 (neutral).

Least popular actions
Congestion Charging
Road-side testing of exhaust emissions
Encourage occasional/casual cycling
Environment Festival
Annual Green Team Week
Annual Bike Week

5.3 Stakeholder and residents discussion

Both stakeholders and residents groups talked about the problems of too much local traffic and too much through traffic, as well as the solutions to the problems.

Network management - infrastructure

There was widespread approval of the A14 re-alignment away from residential areas and widening to accommodate the historic and predicted increases in long-distance HGV traffic. Many people, residents and stakeholders, were counting on these road improvements to alleviate both the problems of congestion and noise as well as air quality although some participants pointed out that providing more road space could lead to more traffic so that the situation would be repeated in ten years time.

Speed reductions on the A14 and its link roads were considered to be beneficial in and near built-up areas (50mph was frequently quoted) but it was noted that this would require enforcement.

Freight is a main contributor to air pollution on the A14, but it was noted that action on freight would be impractical as the A14 is part of a major cross-country route.

Other popular infrastructure changes proposed by the groups were a new ring road for Cambridge, another river bridge in St Neots and a new ring road for Huntingdon.

Cycle way improvements (wider lanes, segregated lanes) to make real and/or perceived safety improvements would encourage uptake of cycling. A problem of insufficient taxi ranks in Cambridge was noted leading to taxis driving around looking for a rank at which to park.

Network management – public transport improvements

There was much discussion by all about the role of public transport; the overall messages were that there should be more public transport (more services and services extended into the evenings and Sundays); it should be of higher quality and less expensive. Participants strongly recommended that councils and public transport providers should have a co-ordinated approach to the provision with improved linkages, co-ordinated and easily accessible information. Services on rural routes should be improved with more frequent services and fewer circuitous and lengthy routes. Parking facilities could be provided adjacent to and at the end of the line for all bus routes as well as increased parking at Park and Ride sites. Radial bus routes around Cambridge were also suggested.

Network management – demand management

Congestion charging was not at all popular with residents and not strongly supported by stakeholders (96th position, average score 2.74, median 3). Residents were concerned that any income raised from a congestion charge should be re-invested in public transport improvements, but that the income raised might not be substantial, given the costs of implementation. Residents considered that a Low Emission Zone would not be practical in Cambridge and difficult to enforce. They also considered that it would be impractical to ban HGVs from city/town centres as they would be replaced by a higher number of delivery vans, but HGV deliveries could be restricted to less busy times of day.

Lowering vehicle emissions

Higher specification (improved Euro Standards) buses and removal of the oldest, most polluting buses was seen as an obvious solution, but not without cost implications. Use of less polluting fuels was a popular option and there was some discussion on the pros and cons of alternative fuel types that could be used –

hydrogen buses were proposed as the most effective. It was thought by residents that the Councils should lead by example – that the Councils' own fleets should be high specification. Charging points for electric vehicles should be introduced across the county.

Vehicle emissions could be checked and there should be national and EU legislation to enforce improvements in emissions. Incentives should be provided for scrappage schemes (as later announced in the Budget 2009) and initiatives established to raise the standards of vehicle emissions.

Lowering building emissions

Although this ranked quite highly amongst the scored actions to help improve air quality, discussion did not cover this area as transport issues dominated.

Strategic planning

Looking ahead to the future, it was noted that a strategic and long-term approach to the problem is required to minimise the impact from planned growth in the region. Infrastructure should be considered from all aspects of new developments and especially relevant are the inclusion of items such as cycle paths, cycle sheds, charging points etc.

Development control

The residents felt quite strongly that new build should not be allowed inside an AQMA as this exacerbates the problem.

Smarter travel choices

Behavioural changes will be required and a number of suggestions were made including changes in the working culture to accommodate a more flexible approach – working from home/flexible hours, using local produce to avoid the need for freight, more school buses. People should buy newer cars and smaller vehicles. Cycling and walking should be encouraged - school children should be brought up to cycle.

Raising awareness

This was not discussed in detail although residents did say that they would like more information about air quality and the effects of poor air quality.

Differences in conclusions between the two groups were minimal; basically the residents would like more information about air quality and were less likely to be in favour of congestion charging.

New ideas

The following actions were suggested for inclusion in the Air Quality Action Plan.

- New-build should not be allowed inside an AQMA.
- Tree-planting to absorb pollutants.
- Limit traffic entry to AQMA on high pollution days.
- Warnings/information for residents on high pollution days.
- Supply masks for those vulnerable to poor air quality.

5.4 Workshop outcomes

The District Councils had produced a short list of the actions in the Action Plan that they considered to be most likely to have a positive impact in their District, as discussed above. These have been revisited in light of the workshop outcomes.

Cambridge City Council

- Implementation of Air Quality policies in the Local Plan – new development not permitted to adversely impact on Air Quality Management Area.

This action was not one of the most highly ranked actions by respondents. Planning actions more highly ranked included the strategic actions (discussed below) and practical steps such as improved cycle paths, possibly reflecting the different areas of expertise of the different groups represented at the workshops. The Districts are legally obliged to work towards improving air quality **within** the AQMA, so for us this is a focus and reflects the priorities that we have been set by

central government. The proposed actions, which could in many cases form part of a set of actions to prevent further deterioration of air quality in the AQMA are more likely to improve overall air quality. Interestingly, the residents suggested that there should be no further build in the AQMA because this would exacerbate the problem. The AQMA in Cambridge covers quite a significant proportion of the District's area, so this would make for an interesting discussion with our planning colleagues.

- Maintain 8-year limit on taxis for all taxis licensed by Cambridge City Council and all taxis entering the transponder-controlled Core Area - to ensure that the fleet is continuously improving.

This was strongly supported during the workshops. It was noted that there is a shortage of taxi ranks spaces in Cambridge (38) compared with the number of taxis permitted to use them (297) and that this did lead at times to taxis circulating the city looking for a space to park or to join a rank space. Additionally, a recent requirement for taxis in Cambridge to be wheelchair accessible has resulted in an increase in taxi size.

- Implementation of the Quality Bus Partnership - minimum emission criteria for all Public Service Vehicles as well as targets for ongoing improvements in emissions.

This was seen as a top priority. The current QBP relates entirely to the City Council district and there are no plans to extend the scheme. City Council Officers continue to engage with County Council officers on improving the specification of buses but improvements have been slow to come forward so far and City officers believe that the rate of improvement will need to increase in order to achieve an improvement in air quality. Indeed, with a proposed doubling of PSV numbers, an increase in the rate of improvement is imperative. City Council officers are members of the Quality Bus Partnership board and will continue to discuss bus improvements on both a formal and informal basis. The source apportionment has shown that emissions from buses are the major contributor to poor air quality in the centre of Cambridge so this action is key for us to follow through. The consultation workshop outcome shows that this action will be widely supported and popular.

- Creation of a Low Emission Zone – restricting access to the Core Area regulated by rising bollard transponder entitlement.

This action was not one of the most highly ranked actions by respondents and was considered to be difficult to implement by residents. However, for Cambridge, this is a priority as the city centre is where the air pollution is highest. Further, a *de facto* LEZ already exists, with entry to the Core Area controlled by transponders issued to taxis and buses with specified emissions standards. Stricter controls on access and improving the standard of the taxi fleets and bus fleets will result in lower emissions and improved air quality.

- Local Transport Plan 2 – policies to maintain current levels of traffic in City Centre.

Strategic planning (LTP) scored highly (ranking 11). District Officers met with County Officers in July 2009 to initiate discussions on developing meaningful targets and indicators that can be used to measure the progress of the AQAP and be integrated into LTP3. LTP3 compatible targets are included in the targets and indicators section below (Section 8).

- Long Term Transport Strategy (LTTS) – links LTP to the Growth Agenda, TIF funding required to accommodate the transport demand of the planned new development.

The LTTS scored in the top quarter of actions. Residents also commented on the importance of planning for the long-term and ensuring that the transport infrastructure was in place before new developments were occupied.

Two types of action, relevant to Cambridge, were popular and frequently discussed at the all workshops – they were lowering building emissions and lowering taxi emissions/ensuring compliance.

Huntingdonshire District Council

- Rerouting of the A14 away from settlements (Ellington to Fen Drayton).

The majority of respondents viewed this project favourably. The perception from some was that the A14 should never have been built so close to settlements such as Huntingdon, and its realignment is long overdue.

The proposal to widen the A14 was recognised as important to alleviate the congestion that is currently experienced and the associated rise in emissions.

Although the A14 proposals were welcomed in local air quality terms there were views expressed that moving the road was simply moving the problem and widening the road would inevitably result in traffic growth.

- Implementation of Air Qualities Policies in the Local Plan.

The inclusion of air quality policies in the Local Plan were welcomed with most respondents taking a relatively strong view that no more new homes should be built within AQMAs. It was also found that respondents felt more direction should come from Government as to where housing should be built.

- Develop an effective freight transport partnership between operators using the A14.

Respondents agreed that a reduction in emissions from HDVs was desirable although the difficulties in achieving this were widely accepted given the far-flung origins of HDVs on the A14. Never the less, it was felt that a local freight partnership was worth pursuing.

- Inclusion of Huntingdonshire District Council in the Quality Bus Partnership.

There was a view that buses that go out into the countryside, i.e., out from Cambridge, tended to be older vehicles and that these should be upgraded or taken out of the fleet. It was also thought that newer buses would have other benefits, such as improved disabled access. On the negative side it was widely thought that bus fares would increase as a result.

- Completion and opening of the Cambridgeshire Guided Busway.

This option was scored highly by respondents but also attracted a number of negative comments. Concerns included that; it may only attract customers from a

relatively narrow corridor, that it was an expensive project which will ultimately be paid for by tax-payers and that it would have made more sense to reinstate the light railway along this route.

- Changes to the traffic light systems in St Neots High Street.

There was obviously strong feeling amongst respondents about congestion in St Neots town centre. Whilst the proposed changes were welcomed it was thought that far more needed to be done to relieve congestion, specifically construction of another bridge over the river.

South Cambridgeshire County Council

- Completion and opening of the Cambridgeshire Guided Busway (CGB).

Respondents saw this as one of the top priorities. Participants were divided in their response to the CGB with overall support counteracted by the comment that it is expensive in terms of its implementation and useful only to those who live along the route.

It does however provide an alternative direct route into Cambridge which could displace single occupancy commuter traffic from the A14 . Its delivery is also timely in providing another form of public transport for residents of the proposed new town at Northstowe.

- Widening of the A14 between Fen Drayton and Histon – increasing the number of lanes from two to three on both eastbound and westbound carriageways should help to alleviate congestion and speed traffic throughflow.

This was strongly supported and seen as one of the top priorities for the Districts. Most respondents thought that widening the A14 something that should have been completed years ago. Concerns were voiced that the project may not go ahead as little progress on the scheme has been made.

Draft Orders are due to be placed late 2009, however public concern is raised as Government appear to be cutting funding for transport which may lead to a shortfall in the budget. Combatting congestion and lowering emissions from vehicles is essential to achieve improvements to air quality.

- Re-alignment of the A14 and the construction of a local road between the M11 and Bar Hill junctions as part of the A14 improvement scheme.

As with the second measure, above, this was strongly supported. A reduction in the number of entrances and exits to the A14 was seen as acceptable as this would reduce the bottlenecks around the north of Cambridge. However, this was countered by comments that areas of the A14 would just gain increased capacity as vehicles would not be able to leave the A14 at as many locations and this may lead to traffic congestion anyway.

The main issue with congestion on the A14 is that there are no local routes so when accidents occur or there are impedances to the flow congestion quickly brings traffic to a standstill. The option of local roads will alleviate this problem and with good signposting congestion can be avoided.

- Become a member of the existing Freight Quality Partnership.

Every respondent agreed that emissions must be reduced in this sector. A Cambridgeshire Freight Quality Partnership does already exist but currently focuses on HGV routes and disturbance to local communities. It was suggested that there are not many freight distributors within the County and that most of the freight using the A14 is simply passing through as it travels to and from the ports.

This is an area for further exploration and engagement with freight operators in order to reduce emissions from this sector.

- Embedding the LDF Air Quality Policy in Supplementary Planning Documents.

It was agreed by respondents that this will give air quality a stronger footing within Council Policy. It is hoped that a Low Emission Strategy can be developed to help to mitigate the transport impact of new development.

Ideas proposed during workshops

- A reduction in speed limits on the A14 to keep vehicles at a consistent speed rather than having to accelerate and brake all the time - by having a 50mph limit close to residential areas (for example, Orchard Park development, villages, part of Brampton) it would allow traffic to move better and would

allow drivers to be at the optimum speed for lower emissions. There would be a wider health, environmental and social impact benefit with associated noise reduction. This idea could be evaluated and form part of future discussions with the Highways Agency.

- Emissions from all types of vehicles need to be lowered and this could be done by regular emission maintenance, legislation and providing funding for re-fitting buses with new engines.

- Buying new or newer cars would be a simple but effective solution to the problem. (The Government's scrappage scheme was introduced shortly afterwards.)

- Alternative fuels should be considered. The Councils should be seen to lead by example and start to use hydrogen or hybrid vehicles to show the way forward. There also needs to be more electric charging points in the county.

- Long term planning was considered to be crucial for the future of Cambridgeshire. In order to increase walking, cycling and the use of sustainable fuels in the future, the infrastructure needs to be in place in any new developments so that alternatives can become the norm.

- There was support for a no-build policy in an AQMA. This would be difficult to enforce in the City where a large area of the district is in the AQMA. City Council Officers already look very closely at the impact of new development on the AQMA as well as impact of new receptors within the AQMA. This is a feasible policy for Huntingdonshire District Council and South Cambridgeshire District Council where most AQMAs are related to the A14.

- There should be an extension of Travel Plan Plus and other travel to work plans which could lead to less commuter traffic.

- Tree-planting to absorb pollutants.

- Limit traffic entry to an AQMA on high pollution days.

- Warnings/information for residents on high pollution days.

- Supply masks for those vulnerable to poor air quality.

6. Quantification

Quantification of the impacts of the actions in the AQAP is not straightforward as many of the actions proposed have a number of variables that have not yet been agreed (for example, A14 improvements). Also, many schemes will have indirect effects that cannot be easily measured or attributed to air quality improvements (for example, Cycle City). However, where possible, quantification has been carried out.

The impact thresholds are listed below. These were selected to be similar to those used by other local authorities that have already assessed impacts of air quality improvement schemes.

Table 6.1 - Impact thresholds

Low	<0.2 µg/m^3
Medium	0.2 – 1.0 µg/m^3
High	>1.0 µg/m^3

6.1 Cambridge City Council

- Implementation of the QBP – minimum emission criteria for all PSVs as well as targets for ongoing improvements in their emissions.

Analysis of the 2006 bus fleet composition was carried out by the City Council, to inform discussion with the partners in the QBP during 2007. This work showed that changing the 2006 bus fleet composition to a composition with all buses being Euro 4 standard would be likely to reduce emissions sufficiently to bring NO_2 levels in the bus station area below the national objectives. This standard is above that subsequently agreed by the QBP for 31st January 2009 and consequently air quality has barely improved.

This work was repeated in 2009 with the 2008 bus fleet composition. Because the number of the journey miles increased between 2006 and 2008, increasing the total emissions, the change of bus composition required to bring NO_2 levels below the national objectives would be for all PSVs to be Euro 5.

More stretching targets are planned for future years (31 January 2011 and beyond). All operators with fleet entering Cambridge submitted Operator Improvement Action Plans in June 2009, which are now being assessed for their impact on air quality and whether or not they are acceptable.

In addition, the QBP team and Cambridge City Officers are working together to draw up new and more detailed air quality performance indicators for the LTP. In addition to having information on the Euro Standard of the fleet likely to enter the central area, the Euro Standard of all public transport journeys undertaken within the Core Area will be collated.

Future Operator Improvement Action Plans will be based on the number of journey miles of each standard of bus in the Core Area of Cambridge. The impact of the various improvement scenarios will be modelled and compared, so that realistic but stretching targets can be set and agreed with the operators.

Our aim is for a 50% cut in emissions over five years, which should reduce NO_2 levels substantially, potentially around 20% to 30%, but this is being modelled with greater precision.

- Maintain 8-year limit on taxis for all taxis licensed by Cambridge City Council and all taxis entering the transponder-controlled Core Area - to ensure that the fleet is continuously improving.

Euro Standards for taxis are introduced in phases of approximately 5 years. Euro 3 standards were introduced in 2000; Euro 4 in 2005, Euro 5 in 2009 and Euro 6 will be introduced in 2014. Thus, the rolling 8-year age limit for taxis means that over a 5-year period the typical taxi will have shifted by one Euro Standard. Assuming no change in taxi mileage, this should result in continual improvements in the taxi fleet.

The oldest taxis in 2006 were Euro 2; the oldest taxis in 2015 will be Euro 4. Adjustment factors from the DfT emissions factor database show that NO_x

emissions from Euro 2 to Euro 4 are 50% lower and PM_{10} emissions from Euro 2 to Euro 4 are also 50% lower. Emission improvements from taxis have been set accordingly.

The impact of these improvements on ambient NO_2 levels in Cambridge will be modelled more precisely.

- Local Transport Plan 2 policies to maintain current levels of traffic in City centre to 2011.

As new vehicles with improved emissions replace older vehicles, it is anticipated that emissions will fall and air quality will improve. Thus, if levels of traffic in Cambridge can be maintained rather than increased (as expected as a result of the growth) then air quality should improve. Recent modelling undertaken for the Councils by CERC (discussed in more detail in Section 7) looked at the impact of potential scenarios, using traffic data from Atkins and emissions data from the Department for Transport and the National Atmospheric Emissions Inventory.

The output files have been examined to look at the specific changes in air quality in the City centre if no further traffic increases are forthcoming. Comparison of specific grid points from Baseline 2006 and Baseline 2016 show that the modelling predicts a 20% to 30% fall in annual mean concentrations of NO_2 throughout Cambridge. The model predicts that with no changes in traffic flow or modal split, air quality in Cambridge should improve with an average of reduction of NO_2 levels of 2% to 3% per annum. This is based solely on the anticipated improvements in vehicle technology. Over the lifetime of this Action Plan 2009 to 2014, a fall of 10% to 15% in measured nitrogen dioxide concentrations across Cambridge is theoretically possible, if vehicle are renewed at the predicted rate, and if the predicted improvements in emissions are observed.

The output files have been examined to look at the specific changes in air quality in the City centre in 2016 with the expected growth and infrastructure changes. These data show that this rate of improvement would be impeded by a few percent.

Further, output files were examined to look at the specific changes in air quality in the City centre in 2016 with the expected growth and infrastructure changes as well

as with congestion charging. The modelling showed that the impact of congestion charging on air pollution concentrations would be negligible in Cambridge.

Thus, over the lifetime of this Action Plan 2009 - 2014, a fall of 10% to 15% in measured NO_2 concentrations across Cambridge should be seen as a result of actions in the LTP.

Whilst these predictions made in 2006 look very favourable, City Officers have some concerns that they might not be realised. For example, since 2006 the annual predicted falls in pollution levels as a result of improvements in vehicle technologies was not observed in 2007 or 2008.

Table 6.2 - Comparison of quantified action results with required improvements.

Action	Percentage Reduction in NO_2	Amount Reduction in NO_2	Impact
QBP agreement	?20%	to be confirmed	High
Taxi improvement	to be confirmed	to be confirmed	Medium?
LTP policies	10% reduction	<6 µg/m^3	High
Reduction required	<33%	20 µg/m^3	High

Thus, these three actions combined could bring levels of NO_2 in Cambridge below the national objectives. However, much of the improvement is dependent upon predicted emissions – predictions that have been optimistic in the past. Meanwhile, City Officers will continue to work towards any measures towards air quality improvement that can be made to ensure that air pollution levels are reduced.

The remaining three[1] of our six priority actions are not quantifiable.

[1] Implementation of Air Quality policies in the Local Plan, Creation of a LEZ, Long-term Transport Strategy

6.2 Huntingdonshire District Council

- The rerouting of the A14 away from settlements.

This proposal will move the A14 away from all the settlements in Huntingdonshire where there are existing AQMAs except from St Neots. Where the existing A14 physically remains as a non-trunk road, traffic flows are expected to be greatly reduced particularly those of HDVs. Whilst modelling emissions from future predicted traffic flows has the potential to be very inaccurate, early indications are that there will be significant reductions of concentrations of NO_2 in the, Brampton and Hemingford to Fenstanton AQMAs bringing NO_2 concentrations below the objective levels. Concentrations in the west of Huntingdon are expected to reduce significantly although it is not expected that revocation of this AQMA will be possible due to the significant emissions from local traffic.

- Implementation of Air Quality policies in the Local Plan – new development not permitted to have a significant adverse impact on air quality within AQMAs.

It is not possible to quantify the improvements in air quality that will result from the implementation of the air quality policies. These policies, however, will be a useful tool in resisting developments which would be likely to worsen air quality within AQMAs

- Development of an effective freight transport partnership between operators using the A14.

The existence of the somewhat informal East of England Freight Quality Partnership has recently been identified and Huntingdonshire has now joined this group. Air quality has now been introduced to the group's agenda and it is intended to keep it there and explore means of reducing emissions from this sector.

- Inclusion of Huntingdonshire in the QBP - minimum emission criteria for all PSVs as well as targets for ongoing improvements in emissions.

The QBP has historically only covered the Cambridge City area and Huntingdonshire has been lobbying this group for formal inclusion and will continue to do so. To date there has been an acknowledgement that the group will assist Huntingdonshire with data provision and it is hoped that this will lead to more

substantial benefits in the future. At this stage it is not possible to quantify benefits from this measure.

- Completion and opening of the Cambridgeshire Guided Busway.

The guided busway runs from St Ives to Cambridge but will have a link using existing roads from Huntingdon Station and this link is expected to open by the end of 2009. Studies conducted by Atkins[(2)] on behalf of Cambridgeshire County Council predict that operation of the guided busway will have a negligible effect on air quality, however, the use of very clean buses on this route are hoped to remove a proportion of existing Huntingdon to Cambridge commuter traffic as well as taking some older and more polluting buses off the roads.

6.3 South Cambridgeshire District Council

- Completion and opening of the Cambridgeshire Guided Busway.

The opening of the Guided Busway between Huntingdon and Cambridge will offer a suitable and more efficient method of travel for commuters needing to use this stretch of the A14. Quantification of the impact of the Guided Busway will be assessed by ongoing monitoring of pollution concentrations, continued monitoring of traffic volumes and speed for the A14 along relevant sections and information on bus patronage. It is envisaged that as bus patronage increases, there will be a reduction in the numbers of private single occupancy vehicles commuting between Huntingdon and Cambridge which will help to improve speed of flow and therefore local air quality.

- Widening of the A14 between Fen Drayton and Histon – increasing the number of lanes from two to three on both eastbound and westbound carriageways should help to alleviate congestion and speed traffic through-flow.

Widening of the A14 between Fen Drayton and Histon should help to alleviate the daily peak time congestion along this stretch as the speed of traffic flow should increase. South Cambridgeshire District Council will continue to monitor air quality along this stretch of the A14 after completion of the widening. Data from this monitoring can be used to ascertain the changes in air pollution concentrations as a result of the improvement scheme.

- Re-alignment of the A14 and the construction of a local road between the M11 and Bar Hill junctions as part of the A14 improvement scheme.

The creation of a local road between Bar Hill and the M11 will create more space between receptors and the main flow of traffic along the A14. It will also help to alleviate the problems associated with vehicles joining the main A14 for short stretches ie lane jumping and slower moving vehicles joining and leaving the carriageway around junctions. At present, no estimate has been made as to how much reduction in traffic on the main carriageway this will cause, however, continued air quality monitoring and traffic data from Cambridgeshire County Council will help to quantify the impacts of this part of the scheme.

- Become a member of the existing Freight Quality Partnership.

From source apportionment studies, it has been shown that within South Cambridgeshire, HGVs are the greatest contributors to emissions within its AQMA. The Freight Quality Partnership has been set up primarily for Local Authorities, County Councils and freight operators to discuss HGV routes through the Anglian region. At present, it primarily focuses on disturbance caused to residents through noise and inconvenience. However, becoming a member of the Freight Quality Partnership, South Cambridgeshire District Council can promote the introduction of new and cleaner engine technologies, promote greener driver behaviour and raise awareness of local air quality issues. Quantification of this action will be through the introduction of air quality to the agenda of the Freight Quality Partnership meetings and an improvement in the communication between freight representatives and the Council.

- Embedding the LDF Air Quality Policy in Supplementary Planning Documents.

Supplementary Planning Documents will play an important role in sustainable development. Air quality is a material planning consideration and Supplementary Planning Documents containing air quality policies will strengthen this requirement. They will provide a platform for consistency and the introduction of low emission developments with little or no impact on local air quality.

7. Implications of Growth on Air Quality

At a national level Cambridgeshire forms part of the London-Stansted-Cambridge-Peterborough growth area, which has been identified as a focus for housing growth. The Cambridgeshire and Peterborough Structure Plan 2003[(27)] set out a strategy for increasing housing development, seeking to deliver over 70,000 homes between 1999 and 2016, by concentrating these in and around Cambridge and in the county's market towns. Information in Appendix 5[(ap5)].

Table 7.1 - Changes in the numbers of dwellings in Cambridgeshire between 1999 and forecast numbers of dwellings for 2016 (From Cambridge and Peterborough Structure Plan, 2003[(27)])

Area	Dwellings 1999	Dwellings 2016	% Annual Change 1999-2016	Total Change 1999-2016	% Change 1999-2016
Cambridge City	44,100	56,600	1.5	12,500	+28%
Huntingdonshire	65,200	74,700	0.8	9,500	+15%
South Cambridgeshire	52,800	72,800	1.9	20,000	+38%
Cambridgeshire (all Districts, inc. Fenland and ECDC	228,700	286,100	1.3	57,400	+25%

Cambridgeshire is one of the fastest growing counties in England with total population expected to grow to 665,100 by 2021 (a 13% increase over 2007 figures).

The RSS for the East of England[(16)] was published in May 2008. This replaces the Structure Plan and sets out the vision, objectives and Core Spatial Strategy for the period to 2021 and provides the regional planning policy framework for the preparation of LDFs. It provides for a minimum of 73,300 new homes and 75,000 jobs within Cambridgeshire by 2021 (excluding Peterborough).

Figure 7.1 - Cambridge Sub-region schematic map showing locations of strategic developments (reproduced from LTP)

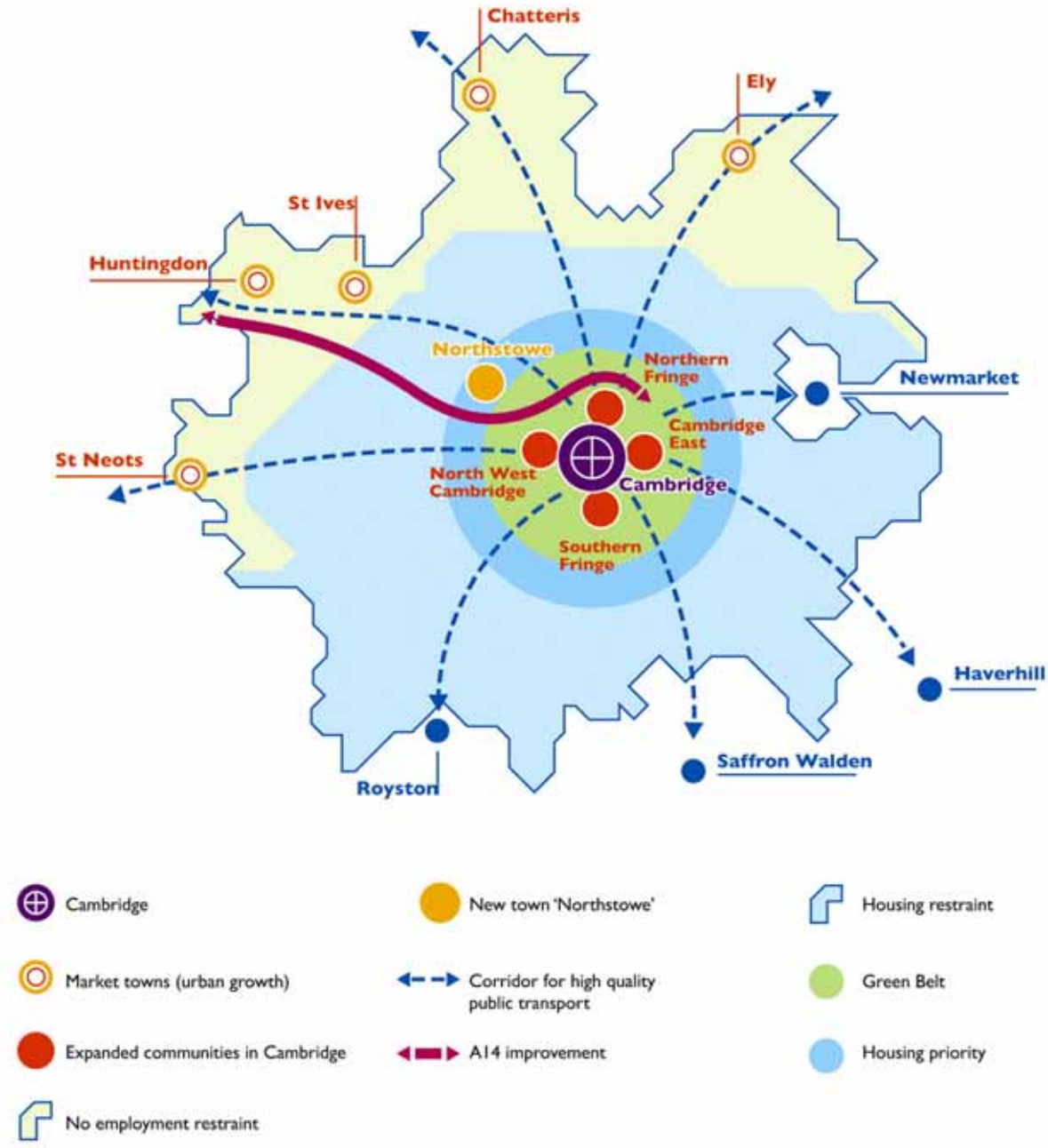


Table 7.2 - Dwelling growth forecasts for Cambridgeshire (EEP, 2008)

Area	Minimum to build 2001 to 2021	Already built (2006)	Minimum still to build by 2021
Cambridge City	19,000	2,300	16,700
Huntingdonshire	11,200	2,890	8,310
South Cambridgeshire	23,500	3,520	19,980
Cambridgeshire and Peterborough	98,300	18,910	79,390

The Cambridgeshire local authorities are currently developing Local Development Documents. These set out planning strategies for their local areas and together with the RSS plan development for the next 15 -20 year period.

7.1 Existing growth areas

The rate of development in the existing Growth Areas slowed in 2008 as the economic climate became less stable. The principle of development at the sites in the table below has been agreed, however, the sites are at various stages in the planning process.

Table 7.3 - Existing growth areas

CCC = Cambridge City Council

County Council = Cambridgeshire County Council

HDC = Huntingdonshire District Council

SCDC = South Cambridgeshire District Council

Orchard Park	Northern fringe of Cambridge (in SCDC).	Mixed use including 900 homes plus additional 220 agreed by Planning Inspector
Cambridge East	Urban extension to east of Cambridge (in CCC and SCDC)	10,000 – 12,000 new homes

Cambridge Southern Fringe	Southern area of Cambridge City – Clay Farm, Trumpington Meadows, Glebe Farm, Bell School, Addenbrookes expansion	Mixed use including 4,100 homes
North-west Cambridge and West Cambridge	North western fringe of Cambridge (in CCC and SCDC)	Mixed uses including 6,000+ homes and research park.
North Eastern Fringe	CCC and SCDC	Office and light industrial units
CB1 Station Area	Central Cambridge at the Railway Station	Mixed use, offices, residential, retails, transport interchange
Northstowe	New town in SCDC	Mixed uses including 9,500 homes
Cambourne	SCDC	3,300 homes currently, further 950 pending decision from the Planning Inspector
Loves Farm	HDC – St Neots	1350 dwellings with small retail centre

7.2 Growth beyond 2021

The current RSS requires a review to be undertaken starting in 2008 and completed by 2011. The purpose of this is to plan for development needs of the region up to 2031 and beyond. It will consider, *inter alia*, a range of jobs and homes targets for 2011-2031 under six different scenarios and the broad locations for this new development. The range of new homes being considered for delivery each year is from 25,400 to 30,600 in East Anglia (3,900 to 5,200 per annum in Cambridgeshire), which will create new environmental pressures unless mitigatory and compensatory measures are implemented.

Developers have submitted proposals for:

- Extensions to Cambourne – up to 9,000 homes (in three separate areas) in South Cambridgeshire district.

- Extensions to Northstowe – up to 3,500 homes in South Cambridgeshire district.
- Denny St Francis, Waterbeach – 12,750 homes in South Cambridgeshire district.
- Hanley Grange, Hinxton – 14,100 homes in South Cambridgeshire district.
- South of Cambridge - west of Shelford Road and south-east of Cambridge (South Cambridgeshire/Cambridge City).
- New development near Stretham at Mereham of 4,000 – 6,000 homes (east Cambridge, but impacting on the A10 and north Cambridge).
- Alconbury Airfield – 5,000 homes in Huntingdonshire district.
- Wintringham Park, St Neots – 4,000 homes in Huntingdonshire district.

An East of England Plan Review to 2031 was published in early 2009, but Cambridgeshire County Council have critical of the extent of the growth proposed by EERA as not being realistic in terms of sustainability, economic balance across the county, infrastructure provision and current economic conditions[2].

Impacts of growth

The Regional Transport Strategy in the current RSS has the following aims:

- Increase passenger and freight movement by more sustainable modes.
- Manage travel behaviour and the demand for transport to reduce the rate of road traffic growth.
- Encourage efficient use of existing transport infrastructure.
- Enable the provision of the infrastructure and transport services necessary to support existing communities and development proposed in the spatial strategy.

[2] http://www.eera.gov.uk/What-we-do/developing-regional-strategies/east-of-england-plan/east-of-england-plan-review-to-2031/east-of-england-plan-review-to-2031-strategic-advice/

- Improve access to jobs, services and leisure facilities.

These aims should be retained and strengthened so that policies are in place and implemented to ensure that the number of traffic movements associated with the housing growth in the region is minimised. If regional transport policies are not effective then the region will continue to be severely impacted by congestion (and associated costs to the private and public sector) and air quality will not improve. Potentially, it could deteriorate further, continuing to impact negatively on human health throughout East Anglia.

7.3 Assessment of growth on air quality to 2016

CERC were engaged by Cambridge City Council and South Cambridgeshire District Council to carry out a detailed air quality assessment[(9)] using ADMS-Urban by modelling air quality across the Cambridge area and northwest towards Bar Hill, Oakington and Cambourne (see Figure 7.2 below). The modelling takes into account predicted changes to traffic flows due to the various locations of proposed development in the area as well as the proposed congestion-charging scheme for Cambridge City.

The study calculated current and predicted concentrations of NO_2 and particulates on a grid of receptor points extending across areas of 20km x 20km, with an output resolution of 200m. Extra receptor points were added close to the modelled roads, providing a more detailed study than those previously carried out by local authority officers with improved definition of problem areas. Model verification was carried out for the baseline scenario for the year 2006 to ensure reasonable agreement between monitored and modelled concentrations.

Eight different scenarios were assessed for the year 2016, ten years on from the modelled baseline year of 2006 and the date of the proposed completion of this phase of development.

1. With Southern Fringe only.
2. With Northstowe only.
3. With CB1 (the area around the railway station) only.
4. With NIAB (the area between Huntingdon Road and Histon Road) only.
5. With the Bayer site redevelopment (Hauxton) only.
6. Area-wide with no growth or infrastructure changes.
7. Area-wide with growth and infrastructure changes.
8. Area-wide with growth and infrastructure changes plus congestion charging.

Model results for the specific developments predict that, individually, the change to traffic flows will have little impact on air quality. Model results for the area-wide developments predict that in 2016:

- Annual average NO_2 concentrations will be above the national objectives around the bus station in Cambridge as well as along and adjacent to the A14 between Milton and Bar Hill.

- Annual average PM_{10} and $PM_{2.5}$ concentrations will be above the national objective along many sections of the A14 with the predicted growth and infrastructure changes, regardless of congestion charging.

- Annual average NO_2, PM_{10} and $PM_{2.5}$ concentrations will fall if there are no growth or infrastructure changes.

- The largest impact potentially leading to exceedences of the annual mean NO_2 and PM_{10} objectives in areas adjacent to the A14 between Milton and Bar Hill is that of the Northstowe development.

- The daily mean PM_{10} objective may not be achieved along the A14 between Milton and Bar Hill with or without the development proposals progressing.

There is some uncertainty in these predictions because the input parameters are based on assumptions and predictions for the future. For example, the traffic flow data was provided by Atkins(2) for the County Council and based on the SATURN model and CERC noted some inconsistencies in the data provided. The pace of development completion and the pace of infrastructure completion are less certain now than previously. The funding for infrastructure completion has not yet been confirmed. Emissions factors (provided by DfT) have been consistently optimistic in the past and continually re-adjusted to be more realistic for the future – a process that is probably not yet finished. Air quality has been monitored and future predictions modelled since 1998 in Cambridgeshire; future predictions have never been borne out in practice and predicted improvements have not occurred.

The modelling study has confirmed that despite predicted improvements in emissions from vehicles and buildings, the predicted growth will lead to an increase in emissions overall of NO_2 and particulate matter and a continuing air quality problem with recalcitrant areas where the air pollution levels are above the National Objectives in 2016. These areas include the area around the bus station, the area around the rail station and the A14, especially between Milton and Bar Hill. The current AQMA boundaries remain appropriate.

Figure 7.2 - Modelling areas and proposed developments

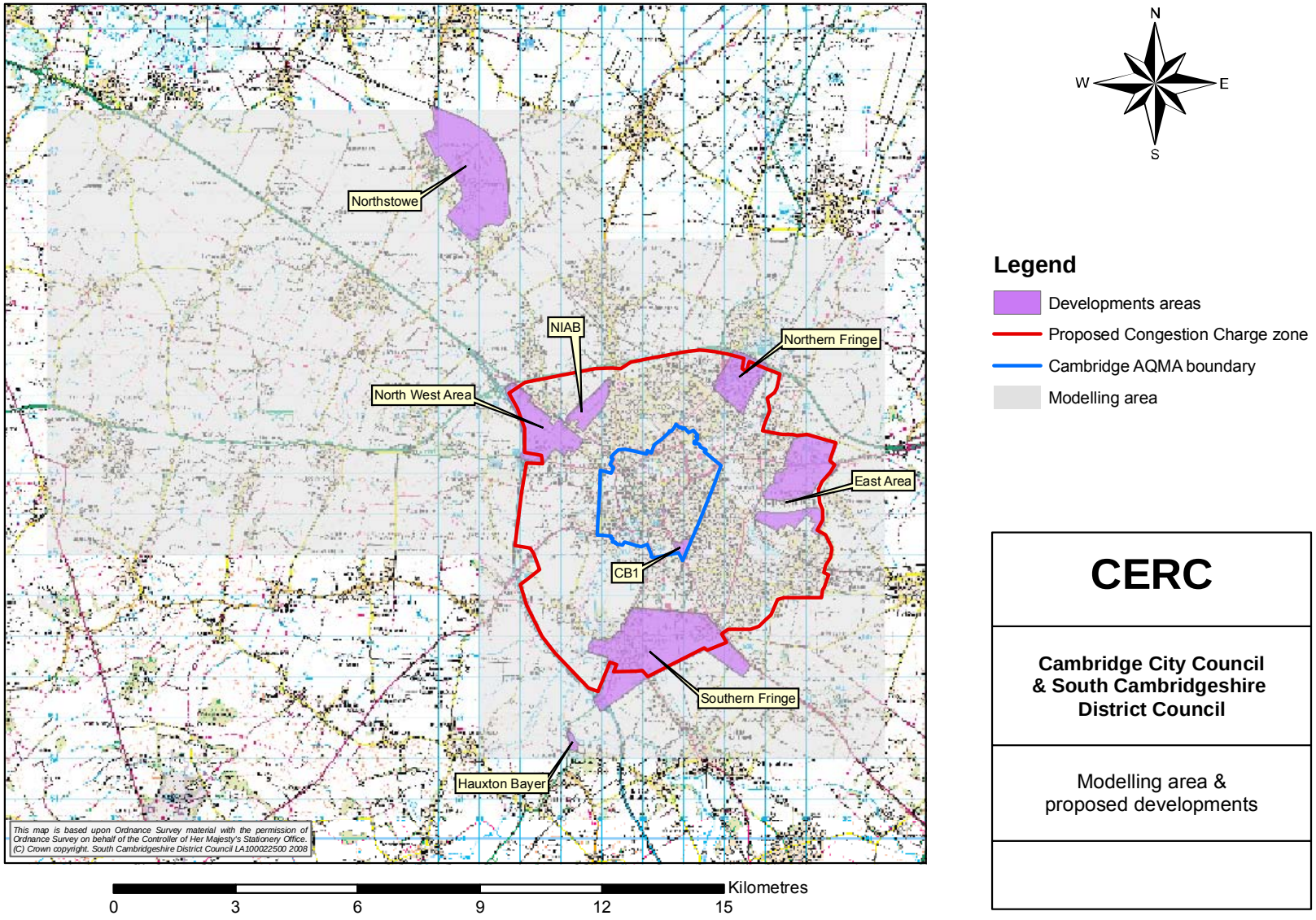
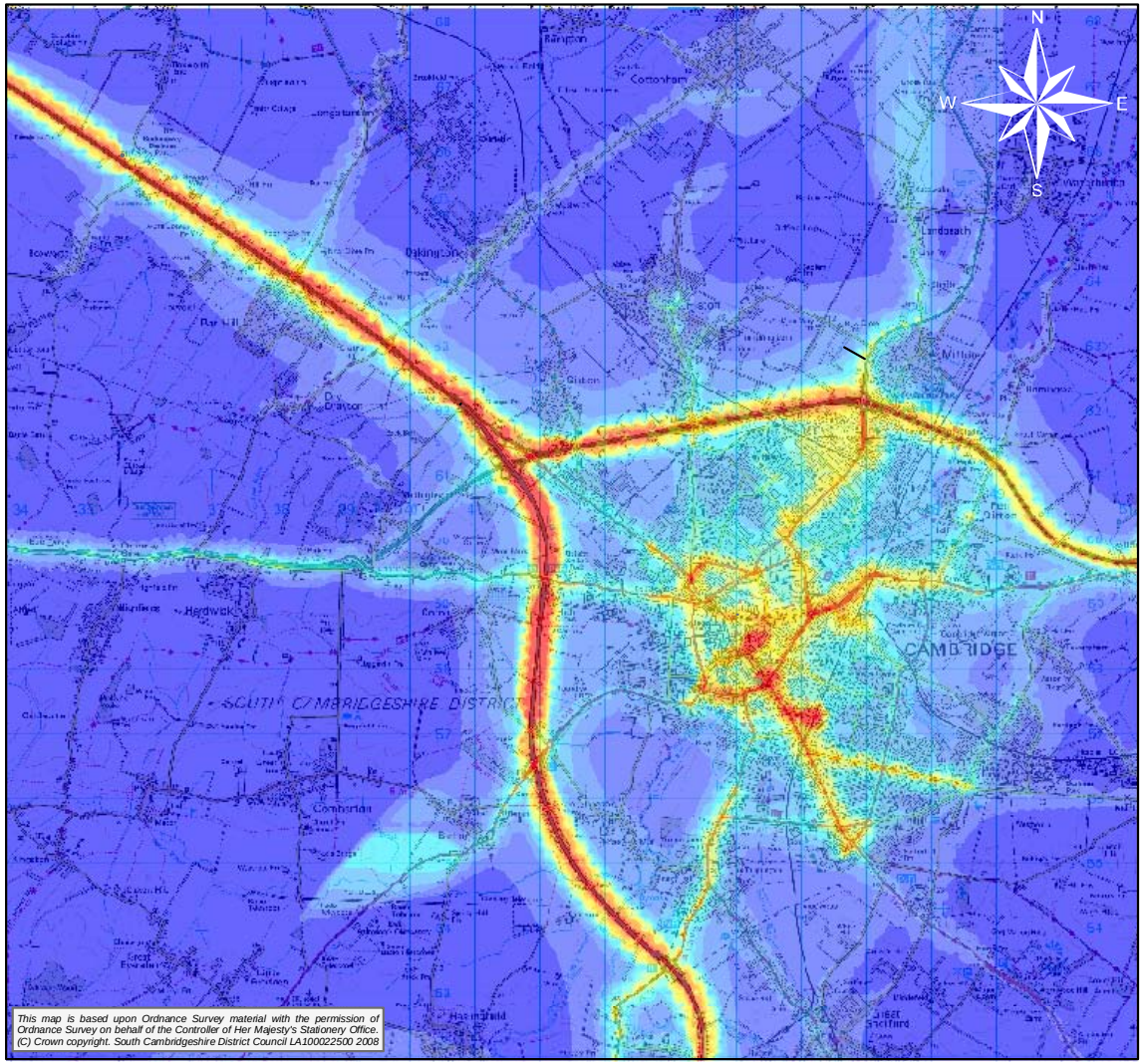


Figure 7.3 - Predicted annual mean NO_2 for 2006, the baseline year



NO_2 concentration ($\mu g/m^3$)

- < 15
- 16 - 18
- 18 - 20
- 20 - 22
- 22 - 24
- 24 - 26
- 26 - 28
- 28 - 30
- 30 - 32
- 32 - 34
- 34 - 38
- 38 - 40
- > 40

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Predicted annual average NO_2 concentrations for the 2006 scenario

Figure 7.4 - Predicted annual mean NO_2 for 2016

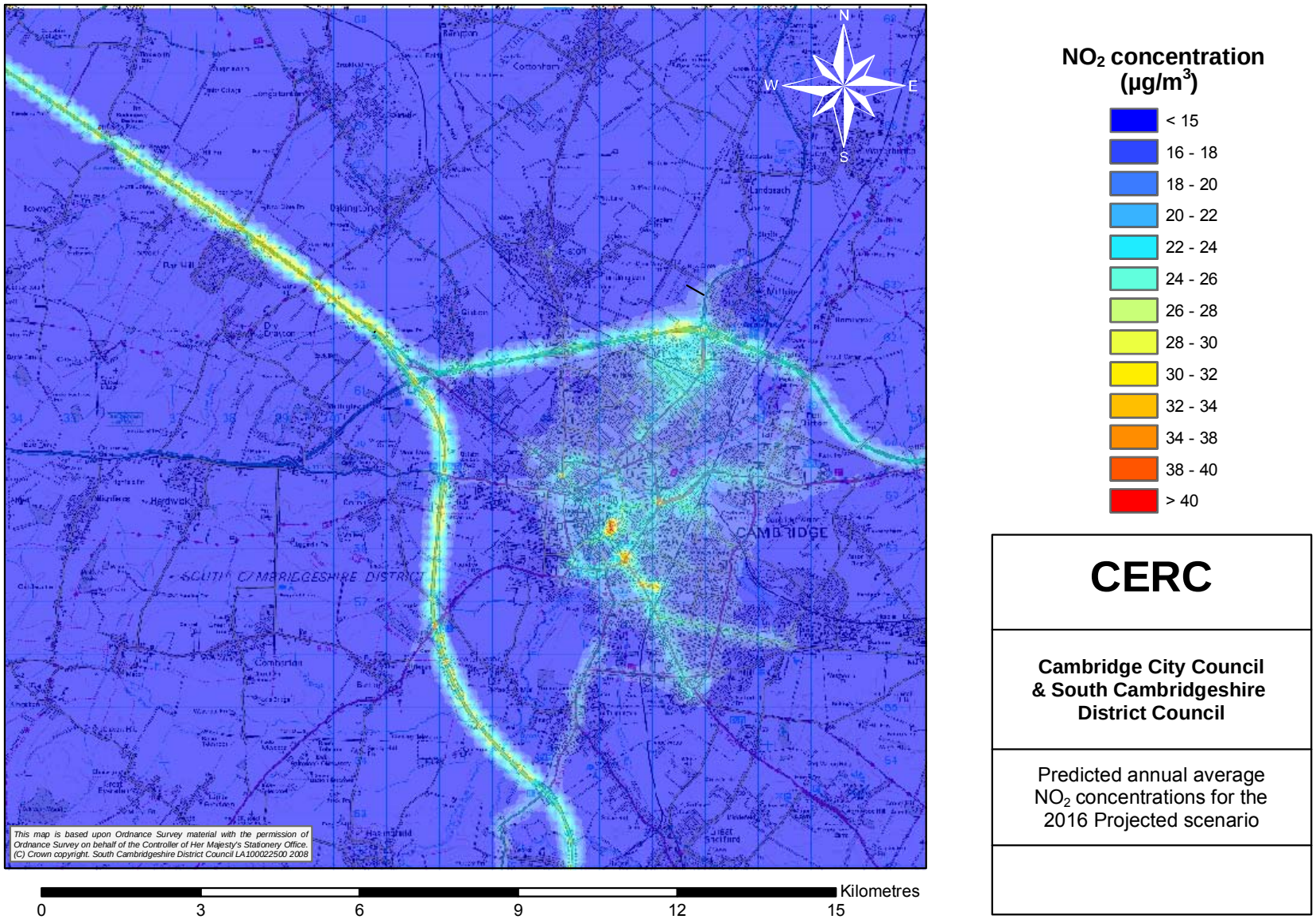
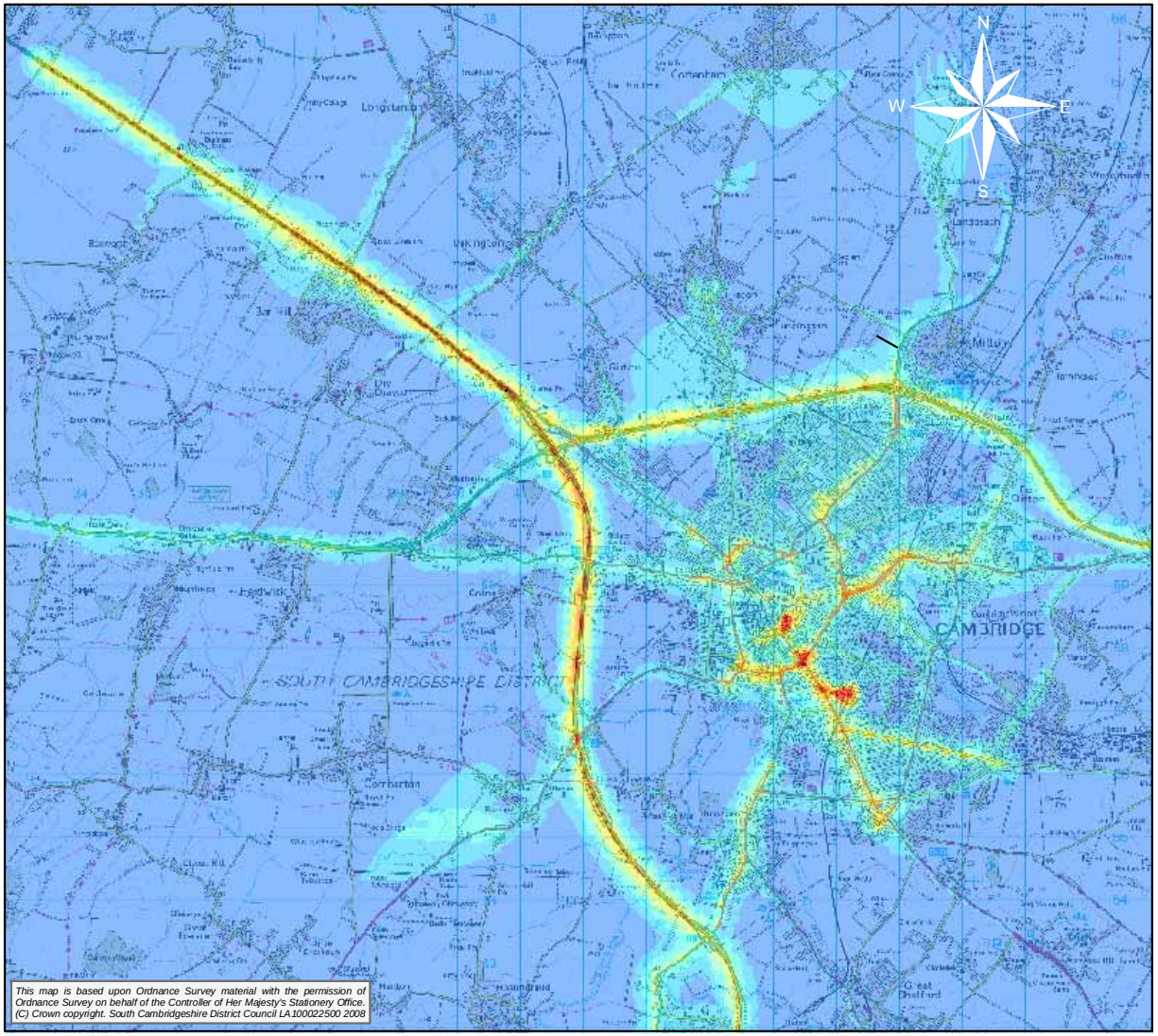


Figure 7.5 - Predicted 24-hour averages PM_{10} for 2006, the baseline year



PM_{10} concentration ($\mu g/m^3$)

- < 30
- 30 - 32
- 32 - 34
- 34 - 36
- 36 - 38
- 38 - 40
- 40 - 42
- 42 - 44
- 44 - 46
- 46 - 48
- 48 - 50
- > 50

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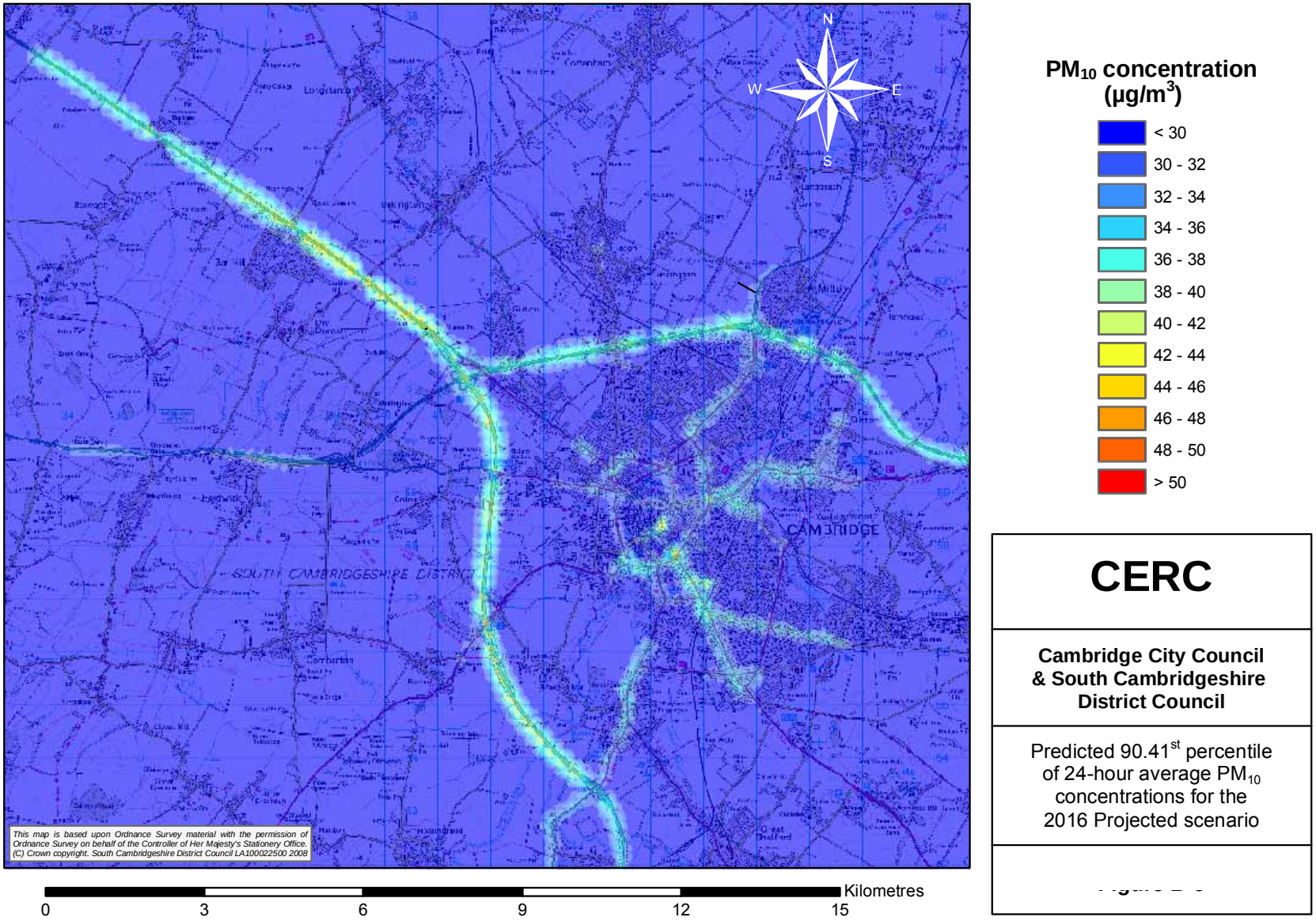
Predicted 90.41st percentile of 24-hour average PM_{10} concentrations for the 2006 scenario

Figure 7.6 - Predicted 24-hour averages PM_{10} for 2016



8. Monitoring and Evaluation

The central objective of any AQAP is the reduction in ambient levels of air pollution to achieve the Air Quality Objective for the particular pollutant concerned. After the Action Plan has been implemented the three local authorities need to monitor its progress to establish whether or not it is having the expected impact on air quality. To assess its effectiveness, the authorities will need to develop both short-term and long-term indicators of the Action Plan's effectiveness. This section sets out the plan to monitor and evaluate the impact of the AQAP.

Computer modelling can be used to predict pollutant levels, including prediction of the impact of different growth scenarios. It can also predict changes in air quality as a result of traffic management and infrastructure changes. As reported in the previous section, baseline modelling carried out and forward predictions produced by CERC have shown that the implementation of the growth agenda will lead to continuing air quality problems across the districts, such that further efforts are required to work towards bringing levels of air pollutants below the National Objectives.

Reporting actual pollutant levels recorded is essential to assess the effectiveness of the Action Plan measures, keeping the local authorities, major polluters and the public informed on the short-term and long-term changes in air quality as well as maintaining and continuing to raise awareness. The local authorities have a statutory duty to review and assess air quality in their districts, which will inform this work.

However, focusing on air pollution concentrations as the indicator of progress for an action raises a number of problems. There are numerous confounding factors, which can mask or amplify progress. Monitoring of air quality in the short term may not give a robust indication of improvements in air quality, especially given that meteorological conditions are an important factor in air pollution levels. In addition, reliance on complex modelling can be both time-consuming and uncertain and, therefore, it is useful to develop additional "surrogate" indicators. These can allow simpler assessment to be made, and more directly relevant monitoring information to be collected.

Therefore, for short-term monitoring, surrogate indicators will be used as an additional and alternative indicator of progress. These are the direct and indirect effect indicators shown below. Monitoring the outputs of a detailed programme of improvements is easier than monitoring the impact on air quality. For example, whilst it is easy to count new walking/cycling routes in an area or the additional miles of route created, it is very difficult to monitor the air quality impact of these types of separate actions. These types of actions are all part of the package of measures supporting the main actions in the AQAP and, whilst their impact might not be (immediately) noticeable, there will be an impact in the long term. The surrogate measures will thus be used as an assessment of work being carried out towards obtaining the National Air Quality Objectives. Much of this monitoring is undertaken by Cambridgeshire County Council and is reported through their various documents, including the LTP.

An annual Progress Report will be produced for the Action Plan as required by Defra. It will contain an over view of progress as well as progress on the implementation of each of the identified priority actions and any other actions that may have been given further consideration since adoption of the AQAP. This will include:

- The effect on air quality and/or traffic levels and/or fleet improvement of the priority actions.
- The effect on air quality and/or traffic levels of any extra measures implemented.
- An indication of air quality within the AQMA and progress towards the national objective for NO_2 (and PM_{10} for South Cambridgeshire District Council).
- Indicators from the LTP.

Thus the effectiveness of the Action Plan will be carefully monitored.

The table below shows the indicators that have been selected to show our work. There is a hierarchy of indicators with three levels:

1. Air pollutant concentrations.

2. Direct effect indicators, eg: traffic flows, vehicle mix

3. Indirect effect indicators, eg: number of companies with a Travel Plan and co-related policies such as noise levels, bus use.

The information recorded in Table 8.1, the table of indicators, will show the progress being made in working towards improving air quality. However, the more important information is the actual progress made based on monitoring results. Whilst it is not possible to see year-on-year trends, real improvement should be seen over a period of five years if the Action Plan is effective. These data are reported at Appendices 3 and 4[(Ap3)]

Table 8.1 – Table of indicators

Hierarchy of indicators	
1 Air pollutant concentrations (District Councils to measure)	
INDICATOR	TARGET
Annual average concentrations of NO_2 in 2015 at monitoring sites in Cambridge	<40 µg/m^3
· Parker	
· Gonville	
· Regent	
Annual average concentrations of NO_2 in 2015 at monitoring sites in Huntingdonshire	<40 µg/m^3
· Castle Moat Road (Ring Road), Huntingdon	
· High Street, St Neots	
· Laws Crescent, Brampton	
Annual average concentrations of NO_2 in 2015 at monitoring sites in South Cambridgeshire	<40 µg/m^3
· Bar Hill	
· Impington	
· Orchard Park	
Annual number of daily exceendences of PM_{10} limit in 2015 at monitoring sites in South Cambridgeshire	<35 days
· Bar Hill	
· Impington	
· Orchard Park	

2a Direct effect indicators (District Councils to measure)	
INDICATOR	TARGET
Reduction in NO_x and primary PM_{10} emissions through local authority's estate and operations (NI 194) - Cambridge	To be confirmed
Reduction in NO_x emissions through local authority's estate and operations (NI 194) - Huntingdonshire	To be confirmed
Reduction in NO_x and primary PM_{10} emissions through local authority's estate and operations (NI 194) - South Cambridgeshire	To be confirmed
Reduction in emissions of NO_x from buses in Cambridge Central Area from baseline 2006	50% by 2015
Reduction in emissions of PM_{10} from buses in Cambridge Central Area from baseline 2006	50% by 2015
Reduction in emissions of NO_x from taxis in Cambridge Central Area from Taxis from baseline 2006	50% by 2015
Reduction in emissions of PM_{10} from taxis in Cambridge Central Area from Taxis from baseline 2006	50% by 2015
Reduction in emissions of NO_x from A14 from 2006 baseline - Huntingdonshire	7% by 2015
Reduction in emissions of NO_x from Huntingdon Ring Road from 2006 baseline - Huntingdonshire	10% by 2015
Reduction in emissions of NO_x from A14 from 2006 baseline - South Cambridgeshire	7% by 2015
Reduction in emissions of PM_{10} from A14 from 2006 baseline - South Cambridgeshire	<35 days of exceedence of the daily mean by 2015

2b Direct effect indicators (Cambridgeshire County Council to measure)	
INDICATOR	TARGET
Reduction in NO_x and primary PM_{10} emissions through local authority's estate and operations (NI 194)	To be confirmed
Bus patronage (NI 177)	At least 22.5m boardings in 2010/11

2b Direct effect indicators (Cambridgeshire County Council to measure)	
INDICATOR	TARGET
Modal share of journeys to school by private car (NI 198) - reduction	20% by 2010/11
Number of cycle journeys (LTP target)	Up by 10.6% by 2010/11
Number of journey miles in Cambridge AQMA made by pre-Euro and Euro 1 PSV	none
Number of journey miles in Cambridge AQMA made by Euro 2 PSV	to be confirmed
Number of journey miles in Cambridge AQMA made by Euro 3 PSV	to be confirmed
Number of vehicles crossing the Cambridge Outer Corden	No increase
Number of vehicles crossing the Cam screenline	No increase
Increase in public transport/walking/cycling in Market Towns	% increase to be confirmed

3a Indirect effect indicators (District Councils to measure)	
INDICATOR	Number
Number of developments with less than the permitted parking spaces agreed in Cambridge	No target, report amount
Number of workplace/commercial travel plans established in Cambridge	No target, report amount
Number of personal travel plans established in Cambridge	No target, report amount
How much S106 funding obtained for air quality projects in Cambridge	No target, report amount
Number of cars in car clubs in Cambridge	Year on year increase
Number of Low Emissions Strategies agreed for new development	No target report amount
Number of personal travel plans established in South Cambridgeshire	No target report amount

3a Indirect effect indicators (District Councils to measure)	
INDICATOR	Number
Number of work-place/commercial travel plans established in South Cambridgeshire	No target report amount
Implementation of Air Quality policies in the Local Plan - Huntingdon	By 2010
Implementation of Air Quality policies in the Local Plan – South Cambridgeshire	By 2010
Inclusion in the Freight Quality Partnership - Huntingdon	By 2010
Inclusion in the Freight Quality Partnership - South Cambridgeshire	By 2010

3b Indirect effect indicators (County Councils to measure)	
INDICATOR	TARGET
Bus punctuality (NI 178) - the percentage of non-frequent buses on time	76% by 2010/11
Bus punctuality (NI 178) - the average excess waiting time for frequent services	53s by 2010/11
Journey time in the morning peak hour (NI 167)	3 min 25 seconds per mile by 2010/11
Condition of surface footway (LTP target) – percentage with notional residual life of less than 0 years by 2010/11	Less than 19.2%
Number of hits on Walk-It	Year on year increase

9. References

Ref	Author	Link back to:	Document	Hyperlink
1	AEAT	page 14	AEAT (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis	http://www.airquality.co.uk/reports/cat09/0701110944_AQinequalitiesFNL_AEAT_0506.pdf
2	Atkins	page 79 page 83 page 92	Cambridgeshire Guided Busway - Transport Assessment	http://www.cambridgeshire.gov.uk/NR/rdonlyres/10730399-889C-4A26-9863-A2B16F0D2BF0/0/TransportAssessment.pdf
3	Cambridge City Council	page 9	Cambridge City Council (2004) Detailed Assessment of NO_2	http://www.cambridge.gov.uk/ccm/content/ehws/ehws-downloads/air-quality-detailed-assessment.en
4	Cambridge City Council	page 4	Cambridge City Council (2004) Walking and Cycling Strategy	http://www.cambridge.gov.uk/ccm/content/policy-and-projects/transport-policy/cycling-walking-strategy.en
5	Cambridge City Council	page 9 page 15 page 32 page 51	Cambridge City Council (2006) Stage 4 Further Assessment	http://www.cambridge.gov.uk/public/docs/Further%20assessment%20of%20nitrogen%20dioxide%202006.pdf
6	Cambridge City Council	page 10 page 15 page 50	Air Quality in Cambridge: Developers Guide (2008)	http://www.cambridge.gov.uk/public/docs/Air%20quality%20developers%20guide.pdf
7	Cambridgeshire County Council	page 12 page 13 page 15 page 16 page 18 page 19	Cambridgeshire County Council (2006) LTP 2006 – 2011	http://www.cambridgeshire.gov.uk/transport/strategies/local/ltp_2006.htm?wbc_purpose=Basic...%22%3ewww.cambridgeshire
8	Cambridgeshire County Council	page 13 page 19	Cambridgeshire County Council (2008) LTP Delivery Report	http://www.cambridgeshire.gov.uk/NR/rdonlyres/9D42C254-FFAA-4B86-AEBF-7B2CC15DA8CC/0/2008ProgressReportFINAL.pdf
10	CERC	page 5 page 48	CERC (DRAFT 2009b) Emissions Inventory for South Cambridgeshire, Cambridge City and Huntingdonshire	No hyperlink. Contact respective contributors
09	CERC	page 90	CERC (2009a) An Air Quality Modelling Study across Cambridge and the surrounding district to determine the Impact of Proposed Development and the Congestion Charging Scheme	No hyperlink. Contact respective contributors

Ref	Author	Link back to:	Document	Hyperlink
28	Communities	page 21	PPS23	http://www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps23/
11	Defra	page 4	Defra Local Air Quality Management, Policy Guidance LAQM. PG(09) (2009).	http://www.huntsdc.gov.uk/NR/rdonlyres/7BEBDD1B-0844-4CAA-815D-19A361323FB8/0/laqm_policy_guidance_09.pdf
12	Defra	page 4	The National Air Quality Strategy	http://www.defra.gov.uk/environment/quality/air/airquality/strategy/index.htm
13	Defra	page 4	Air Quality Regulations	http://www.defra.gov.uk/environment/quality/air/airquality/regulations.htm
14	Defra	page 4	Defra Local Air Quality Management, Technical Guidance LAQM. TG(09) (2009).	http://www.huntsdc.gov.uk/NR/rdonlyres/7BEBDD1B-0844-4CAA-815D-19A361323FB8/0/laqm_policy_guidance_09.pdf
15	Dft	page 57	DfT (2004) Smarter choices	http://www.dft.gov.uk/pgr/sustainable/smarterchoices/ctwwt/
16	Government Office for the East of England	page 11 page 83	East of England Plan: Revision to the Regional Spatial Strategy for the East of England (2008) published by TSO	http://www.gos.gov.uk/goee/docs/Planning/Regional_Planning/Regional_Spatial_Strategy/EE_Plan1.pdf
17	Huntingdonshire District Council	page 36 page 47	LAQM Reports	http://www.huntsdc.gov.uk/Environment+and+Planning/Air+quality.htm
18	NSCA	page 29	NSCA (2001a) Air Quality Action Plans: Interim Guidance for Local Authorities	http://www.environmental-protection.org.uk/assets/library/documents/AQActionPlansInterim.pdf
27	Peterborough City Council, Cambridgeshire County Coun Council, Cambridgeshire County Coun	page 10 page 85	Cambridge and Peterborough Structure Plan	http://www.cambridgeshire.gov.uk/NR/rdonlyres/E5D7DF57-9987-481F-9BFE-78B0D0D27BAE/0/StructurePlan.PDF
22	South Cambridgeshire District Council	page 9	The Detailed Assessment of NO_2 Along the A14 Corridor (2006)	http://scambs-airquality.aeat.co.uk/document/ApprovedDetailedAssessment.pdf
23	South Cambridgeshire District Council	page 27	The Detailed Assessment of PM_{10} Along the A14 Corridor (2007)	http://scambs-airquality.aeat.co.uk/document/pm10_detailed_assessment.pdf

Ref	Author	Link back to:	Document	Hyperlink
24	South Cambridgeshire District Council	page 10 page 27 page 40 page 47	The Further Assessment of NO_2 and PM_{10} Along the A14 Corridor (2008)	http://www.scambs.gov.uk/documents/retrieve.htm?pk_document=907689
25	Cambridgeshire County Council	Page 16	Overview of proposals for stage 4	http://www.cambridgeshire.gov.uk/NR/rdonlyres/2DFE1210-3682-4B0E-94FC-B8284A1AB672/0/core_scheme_stage4.pdf

Useful links not linked in this document:

South Cambridgeshire District Council Reports	Updating and Screening Assessment in fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management (2009)	http://www.scambs.gov.uk/Environment/Pollution/AirPollution/aqreports.htm
NSCA	NSCA (2001b) Air Quality: Turning Reviews into Action	http://www.environmental-protection.org.uk/assets/library/documents/AQMAGuidance.pdf
NSCA	NSCA (2004) Development Control: Planning for Air Quality	http://www.environmental-protection.org.uk/assets/library/documents/Development_Control_planning_for_air_quality.pdf

10. Acronym Glossary

µg/m^3	Microgrammes per cubic meter
ADMS Urban	Atmospheric dispersion computer modelling package
AEAT	AEA Technology is an international consultancy that advises the Government on air quality.
APR	Annual Progress Report
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQR&A	Air Quality Review and Assessment
CERC	Cambridge Environmental Research Consultants
Defra	Department of Environment, Food and Rural Affairs
DfT	Department for Transport
EERA	East of England Regional Assembly
EMIT	An emissions database (used with ADMS-Urban)
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
inter alia	Among other things
LAQM	Local Air Quality Management
LDF	Local Development Framework
LEZ	Low Emission Zone
LTP	Local Transport Plan
LTTS	Long Term Transport Strategy

MOT	An MOT certificate confirms that a vehicle, at the time of its test, (as far as can be reasonably determined without dismantling) met the minimum acceptable environmental and road safety standards required by law. It does not mean that the vehicle is roadworthy for the life of the certificate and isn't a substitute for regular maintenance.
MRUK	Market Research UK - This is the company that conducted the AQAP Consultation Workshops
NAEI	National Atmospheric Emissions Inventory
NI194	National Indicator 194
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen - which includes: nitric oxide (NO) and nitrogen dioxide (NO_2)
NSCA	National Society for Clean Air
PM_{10}	Particulate matter with a diameter of less that 10 microns
$PM_{2.5}$	Particulate matter with a diameter of less that 2.5 microns
PSV	Public Service Vehicle
QBP	Quality Bus Partnership
RET	Roadside Emission Testing
RPC	Reduced Pollution Certificate
RSS	Regional Spatial Strategy
TIF	Transport Innovation Fund
VOSA	Vehicle and Operator Services Agency (VOSA)

Euro Standards

http://en.wikipedia.org/wiki/Euro_IV

Euro Standards	Vehicle emission standards for new vehicles regulating concentrations of pollutants including: CO, NO_x, HC & PM in exhaust gasses
Euro 1	Cars 1992 HDVs 1992
Euro 2	Cars 1996 HDVs 1996/1998
Euro 3	Cars 2000 HDVs 2000
Euro 4	Cars 2005 HDVs 2005
Euro 5	Cars 2009 HDVs 2008
Euro 6	Cars 2014 HDVs 2013

11. Appendices

Appendix 1 Maps of Air Quality Management Areas

Appendix 2 Spreadsheet of all measures planned/in progress

Appendix 3 Progress based on continuous monitoring results: 5-year rolling means

Appendix 4 Progress based on NO_2 diffusion tube results: 5-year rolling means

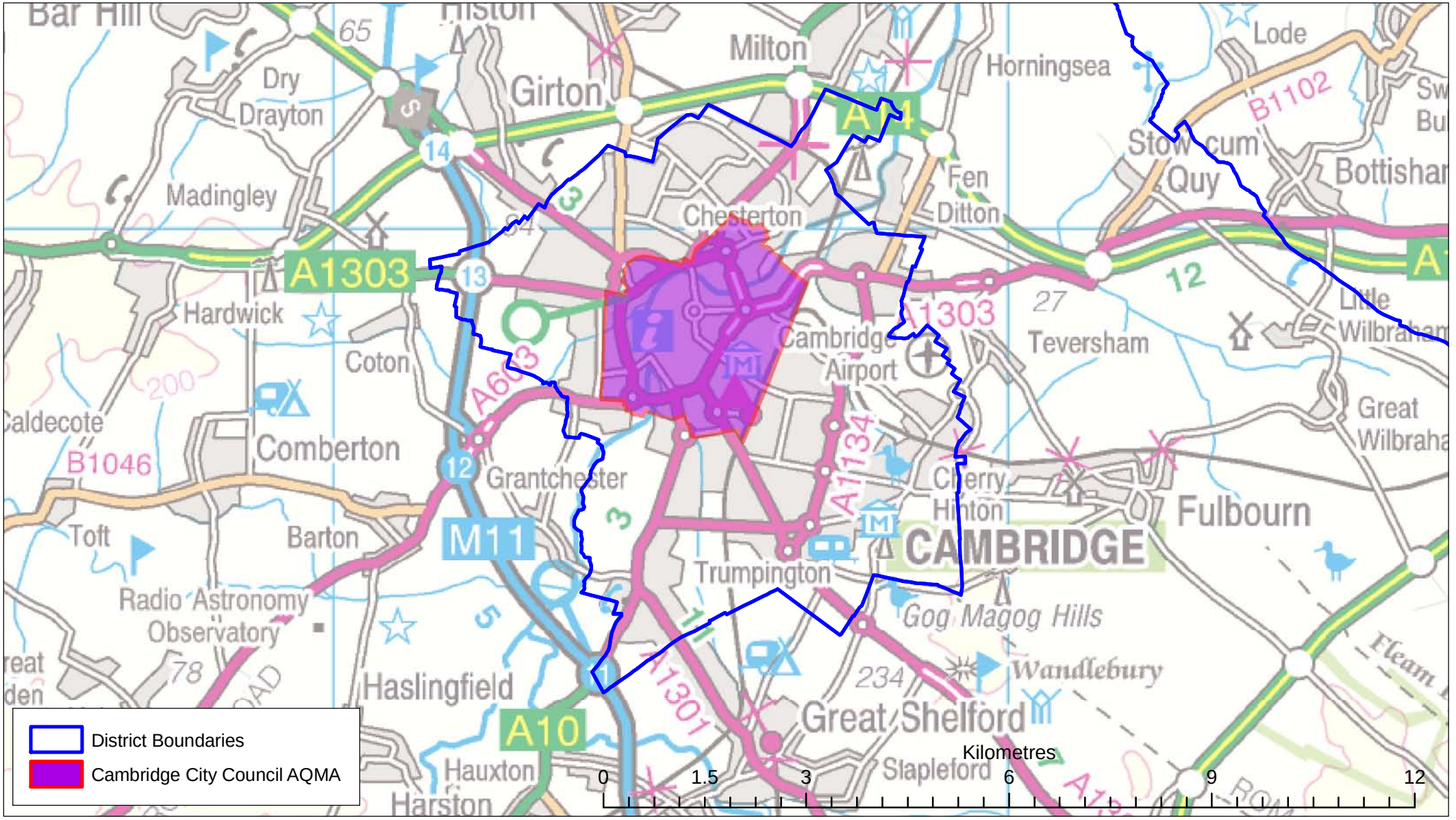
Appendix 5 Growth Areas

Appendix 1

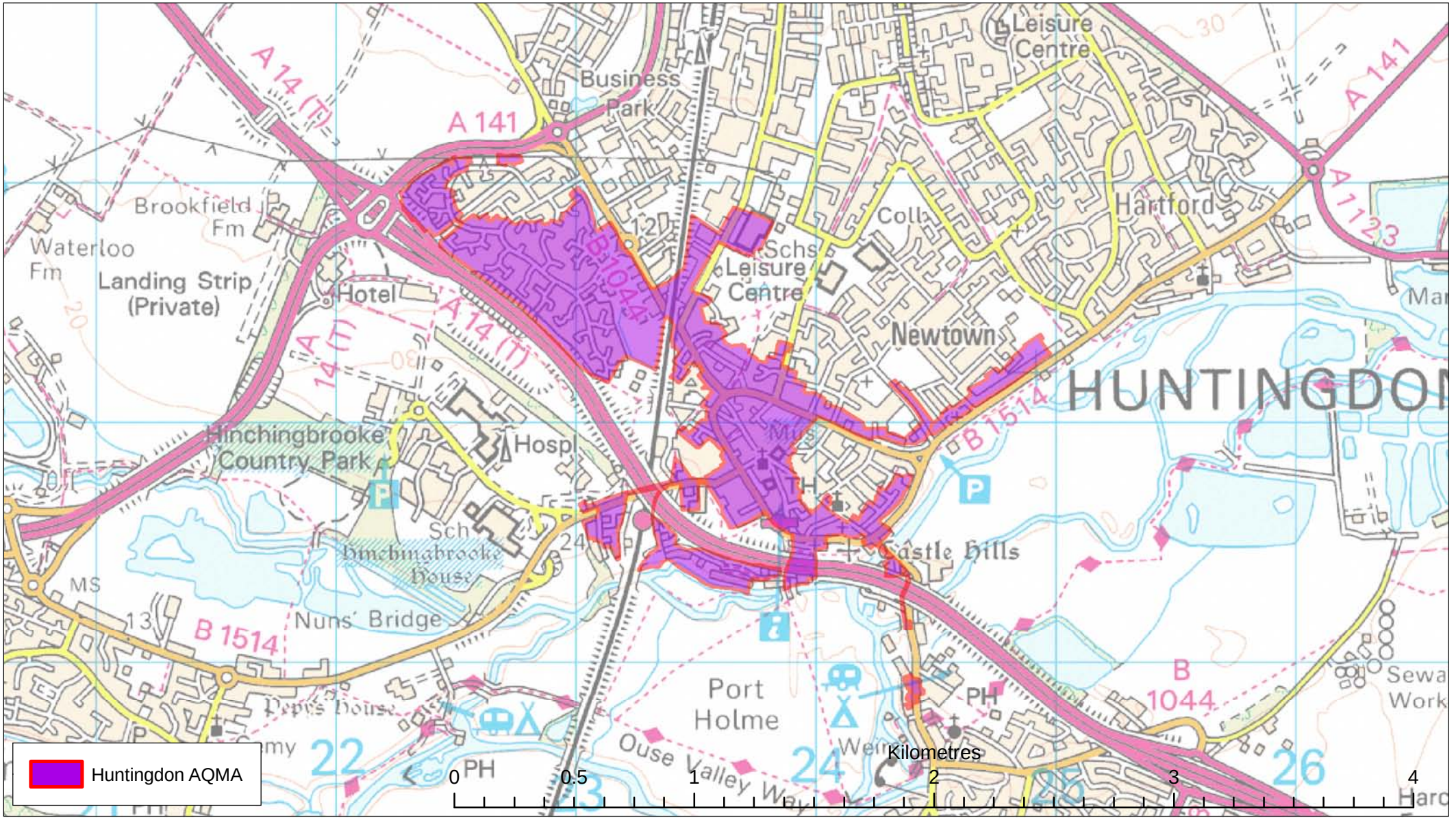
Maps
of
Air Quality
Management Areas

(link back to Section 1)

Cambridge City Council
Air Quality Management Area 2004

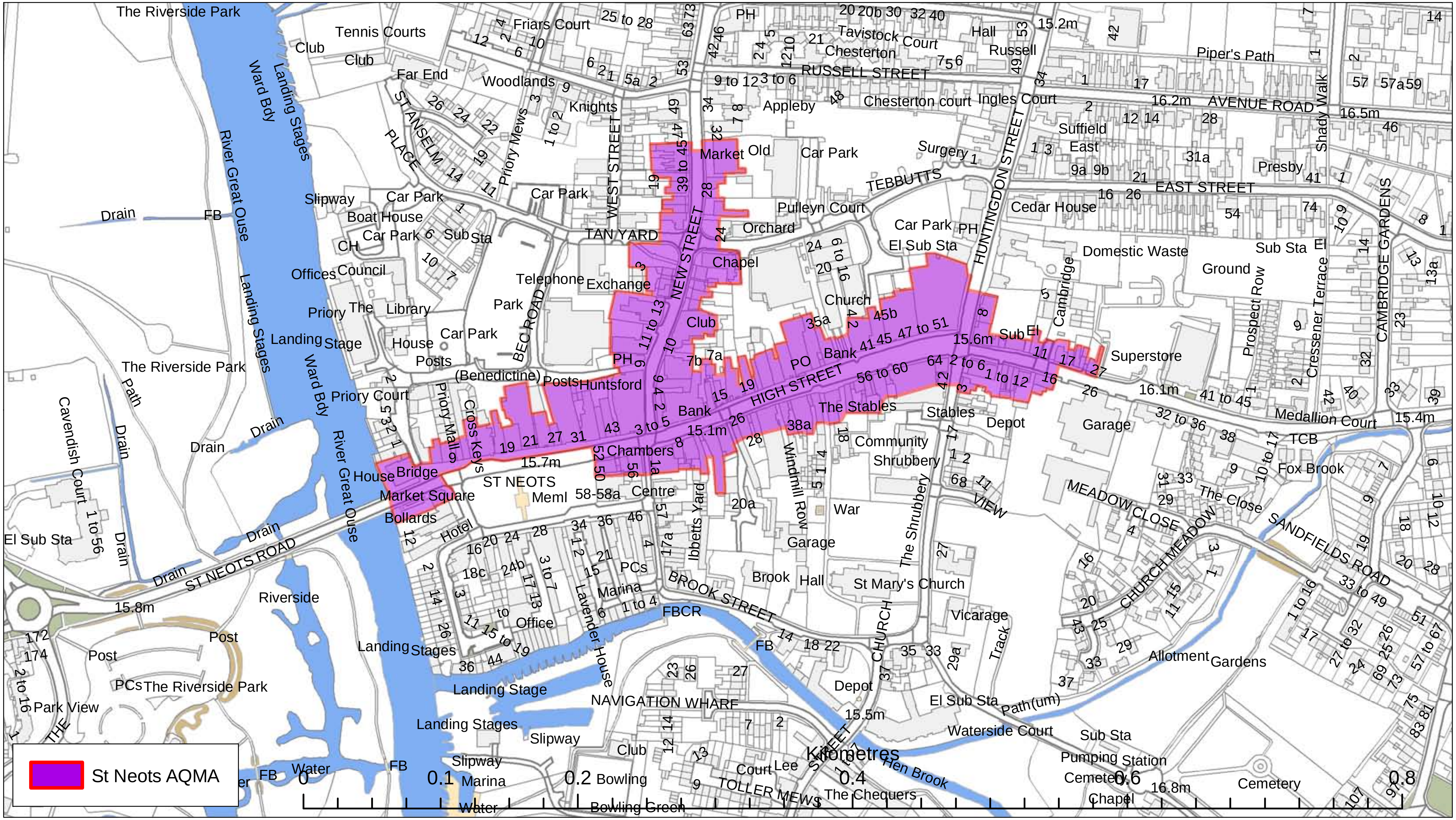


Huntingdonshire District Council
Huntingdon AQMA (amended 2007)



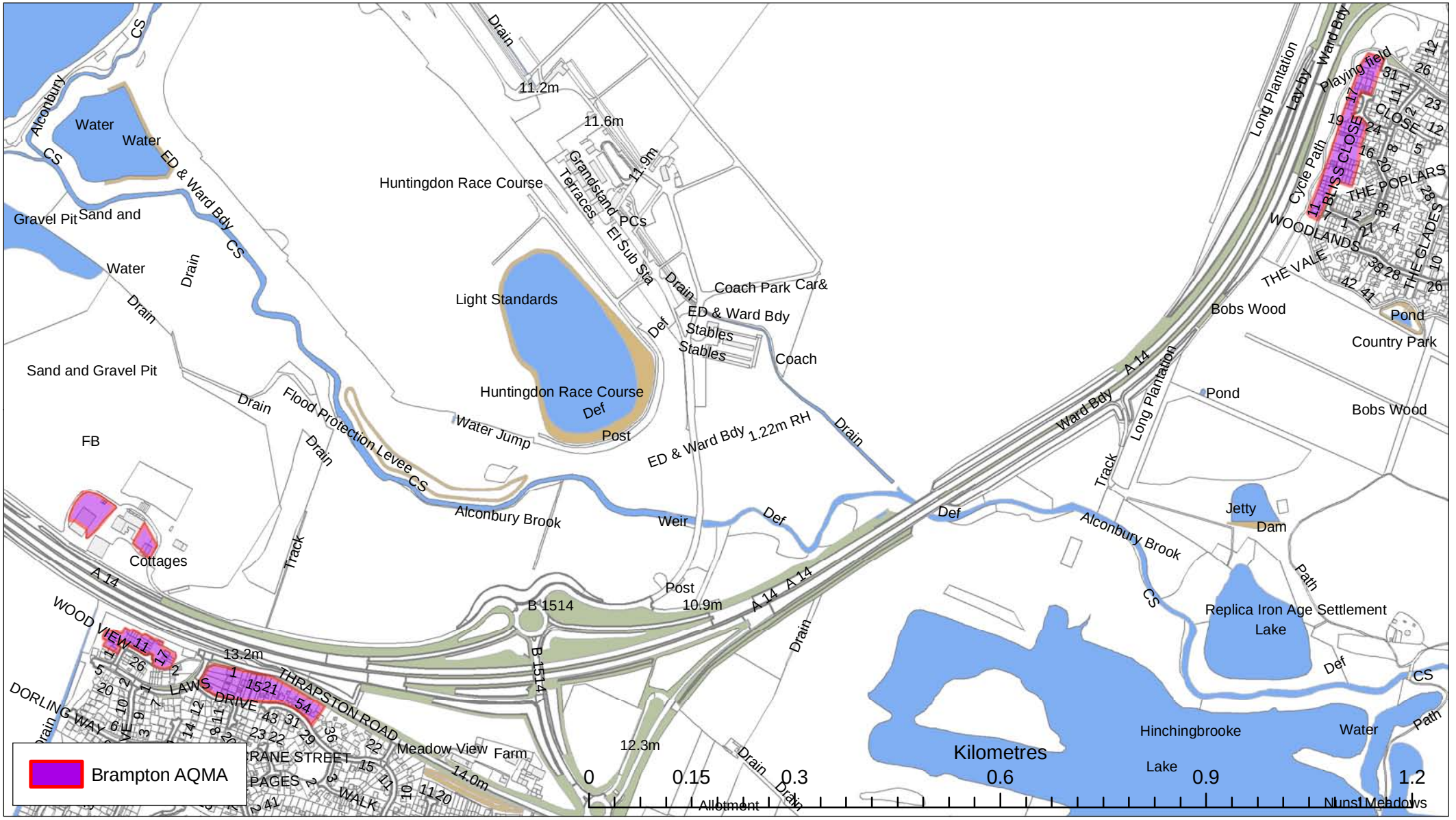
Huntingdonshire District Council
St Neots AQMA (amended 2007)

Huntingdonshire DISTRICT COUNCIL

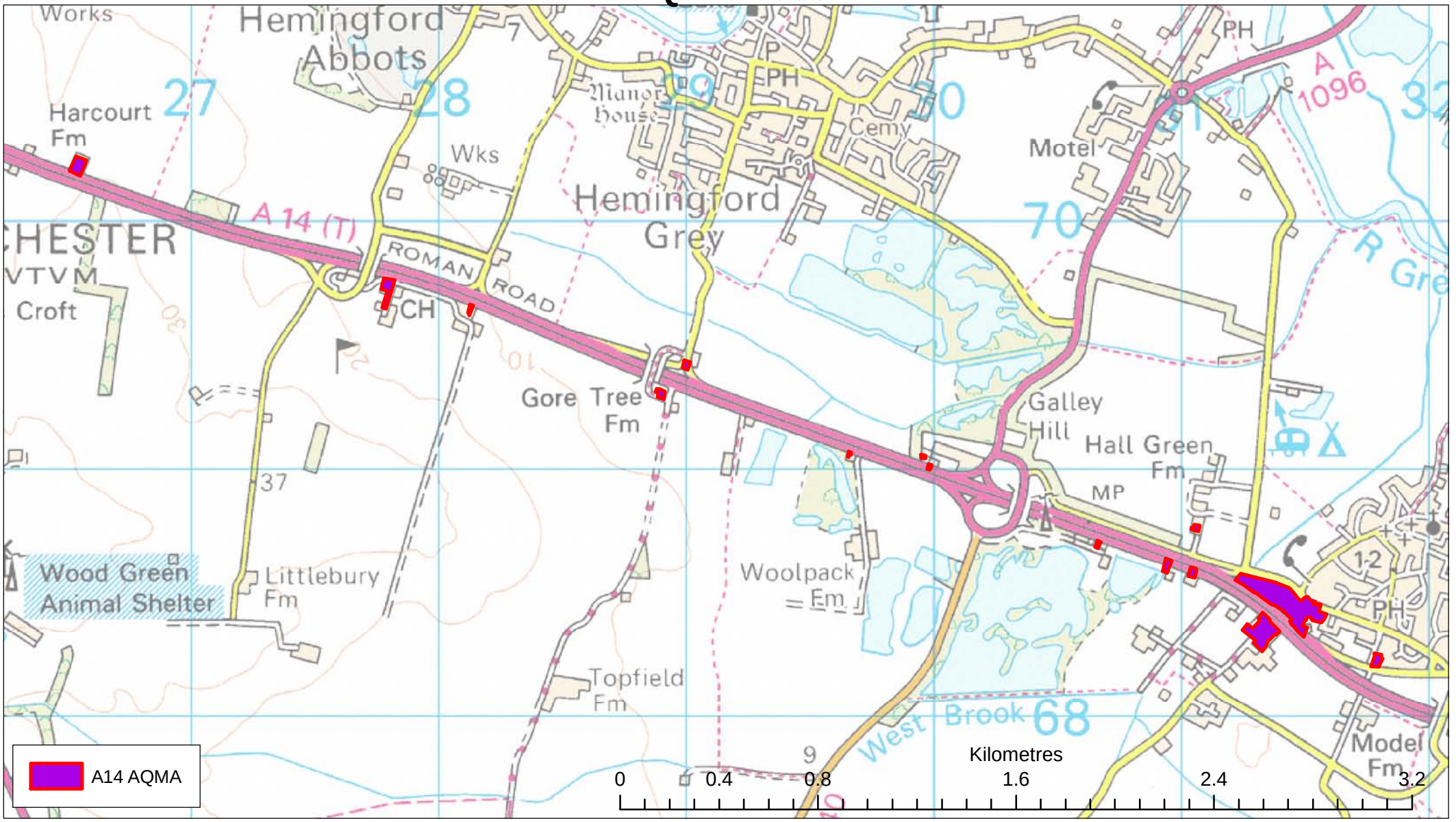


Maps reproduced from the Ordnance Survey Mapping with the permission of the Controller of

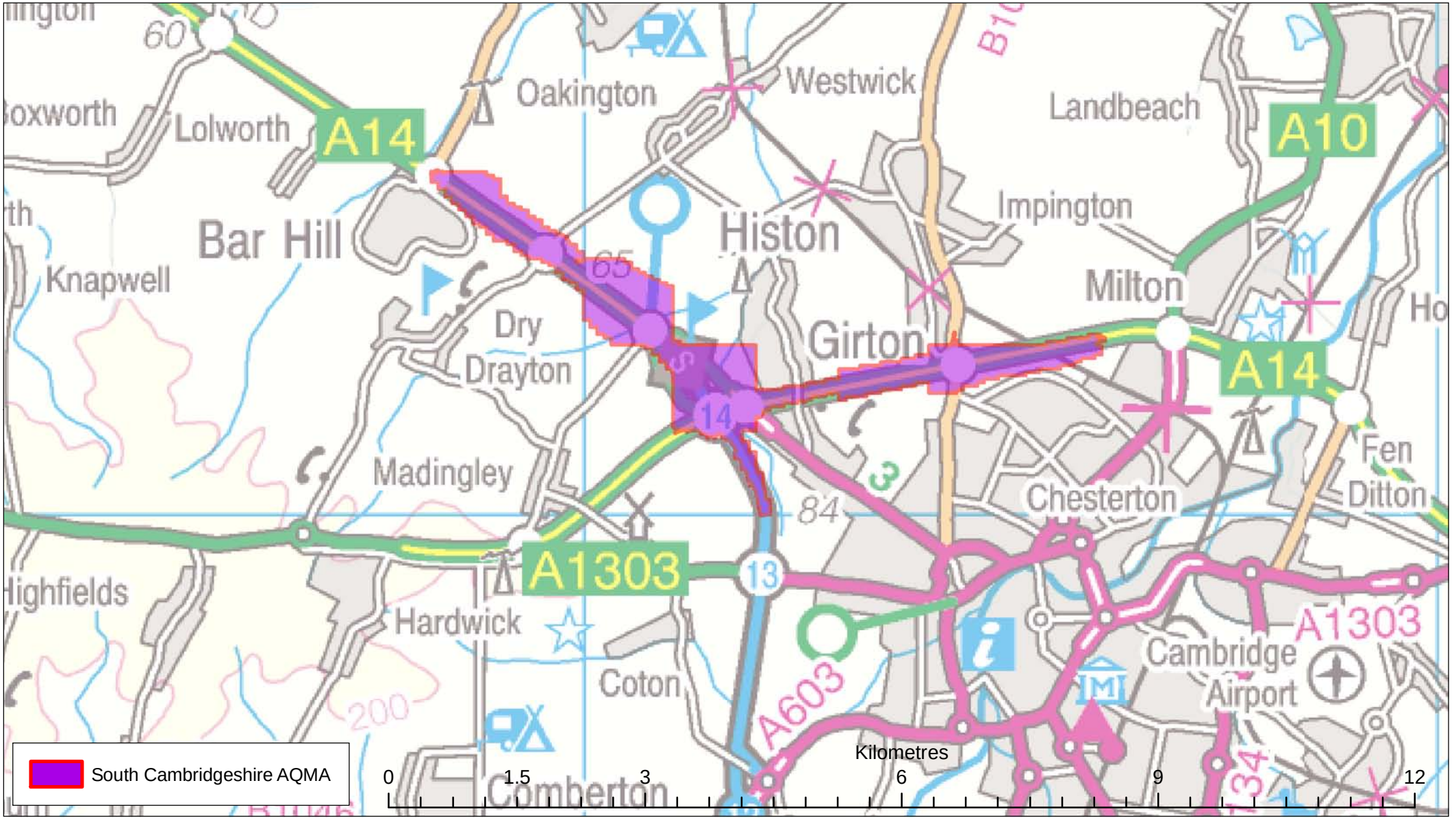
Huntingdonshire District Council
Brampton AQMA (amended 2007)



Huntingdonshire District Council
A14 - Fenstanton to Hemingford
AQMA 2006



South Cambridgeshire District Council
AQMA (amended 2008)



Appendix 2

Spreadsheet of all measures planned/in progress

(Link back to Section 3)
(Link back to Section 4)

Air Quality Action Plan Measures in Progress, under consideration and/or development

	Action	Description	Target/ Indicator/Policy/Plan	City AQMA	Huntingdon AQMA	St Neots AQMA	Brampton AQMA	A14 Hemingford to Fenstanton AQMA	A14 Bar Hill to Milton AQMAs	COSTS L (<£100K), M (£100K - £1M), H (>£1M)	Impact on air quality L/M/H	Feasibility L/M/H	AQAP Priority L/M/H	Lead Council	Partners/Contacts	Timescale	Wider impacts - climate change / economic / social benefits	Wider impacts - climate change / economic / social disadvantages	Risk to delivery
	Managing the network - infrastructure changes																		
1	Cambridgeshire Guided Busway	New route from St Ives to Trumpington, mostly on bus-specific land	N/A	Yes	No	No	No	Yes	Yes	High	to be modelled	High	High	Sustainable Infrastructure, Cambridgeshire County Council	Bus operators	open in 2009	Reduction in congestion on A14 and in Cambridge, increased travel choice for non-Cambridge residents	Increase in noise and emissions close to the CGB route	None known - busway already under construction
2	A14 improvements	New alignment and improvements Ellington - Fen Drayton	Approval of draft Order	No	Yes	No	Yes	Yes	Yes	High	tbc	High	High	Sustainable Infrastructure, Cambridgeshire County Council	Highways Agency CCC contractor tbc	completion of proposed upgrading by 2015	Reduction in congestion on A14	Long term delays and commuter disruption during construction work	Loss at a public appeal
3	A14 improvements	Widening of carriageway Fen Drayton - Histon and parallel link at Bar Hill	Approval of draft Order	No	No	No	No	No	Yes	High	tbc	High	High	Sustainable Infrastructure, Cambridgeshire County Council	Highways Agency CCC Costain Skanska JV	completion of proposed upgrading by 2015	Reduction in congestion on A14	Long term delays and commuter disruption during construction work	Loss at a public appeal
4	A14 improvements	Widening of carriageway Histon - Fen Ditton	Approval of draft Order	No	No	No	No	No	Yes	High	tbc	High	High	Sustainable Infrastructure, Cambridgeshire County Council	Highways Agency CCC contractor tbc	completion of proposed upgrading by 2015	Reduction in congestion on A14	Long term delays and commuter disruption during construction work	Loss at a public appeal
5	New Roads	Link between Madingley Road and Huntingdon Road	N/A	Yes	No	No	No	No	Yes	High	tbc	High	High	Sustainable Infrastructure, Cambridgeshire County Council	City Council, University of Cambridge	depends on West Cambridge development	avoid journeys up and down H Rd and M Rd to reach A14/A428	Some delays and disruption during construction work	**TIF-dependent in part**
6	Rail infrastructure	New station at Chesterton	N/A	Yes	No	No	No	No	Yes	High	tbc	High	High	Sustainable Infrastructure, Cambridgeshire County Council	District Council, Network Rail	not known	increasing possibiities for rail use		**TIF-dependent in part**
7	Low emission zone	Create areas that have lower speed limits, speed reduction methods, traffic restrictions and more pedestrian areas / cycle routes	Core Schemes IV and V	Yes	No	No	No	No	No	High	High	High	High	Highways and Access, Cambridgeshire County Council	District Councils	Ongoing, where appropriate	Improved perception of urban environment, increased economic activity, safer streets, more social interaction, lower noise levels	Enforcement application, resource provision and the potential for prejudice against owners of older vehicles	Political challenge, consensus amongst stakeholders
6	Reduction in speed limits	Create new areas of 20mph zones	N/A	Yes	No	No	No	No	No	High	tbc	High	High	Highways and Access, Cambridgeshire County Council	District Councils	Ongoing, where appropriate	Safer Streets and potential for reduction in noise levels	Enforcement application, increased journey times	
7	Cycle City	Provision of new infrastructure and promotion of cycling across Cambridge	TBC, based on cycling rates	Yes	No	No	No	No	No	Medium	tbc	High	High	Cambridgeshire County Council	Sustainable Infrastructure, Major Infrastrucure Delivery, OECS, City Council and SCDC	2008 - 20011	Increase in cycle usage, potential for traffic reduction, health benefits	None Known	Match-funding (50%) not available
8	Improving City Centre Infrastructure	Re-design bus stops and introduce one way system in bus station area. Further improvements are TIF-dependent	Core Schemes IV	Yes	No	No	NA	NA	No	Med	High	High	High	Highways and Access, Cambridgeshire County Council	District Councils	Ongoing	Reduction in congestion in the area most affected by air pollution within the city	None Known	None known - Project underway. Future improvements are **TIF-dependent**
9	Provision of new cycleways	New cycle path from Sawston to Babraham Park and Ride	N/A	Yes	No	No	No	No	No	Med	Low	High	Low	Cambridgeshire County Council	SCDC, Babraham Institute, Sawston VC, Granta Park	2009	Increase in cycle usage, potential for traffic reduction, health benefits	None Known	May require CPO
10	Provision of new cycleways	New cycle and footpath Northfield Avenue to provide a link to the Guided Bus and a crossing for Kings Hedges Road	N/A	Yes	No	No	No	No	Yes	Med	Low	High	Low	Cambridgeshire County Council	SCDC and City Council	2008	Increase in cycle usage, potential for traffic reduction, health benefits	None Known	None Known
11	Provision of new cycleways	Widening of path on Coe Fen between Newnham and Brooklands Avenue, part of NCN 11	N/A	Yes	No	No	No	No	No	Med	Low	High	Low	Cambridgeshire County Council, Sustainable Infrastructure, Highways and Access	City Council	2008	Increase in cycle usage, potential for traffic reduction, health benefits	None Known	None Known
	Managing the network - public transport improvements																		
13	Continuously improving quality of bus services by establishing Quality Bus Partnership	Stricter limits for buses and year-on-year fleet improvements Regulated by rising bollard transponder entitlement Twice-yearly MOT	90% Euro 2 with RPC by January 2009; RPC requirement dropped in negotiations	Yes	No	No	No	No	Yes	High	High	High	High	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	Bus companies, QPB Board	January 2009 for intial criteria: 90% Euro 3 by January 2011, ongoing improvements to be negotiated	Increased and improved public transport provision and choice, potentially reducing congestion	Cost to bus operators	Supply of new buses
14	Increase coverage of the Quality Bus Partnership to cover Huntingdonshire	Increase coverage of the Quality Bus Partnership to cover Huntingdonshire	include Huntingdonshire in the QBP	No	Yes	Yes	Yes	Yes	No	High	High	Med	High	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	Bus companies, QPB Board	Need to obtain commitment on time scale from QPB	Increased and improved public transport provision and choice, potentially reducing congestion	Cost to bus operators	Supply of new buses
15	Increase bus patronage	Increase bus customer satisfaction/ bus punctuality	LTP Con1, Con2, Con 5a, 5b, 5c	Yes	Yes	Yes	Yes	Yes	Yes	Med	High	Med	Med	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	Bus companies	Ongoing	Improves perception of public transport, increased patronage resulting in fewer private car journeys	None Known	**partly TIF-dependent**
16	Increasing public transport provision	Higher frequency of buses, during the day and extending service in the evenings and Sundays	LTP, NI177	Yes	Yes	Yes	Yes	Yes	Yes	Med	High	Med	Med	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	District Councils/bus oeprators,/ developers (S106 agreements)	Ongoing	Fewer private car journeys, reduction in congestion	None Known	Substaintial increase in number of buses will require increase in depot size for main service provider (Stagecoach). **Also partly TIF-dependent**

Air Quality Action Plan Measures in Progress, under consideration and/or development

	Action	Description	Target/ Indicator/Policy/Plan	City AQMA	Huntingdon AQMA	St Neots AQMA	Brampton AQMA	A14 Hemingford to Fenstanton AQMA	A14 Bar Hill to Milton AQMAs	COSTS L (<£100K), M (£100K - £1M), H (>£1M)	Impact on air quality L/M/H	Feasibility L/M/H	AQAP Priority L/M/H	Lead Council	Partners/Contacts	Timescale	Wider impacts - climate change / economic / social benefits	Wider impacts - climate change / economic / social disadvantages	Risk to delivery
17	Increasing public transport provision	Increase in number of Park and Ride sites, Cowley Road site to be replaced by new site on Milton Road, other sites to be extended	LTP	Yes	No	No	No	No	Yes	Med	High	Med	High	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	District Councils/bus oeprators,/ developers (S106 agreements)	Ongoing	Will attract commuters who would usually drive into the city. Reduction in private car journeys and therefore reduction in congestion	Some congestion caused during construction phase	**TIF-dependent**
18	Increasing public transport provision	extension of number of Park and Ride operations to include Sunday and off-peak	LTP	Yes	Yes	Yes	NA	NA	Yes	Med	High	Low	High	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	District Councils/bus oeprators,/ developers (S106 agreements)	Ongoing	Reduction in congestion, encourages behavioural change	Cost to the County Council	Decision on Sunday operation deferred by County Members, unwilling to increase Sunday operations until Sunday car parking charges rise to incentivise use
19	Provision of Bus Priority measures	Extension of designated bus lanes planned in the City		Yes	Yes	No	No	No	No	High	Low	Med	Med	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)			Improvement in bus reliability and journey times resulting in increase in bus patronage	May have negative impact on other traffic if an existing "all traffic" lane is used as the bus lane	Political challenge, consensus amongst stakeholders. **TIF-dependent**
20	Subsidised public transport	Non-commercial but important routes are subsidised in part	NI177	Yes	Yes	Yes	Yes	Yes	Yes	Med	Low	Med	Low	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	Bus companies	Ongoing	Reduction in congestion, increased bus patronage due to subsidies	Cost to the Council	Funding pressure, some services planned to lose subsidy in 2008.
21	Improving bus information provision	Provide Real Time Information at stops. Equipment installed on buses will communicate with on street equipment to indicate exactly when each bus will arrive.	% buses kitted out; % stops with RT signs: number of users of e-services:	Yes	Yes	Yes	Yes	Yes	Yes	High	Low	Med	Low	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	ACIS UK, Bus companies Traffic Managers Team Bedfordshire County Council, Peterborough Council, Luton Borough Council	2004 - Ongoing	Improved perception of bus service provision resulting in increased bus patronage and reduction in congestion	Cost to bus operators	Major roll out of equipment and upgrades **dependent on TIF resource**, may be some other sources of income to pay for this. Funding for ongoing maintenance may be an issue
22	Improving bus information provision	Provide interactive maps at stops that can be used to find out how to get from one part of the County or City to another using public transport, with details of bus times	% stops with maps: number of users	Yes	Yes	Yes	Yes	Yes	Yes	High	Low	Med	Low	Cambridgeshire County Council, Highways and Access, Head of Public Transport (Glenn Edge)	Bus companies Traffic Managers Team Bedfordshire County Council, Peterborough Council, Luton Borough Council	plans under way	Improved perception of bus service provision resulting in increased bus patronage and reduction in congestion	Cost of purchase and installation of equipment, prevention of vandalism	Major roll out of equipment and upgrades **dependent on TIF resource**, may be some other sources of income to pay for this. Funding for ongoing maintenance may be an issue
	Managing the network - demand management																		
24	Congestion Charging	Charging at peak hours to enter Cambridge	To reduce vehicle kilometres in Cambridge by 10% on current day levels'	Yes	No	No	No	Yes	Yes	High	to be modelled	Med	High	Cambridgeshire County Council	Cambridge City Council/South Cambridgeshire District Council	Long-term	Spread of traffic away from peak hours, increased revenue that can be put back into the local environment. Coupled with other improvements in the package, more alternatives to the private car	May move the congestion to other areas, potential for prejudice against those who live in the City (or outside the City) and cannot afford the charge or those who have inadequate public transport provision	Political, both local and national. Oppostion by the local public. Completely **TIF-dependent**
25	HGV restrictions	HGV access to certain areas limited	No information available	Yes	Yes	Yes	No	No	No	Low	Low	Low	Med	Cambridgeshire County Council	Highways Agency CCC Highways and Access Freight Manager	delayed	Noise reduction	Increase in noise near to restricted areas	Staff not in place to carry this measure through
26	Parking Management and Charging	Increase Controlled Parking Zones; Policies to discourage long-term parking in Cambridge centre	N/A	Yes	No	No	No	No	No	Low	Low	High	Med	Cambridgeshire County Council	District Councils	Ongoing	Discourages commuters and shoppers from driving into the city centre resulting in a reduction in congestion	May prejudice against those who require parking outside or near their homes	Not popular with the public
27	HDC Site Specific Employee Travel Plans	Reducing single occupancy car journeys, amending car allowance schemes to remove incentive for bigger vehicles, promote modal shift away from cars, provision of low emission pool cars for employees use	Number of Council emplyees travelling to work by car	No	Yes	Yes	Yes	Yes	No	Low	Low	High	Low	HDC	Employees	2010/2011	Encourages cycling/walking and saves on fuel costs; improves employee health. Sets an example to local organisations and businesses	None known	None Known
28	Employee Travel Plan (City Council)	Launched in 2008. Baseline interest-free season ticket loans, cycle allowance for work-related trips, discount at selection of cycle shops on new bikes and repairs. Plans include provision of cycle lockers, purchase of spaces in Grand Arcade car park, join Street Car, re-join LiftShare scheme, incentives for greater use of sustainable transport.	Reduce journeys to work by car, increase journeys to work by public transport, walking and cycling; increased tele-working	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Employees	2008 - 9	Encourages cycling/walking and saves on fuel costs; improves employee health. Sets an example to local organisations and businesses	None known	None Known

Air Quality Action Plan Measures in Progress, under consideration and/or development

	Action	Description	Target/ Indicator/ Policy/ Plan	City AQMA	Huntingdon AQMA	St Neots AQMA	Brampton AQMA	A14 Hemingford to Fenstanton AQMA	A14 Bar Hill to Milton AQMAs	COSTS L (<£100K), M (£100K - £1M), H (>£1M)	Impact on air quality L/M/H	Feasibility L/M/H	AQAP Priority L/M/H	Lead Council	Partners/Contacts	Timescale	Wider impacts - climate change / economic / social benefits	Wider impacts - climate change / economic / social disadvantages	Risk to delivery
29	SCDC Travel for Work Plan	Introduced in 2004. Includes options for bicycle loans, interest free loans for public transport season tickets, car share and bike mileage allowances, motorbike mileage allowances, car sharer parking spaces and promotion of cleaner modes of transport.	Reduce journeys to work by car, increase journeys to work by public transport, walking and cycling; increased tele-working	No	No	No	No	Yes	Yes	Low	Low	High	Low	South Cambridgeshire District Council	Employees	Ongoing	Encourages cycling/walking and saves on fuel costs; improves employee health.Sets an example to local organisations and businesses	None known	None known
	Lowering Vehicle emissions																		
31	Improve emissions performance of council fleet	Replacing of older "dirtier" vehicles with newer "cleaner" technologies	part of NI 194	Yes	Yes	Yes	Yes	Yes	Yes	Med	Medium	High	Low	All Councils	County CC - Susan Haylett City CC - Climate Change Officer and Fleet Manager, HDC Environment Team Leader, SCDC No-one	Ongoing	Improve perception of the Council as environmentally aware and reduce emissions	Cost of carrying out improvements	Economics/political SCDC No one person responsible for NI194. Nothing in service plan or climate change plan. Each service manager responsible for own fleet.
32	Improve emissions performance of council fleet	Apply to EST for a Green Fleet Review to develop a carbon reduction programme for the vehicle fleet	part of NI 194	Yes	No	No	No	No	No	Low	Med	High	Low	City Council	Fleet Manager, Climate Change Officer	2008 - 9	Improve perception of the Council as environmentally aware and reduce emissions	None known	Economics/political
33	Improve emissions performance of council fleet	Use of Additives to lower fuel consumption (and therefore emissions) - ChemEcol being trialled at City Council	part of NI 194	Yes	No	No	No	No	No	Low	Medium	High	Low	City Council	City Council	Ongoing	Improve perception of the Council as environmentally aware and reduce emissions	Cost of carrying out improvements	Economics/political
34	Reduce emissions from council fleet	Introduce a digital web-based tracking system for Council vehicles to more effectively monitor and control fuel efficiency	part of NI 194	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Fleet Manager, Climate Change Officer, service provider	2008 - 9	Improve perception of the Council as environmentally aware and reduce emissions	Cost of equipment installation	
35	Reduce emissions from council fleet	Conduct a trial use of a) biodiesel in Council refuse collection vehicles and b) electric powered van	part of NI 194	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Fleet Manager, Climate Change Officer, service provider	2008 - 9	Improve perception of the Council as environmentally aware and reduce emissions	None known	
36	Improve quality of buses	Extend Quality Bus Partnership - contunue with ongoing improvements and widen to include Huntingdon	90% Euro 2 with RPC by January 2009; RPC requirement dropped in negotiations	Yes	Yes	Yes	Yes	Yes	Yes	High	High	Medium	High	Cambridgeshire County Council	CCC - Head of Public Transport	Long term	Decrease in emissions from buses, particularly important in Cambridge City and Huntingdon	Poor service to public if services no longer allowed to use bus station facilities	No penalty available to encourage operators to sign up
37	Taxi fleet compliance	Twice-yearly emissions checks made to all taxis operating within LEZ 8 year age limit	Improved euro standard of taxis within the fleets	Yes	Yes, tbc	Yes, tbc	Yes, tbc	Yes, tbc	Yes	Low	Low	High	High	All Councils	Licensing / Taxi fleets	Ongoing	Reduction in vehicle emissions	May be prejudice against smaller fleet operators who cannot afford upgrades	Obtaining agreement with taxi operators
38	Reduce emissions from taxis	Investigate with partners the ability for City Council & HDC to introduce carbon dioxide vehicle emissions standards in respect of Taxi Licensing Functions.		Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	Med	Low	City Council	Licensing / Taxi fleets	2009 - 10	Improve perception of the Council as environmentally aware and reduce emissions	None known	
39	Reduce emissions from taxis	SCDC: as part of licensing conditions, retrofit taxis to achieve Euro standard (standard and timescale yet to be decided)	tbc	Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	Med	Low	SCDC	Licensing / Taxi fleets		Improve perception of the Council as environmentally aware and reduce emissions	None known	
40	Establish Freight Quality Partnership	Set up partnership with freight organisations to encourage better environmental practices	Member commitment by 2009, partnership establihsed by 2012	Yes	Yes	Yes	Yes	Yes	Yes	Low	Med	Low	Med	Highways and Acces, Cambridgeshire County Council	Highways Agency Supermarkets Haulage companies	Staff not in place to carry this measure through	Work with freight operators, drivers and distributors to improve emissions from freight transport	None known	Staffing issues
41	Parking Management and Charging	Variable Parking Charges - car parks and residential permits - depending on emissions	City Council Medium Term Objectives	Yes	No	No	No	No	No	Low	Low	High		City Council	Parking Contractors, NCP	under discussion	Climate change mitigation	Unpopular with some residents	Political
42	Parking Management and Charging	Introduce car parking charges with reduced season tickets charges for cars with CO2 emissions under 120g/km	Huntingdonshire Car Parking Strategy	No	Yes	Yes	Yes	No	No	Low	Low	High	High	HDC		Ongoing	Reduction in CO2 emissions	Could increase illegal parking outside designated carparks/unpopluar	Political
43	Encourage uptake of low emission vehicles	Install electric charging points for vehicles in City Council car parks	City Council Medium Term Objectives	Yes	No	No	No	No	No	High	Low	High	Low	City Council	Parking Contractors, NCP	Parking Contractors, NCP etc	having a good coverage of charge points will make electric vehicles a more attractive and reliable choice	cost of installation of charge points	
44	Road-side testing of exhaust emissions	Spot checks by the roadside (with the aid of police officers) or at car parks. Ensure that pollution from vehicle exhausts is minimised.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	High	Low	District Councils	VOSA / Police / Local mechanic / Highways Agency	Ongoing	Raising Awareness Basic safety checks	Cost to the Council	Poor infrastructure to enable checks to be carried out safely (Cambridge)

Air Quality Action Plan Measures in Progress, under consideration and/or development

	Action	Description	Target/ Indicator/Policy/Plan	City AQMA	Huntingdon AQMA	St Neots AQMA	Brampton AQMA	A14 Hemingford to Fenstanton AQMA	A14 Bar Hill to Milton AQMAs	COSTS L (<£100K), M (£100K - £1M), H (>£1M)	Impact on air quality L/M/H	Feasibility L/M/H	AQAP Priority L/M/H	Lead Council	Partners/Contacts	Timescale	Wider impacts - climate change / economic / social benefits	Wider impacts - climate change / economic / social disadvantages	Risk to delivery
	Lowering Emissions from Buildings - commercial/industrial/public																		
46	Energy Efficiency Audit of Council property	Improved energy management	NI 194	Yes	Yes	Yes	Yes	No	No	Low	Low	High		All councils individually	Property and Building Services/Estates	Ongoing	Lower energy bills Climate change mitigation and improved council environmental profile	Cost to the Council (and ultimately the taxpayer) of improvements, if not offset by energy savings	
47	Improved energy performance of public sector administrative and community buildings	Aim to increase resources for energy management within Council buildings to EST benchmark standards	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council, Property and Building Services	Property and Building Services/Estates	2008 - 9		None known	
48	Improved energy performance of public sector administrative and community buildings	Undertake energy assessements and introduce Display Energy Certificates at required Council buildings	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council, Property and Building Services	Property and Building Services/Estates	2008 -9		None known	
49	Improved energy performance of public sector administrative and community buildings	Installation of energy-saving measures, automated energy monitoring systems, energy eficiency measures, where appropriate to do so	City Council Medium Term Objectives, HDC Adopt an energy policy	Yes	Yes	Yes	Yes	No	No	Med	Low	High		All councils individually	Property and Building Services/Estates		Lower energy bills Climate change mitigation and improved council environmental profile	Cost to the Council (and ultimately the taxpayer) of improvements, if not offset by energy savings	
50	Improved energy performance of new build	Requirement for high sustainability standards for new schools and other buildings	City Council Local Plan 3/1	Yes	Yes	Yes	Yes	No	No	Med	Low	High	Med	All councils individually	Development Control	Ongoing	Lower energy bills Climate change mitigation and improved council environmental profile	Cost of new build projects. Cost to the Council: Would require a dedicated EHO to work alongside Planning (which Council?)	No funding available for extra post
	Lowering Emissions from Buildings - domestic																		
52	Home Energy Strategy	rease the efficient use of energy in exis	HECA/NI 187	Yes	Yes	Yes	Yes	No	No	Low	Low	High	Low	District Councils	Energy Efficiency Officers	City: Ongoing strategy, to be re-written in early 2009. SCDC ongoing, to be reveiwed Apr 2009	Lower energy bills Climate change mitigation and improved council environmental profile	None known	
53	Affordable Warmth Policy	CITY: Eradication of fuel poverty in vulnerable households where reasonably practicable by 2010 - some specific measures for private and public sector housing Provide free and impartial energy efficiency advice to all local residents. SCDC. Partnership set up with Local health Authorities to look into fuel poverty in the District.	HECA/NI 187	Yes	tbc	tbc	tbc	No	No	Low	Low	High	Low	District Councils	Energy Efficiency Officers	CITY: Targets to be set in December 2008, policy runs 2008 - 2010. Will be integrated into HES. SCDC Ongoing.	Lower energy bills Climate change mitigation and improved council environmental profile	None known	
54	Improved energy performance of private sector housing	CITY. Develop partnerships with external organisations to assist with the delivery of affordable warmth in the private sector. Appointment of new Home Energy Officer to help people in private sector housing improve the energy efficiency of their homes (now in post); set up a second Energy Action Zone; offer a free SAP energy inspection and certificate to members of the Landlord Accreditation Scheme; grants to low income and elderly residents. SCDC - Private Sector Housing Strategy. Promotion of low carbon living and provision of grants for cleaner heating systems and energy saving measures.	City Council Medium Term Objectives. NI 185, 186, 187.	Yes	No	No	No	No	No	Low	Low	High	Low	District Councils	Community Services/Housing Teams, Home Improvement Agency Service	Ongoing	Lower energy bills Climate change mitigation	Cost to the Council	
55	Improved energy performance of public sector housing	CITY. Improve the energy efficiency of council owned housing stock by continuing to invest via the Decent Homes programme and external funding. Installation of extra loft insulation, cavity wall insulation and heating systems; dry-lining to treat cold and damp rooms; renewing old bathrooms and kitchems and replacing old boilers.	City Council Medium Term Objectives	Yes	No	No	No	No	No	Low	Low	High	Low	District Councils	Community Services/Housing Teams external funders???	Ongoing	Lower energy bills Climate change mitigation, improves the Councils' environemntal image	Cost to the Council. Would require a dedicated EHO to wrok alongside Planning	No funding available for extra post
56	Improved energy performance of new build housing	Requirements for 10% or 20% renewable energy source (depending on size), high Sustainable Homes code levels	Local Plan Policy 3/1 (City Council),	Yes	Yes	Yes	Yes	No	No	Med	Low	High	Low	All Councils	Development Control	Ongoing	Lower energy bills Climate change mitigation	Increased cost of new build premises	

Air Quality Action Plan Measures in Progress, under consideration and/or development

	Action	Description	Target/ Indicator/Policy/Plan	City AQMA	Huntingdon AQMA	St Neots AQMA	Brampton AQMA	A14 Hemingford to Fenstanton AQMA	A14 Bar Hill to Milton AQMAs	COSTS L (<£100K), M (£100K - £1M), H (>£1M)	Impact on air quality L/M/H	Feasibility L/M/H	AQAP Priority L/M/H	Lead Council	Partners/Contacts	Timescale	Wider impacts - climate change / economic / social benefits	Wider impacts - climate change / economic / social disadvantages	Risk to delivery
57	Improved energy performance of private sector housing	Demonstrate how three properties representative of the housing stock can be upgraded to be more sustainable	Sustainable homes showcase, retrofit	No	Yes	Yes	Yes	No	No	Low	Low	High	L	HDC	HDC Environment Team	2009/2010	Lower energy bills Climate change mitigation	None known	
58	Improved energy performance of new build housing	A development of 2,3 and 4-bed exemplar homes to comply with the code for sustainable development level 5.	Sustainable homes showcase, retrofit	No	Yes	Yes	Yes	No	No	Low	Low	High	L	HDC	HDC Environment Team	2012/2013	Lower energy bills Climate change mitigation	None known	
59	Improved energy performance of new build housing	For major developments, a Sustainability Statement and Health Impact Assessment must be submitted by the developer to demonstrate that the principles of sustainable development have been applied	LDF Policy DP/1 (3.)	No	No	No	No	No	Yes	Low	Low	High	L	SCDC	Development Control	Ongoing	Lower energy bills Climate change mitigation	None known	
	Strategic Planning																		
61	Involvement in regional development plans (RSS)	RSS is high level strategy with policies that seek to accommodate rapid growth in the region whilst protecting the environment. East of England Regional Assembly will review RSS to extend timescale to 2031	Policy T1 Regional Transport Strategy has the objectives of ensuring that the East of England benfits from increased mobility and access while minimising the impact on the environment and inhabitants of the region	Yes	Yes	Yes	Yes	Yes	Yes	Low	High	High	High	County Council, Environment and Regulation (County officers input County and District views to EERA)	District Councils	2001 - 2021	Increase in population will increase environmental impact, Transport Strategies to minimise impact on environment have, as an outcome, positive impact on air quality	None known	Air quality not being considered at regional level. Strategies not being carried through with sufficient impact at local level, extra posts may be required increasing cost to the Council but funding for such post might not be granted.
62	Local Transport Plan	LTP2 includes transport programme of schemes to improve transport facilities, reduce road accident casualties, and provide some additional capacity	Several indicators that impact on air quality are embedded in LTP2	Yes	Yes	Yes	Yes	Yes	Yes	High	High	High	High	County Council	District Councils	2006 - 2011	Air quality becomes of major signifcance when transport planning is undertaken, potential for funds for air quality improvements	None known	
63	Long Term Transport Strategy	LTTS links the LTP2 programme to the Growth Agenda, and sets out overall programme of funding that will be required to deal with the transport demand of new development	N/A	Yes	Yes	Yes	Yes	Yes	Yes	High	High	High	High	County Council	District Councils	2006 - 2021	Air quality becomes of major signifcance when transport planning is undertaken, potential for funds for air quality improvements	None known	Funding not available for projects
64	Cambridge Local Development Framework	Identify opportunities in the LDF to require new homes to meet the Code for Sustainable Homes Level 3, to increase used of renewable and locally generated energy, minimise trafffc generation and promote public transport, cycling and walking	2009 - 10	Yes	No	No	No	No	No	Low	High	High	High	City Council, Policy and Projects	Sarah Cass, P+P, Simon Chubb, Climate Change Officer	2009 -10		None known	
65	SCDC Local Development Framework	Opportunities within Policy DP1 to meet the Code for Sustainable Homes Level 3 and increase use of renewable and locally generated energy and Policies TR1, 2, 3 and 4 to minimise traffic generation and promote public transport, cycling and walking.	Ongoing	Yes	No	No	No	No	Yes	Low	High	High	Mediu m	South Cambridgeshire District Council	Planning Policy Officer	Ongoing		None known	
66	Air quality policy in Local Development Documents	Sets out requirements for air quality assessments for planning applications	City: Local Plan section 4/14 Air Quality Management Areas Hunts DC: Scambs DC: LDF Policy NE/16	Yes	Yes	Yes	Yes	Yes	Yes	Med	High	High	High	All Councils	Environmental Services Development Control, SCDC - Health and Environmental Services and Plannning Policy	Ongoing	Mitigation measures to protect the public and to reduce congestion	None known	Increase in workload for officers to carry through, possibly requiring additional post
67	Sustainable Construction Document	Sets out standards for construction in terms of insulation and lower energy use etc	N/A	Yes	Yes, tbc	Yes, tbc	Yes, tbc	No	No	Low	High	High	High	District Councils	City: Sustainable City and Transport Policy	Jun-07	Climate change mitigation	None known	Increase in workload for officers to carry through, possibly requiring additional post

Air Quality Action Plan Measures in Progress, under consideration and/or development

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68	Production of Supplementary Planning Documents & guidance	Sets out requirements for air quality assessments for planning applications	SPD adopted by LPAs and delivery programme established	Yes	Yes, tbc	Yes, tbc	Yes, tbc	Yes, tbc	Yes	Low	High	High	High	District Councils	Environmental Services Development Control	completed August 2008 Cambridge City Council: SCDC and HDC work in progress	Mitigation measures to protect the public and to reduce congestion	None known	Increase in workload for officers to carry through, possibly requiring additional post
69	Production of Supplementary Planning Documents & guidance	Possibility of SPD to set out requirements for RTP	None known	Yes	Yes, tbc	Yes, tbc	Yes, tbc	Yes, tbc	Yes	Low	Low	High	High	County Council	District Councils	2008/9	Decrease number of private vehicle trips, reduction in congestion	None known	
70	Encourage workplace provision of cycle facilities	Cycle Parking standards in Local Plan/LDF	City: Local Plan Policy 8/6	Yes	Yes	Yes	Yes	No	Yes	Low	Low	High	High	District Councils	Sustainable City and Transport Policy	Ongoing	Increase in cycle usage, potential for traffic reduction, health benefits	Possible safety issues	
71	Incorporate cycling and walking into Land Use Planning	S106 agreements. Development breifs, Area Transport Plans, Local Transport Plan, Cambridgeshire Structure Plan	City: Local Plan Policy 8/4, 8/5	Yes	Yes	Yes	Yes	No	Yes	Low	Med	High	Low	All Councils	Environmental Services Development Control	Ongoing	Agreements will seek to increase walking and cycling and therefore reduce private vehicle usage, reducing congestion	None known	
72	New major developments to produce Travel Plans	Travel for Work, Residential and School Travel Plans produced	100% of consents ensuring delivery of travel plans	Yes	Yes	Yes	Yes	Yes	Yes	Low	Med	High	High	All Councils	CCC - Residential Travel Plan Officer CCC - School Travel Co-ordinator	Ongoing	Protection of health of future occupiers/residents, minimilise impact of development on local infrastructure, reduction in congestion	None known	
	Development Control																		
74	Policies on development affecting an AQMA	New development not permitted to adversely impact AQMA or proposed users	City: Local Plan section 4/14 Air Quality Management Areas Hunts DC: Scambs DC:	Yes	Yes	Yes	No	No	Yes	Low	High	High	High	District Councils	Environmental Services Development Control	In place Cambridge City and South Cambridgeshire	Will prevent a worsening of air quality within the AQMA	None known	
75	Introduction of Car Clubs	Occasional access to a car without need to own, initiated with S106 funds	City Council Medium Term Objective	Yes	Yes	Yes	Yes	No	Yes	Med	Low	High		District Councils	Environmental Services Development Control	Ongoing.	Reduction in number of privately owned vehicles, reduced vehicle running costs for individuals	Reliability of access to a vehicle	
76	Residential Travel Plans	Required for all new developments over a certain size	N/A	Yes	Yes, tbc	Yes, tbc	Yes, tbc	No	Yes	Low	Med	High	High	All Councils	CCC - Residential Travel Plan Officer and School Travel Co-ordinator Environmental Services Development Control	Ongoing. New post at County May 2007.	Decrease number of private vehicle trips, thus reducing congestion	None known	
77	Car Parking Standards	Maximum levels of car parking permitted for various types of development in different areas of the City. SCDC: To work with Planning Policy and Development Control and the Sustainability Officer to ensure that use of LDF Policy TR2 is maximised for new developments within the District	City:Parking Standards in Local Plan. SCDC LDF Policy TR2	Yes	NA	NA	NA	NA	Yes	Low	High	High	High	District Councils	Development Control	In Place Cambridge City Council and SCDC	Future developments to encourage alternative means of travel	None known	Political pressure, fear of overspill parking from new developments
78	Increase walking and cycling trips	Identify, audit, improve exisitng and planned walking and cycling routes, including crossings, surface condition etc	some targets in LTP	Yes	Yes	Yes	Yes	No	Yes	Low	Low	High	High	All Councils	Development Control	Ongoing	Reduction in congestion Improvement in cardio-vascular health Improved access (quality of life) for disabled people	None known	No officers at South Cambs and Hunts DC
79	Improve cycle parking facilities	Work with Cambridge Cycling Campaign to prepare a new design guide for cycle parking in residential areas	City Council Medium Term Objective	Yes	No	No	No	No	No	Low	Low	High	Med	City Council	Cambridge Cycling Campaign		Increase in bicycle usage	Possible safety issues	
80	Cycle Parking Standards	Minimum requirements in terms of cycle parking provision for new developments and change of use. SCDC: To work with Planning Policy, Development Control and the Sustainability Officer to ensure that use of LDF Policy TR2 is maximised for new developments within the District	City:Parking Standards in Local Plan, SCDC LDF Policy TR2	Yes	No	No	No	No	Yes	Low	Low	High	High	District Councils	Sustainability Officer and Development Control	In Place Cambridge City Council, ongoing at SCDC	Future developments to promote cycle usage	None known	
	Promote Smarter Travel Choices																		
82	Residential Travel Plans	Required for all new developments over 80 dwellings	Increase in number of RTP submitted for consideration	Yes	Yes, tbc	Yes, tbc	Yes, tbc	No	Yes	Low. £30K pa from LTP	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs)	City and District Development Control, developers	Officer now in post, funded from 2007 to April 2010 - possibility of extension if TIF bid sucessful.	Decrease number of private vehicle trips, reduction in congestion	None known	City and District Council not requesting RTPs and/or not being able to secure them through S106 agreements

Air Quality Action Plan Measures in Progress, under consideration and/or development

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83	Personalised Travel Plans	PTP Arbury Park (new development) providing personal travel planning and sustainable travel advice to each household	Qualitative change recorded. 100% dwellings targted	Yes	No	No	No	poss	Yes	Low. £30K pa from LTP	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs)	SCDC, Highways Agency	Implementation July 2008, evaluation September 2008	Decrease number of private vehicle trips, reduction in congestion	None known	Lack of engagement by residents
84	Travel for School	The primary objectives of the "Travelling to School Initiative" (TTSI) are to improve road safety for children and reduce dependence on the car by promoting walking, cycling and public transport as more responsible, accessible and desirable alternatives for the home to school journey. Includes 'Bikeability' new national standard	NI 198	Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs)	Development Control, Safer Routes for School (Office of Children and Young People's Services)	Ongoing	Reduction in congestion during peak hours, health benefits for children and reduction in travel costs for families	Sometimes percieved as dangerous for children and some schools are in locations that will not suit such schemes. Car-share not particularly encouraged for primary school children (Child Car Seat legislation).	
85	Travel for Work plans	Required for all non-residential planning applications that require a Transport Assessment.	Target for uptake of travel planning advice and number of	Yes	Yes, tbc	Yes, tbc	Yes, tbc	No	Yes	Low, £40 - £60K pa from LTP	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs), Matt Staton	City and District Development Control, Adenbrookes, CU, PCT, developers	Ongoing	Decrease number of private vehicle trips, thus reducing congestion and health benefits	None known	Loss of funding from other partners
86	Travel for Work plans	Membership of Cambridgeshire Travel for Work partnership encouraging existing employees to travel to work in a sustainably	N/A	Yes	Yes, tbc	Yes, tbc	Yes, tbc	No	Yes	Low, £40 - £60K pa from LTP	Low	High	High	All Councils	Transport Officers, local organisations and companies	Ongoing	Decrease number of private vehicle trips, thus reducing congestion and health benefits	None known	Loss of funding from other partners
87	Encouraging car-sharing	Promotion and information about online car-sharing system - Camshare - for businesses and residents, particularly focussing on rural and congested areas. Also school staff.	Number of sign-ups and matches made	Yes	Yes	Yes	Yes	Yes	Yes	Low, £12K pa from LTP	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs)	TfW partnership, residents	June 2008 onwards	Reduction in congestion, improved community spirit	None known	Low sign up rate when promotion ends
88	Encourage bus use	Take the Bus project - promotion of the bus as an alternative to the car and provision of incentives to encourage bus travel, Taster Day and Radio Campaign	NI177	Yes	Yes	Yes	Yes	Yes	Yes	Low, £8K pa from LTP	Low	High	High	Cambridgeshire County Council	Office of Environment And Community Services (Oecs), Highways and Access, Passenger Transport	from April 2008	Reduction in congestion	None known	Loss of funding
89	Encourage cycle use	Adult Cycle Training	Increased take up of training	Yes	Yes	Yes	Yes	No	No	Low, £5-6K	Low	High	High	Cambridgeshire County Council, Office of Environment And Community Services (Oecs)	Cycling Education Officers, Road Safety, Highways and Access, City Transport Policy Officers	2008/9	Increase in cycling, potential for traffic reduction, health benefits	None known	Lack of engagement by residents
90	Encourage cycle use	PushChair Scheme - cycle into town, park your bike and borrow a pushchair for free from Park Street Cycle Park and now extended to Grand Arcade	N/A	Yes	No	No	No	No	No	Low	Low	High	in place	City Council	Parking Services, Station Cycles, John Lewis	Ongoing	Increase in cycling, potential for traffic reduction, health benefits	None known	
91	Publicise walking routes	County target based upon number of promotional campaigns each LA takes part in per year to be implemented?		Yes	No	No	No	No	Yes	Low	?	High	High	All Councils	Smarter Travel officers, Cycling and Walking Officers, Air Quality Officers	Autumn 2008	Increase in walking, potential for traffic reduction, health benefits	None known	
92	Publicise walking routes	Cambridge Street Signage Project. Maps to enable the user to easily read where they are and where destinations are located, provide clear and legible connections through the city provide clear, attractive mapping which encourages self exploration	County target based upon number of promotional campaigns each LA takes part in per year to be implemented	Yes	No	No	No	No	Yes	Low	Low	High	High	Cambridgeshire County Council and Cambridge City Council	Smarter Travel officers, Cycling and Walking Officers, Air Quality Officers	Ongoing	Increase in walking, potential for traffic reduction, health benefits		
93	Publicise walking routes	Walk-it, online route planner for walking routes around Cambridge, information on journey time, calories used and carbon dioxide emissions saved. Low pollution routes can be selected.	Number of queries	Yes	No	No	No	No	No	Low	Low	High	Med	Cambridgeshire County Council and Cambridge City Council	Walk-It, Smarter Travel officers, Cycling and Walking Officers, Air Quality Officers	Ongoing	Increase in walking, potential for traffic reduction, health benefits	Need access to computer.	None. Project launched 15th September 2008.
94	Publicise existing and new cycle and highway schemes	Online interactive maps on website	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	High	High	District Councils	Sustainable City and Transport Policy	Ongoing	Increase in cycle usage and walking, potential for traffic reduction, health	Possible safety issues	
95	Promotional campaigns on Health Benefits of cycling and walking	Carried out through School Travel Plans	N/A	Yes	Yes	Yes	Yes	No	Yes	Low	Low	High	High	All Councils	David Bethall, Matt Staton	Ongoing	Increase in cycle usage and walking, potential for traffic reduction, health benefits	Possible safety issues	

Air Quality Action Plan Measures in Progress, under consideration and/or development

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96	Encourage occasional/casual cycling	Consider Community Bike Hire Scheme	City Council Medium Term Objective	Yes	No	No	No	No	Yes	Low	Low	High	High	City Council	Sustainable City and Transport Policy	To be decided	Reduction in congestion, improvement in cardio-vascular health and is an energy efficient mode of transport reducing travel costs to commuter	Lack of cycling routes and concerns over personal safety	Space for infrastructure.
97	Encourage better bus provision	Encourage bus companies to provide better bus services into Cambridge on Sunday	City Council Medium Term Objective	Yes	No	No	No	No	Yes	Low	Low	High	Low	City Council	County Council	Ongoing	Reduction in congestion on Sundays, climate change mitigation	Increased car parking costs in Cambridge on Sunday (currently cheaper)	Retailers prefer lower car parking charges on Sundays to increased bus provision
98	Discourage car purchase	Extend Car Club scheme and introduce low carbon vehicles	City Council Medium Term Objective	Yes	No	No	No	No	Yes	Low	Low	High	High	City Council	Street Car	Ongoing expansion of scheme to meet demand	Reduction in congestion, climate change mitigation and health benefits	None known	Lack of take-up
99	Publicise sustainable travel	Promote EST's free Green fleet advice service, County Council travel plans and cycling facilities	N/A	Yes	No	No	No	No	Yes	Low	Low	High	High	City Council	Sustainable City	2008 - 9	Reduction in congestion, climate change mitigation and health benefits	None known	
##	Annual Bike Week	Activities to raise awareness of cycling benefits	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Low	Low	High	Low	District Councils	Sustainable City and Transport Policy	Ongoing	Increase in cycle usage, potential for traffic reduction, health benefits	Possible safety issues	
	Raising awareness																		
##	Development of Climate Change Strategy	County: Climate Change and Environment Strategy adopted July 2008. City: Climate Change Officer in Place, Climate Change Charter launched October 2007. SCDC: Climate Change Officer in place, Climate Plan published in 2005 - currently under revision.	N/A	Yes	No	No	No	No	Yes	Med	Low	High	Med	All Councils	All Departments	Officer in place. Ongoing strategy	Lower household and business premises energy bills. Climate change has higher political profile than air quality but actions are mostly win-win.	None known	
##	Annual Green Team Week	Annual Green Team Week	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Sustainable City and Transport Policy	Ongoing	Climate change mitigation, health benefits, awareness of environmental issues, positive behaviour encouragement	None known	
##	Switch Off week	Switch Off week	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Sustainable City and Transport Policy	Ongoing	Climate change mitigation, health benefits, awareness of environmental issues, positive behaviour encouragement	None known	
##	Environment Festival	Environment Festival	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Sustainable City and Transport Policy	Ongoing	Climate change mitigation, health benefits, awareness of environmental issues, positive behaviour encouragement	None known	
##	Cambridge Carbon Footprint	Community-based project aims to educate local people about their personal contribution to climate change	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Sustainable City and Transport Policy	Ongoing	Climate change mitigation, health benefits, awareness of environmental issues, positive behaviour encouragement	None known	
##	Energy 4 Good scheme	Grants towards costs of installation of renewable energys	N/A	Yes	No	No	No	No	No	Low	Low	High	Low	City Council	Sustainable City and Transport Policy	Ongoing	Climate change mitigation, health benefits, awareness of environmental issues, positive behaviour encouragement	None known	

Appendix 3

Progress based on continuous monitoring site results

5-year rolling means

(Link back to Section 8)

Appendix 3. Progress based on continuous monitoring site results:

5-year rolling means

CCC = Cambridge City Council

HDC = Huntingdonshire District Council

SCDC = South Cambridgeshire District Council

	2006 base	**2007**	**2008**	**Target 2015**	**On Target ?**
CCC NO_2 Gonville Place	41	42	43	40 µg/m^3	No
CCC NO_2 Parker Street	51	54	54	40 µg/m^3	No
CCC NO_2 Regent Street	44	44	43	40 µg/m^3	No
HDC NO_2 St Neots	*2 year mean* 48	*3 year mean* 45	*4 year mean* 45	40 µg/m^3	No
SCDC NO_2 Bar Hill	44	44	44	40 µg/m3	No
SCDC PM_{10} Bar Hill (Daily mean)	32	36	39	<35 exceedences	No
SCDC NO_2 Impington	42	39	36	40 µg/m^3	Yes
SCDC PM_{10} Impington (Daily mean)	36	38	32	<35 exceedences	No
SCDC NO_2 Orchard Park	N/A	N/A	N/A	40 µg/m^3	New monitor 2008
SCDC PM_{10} Orchard Park	N/A	N/A	N/A	<35 exceedences	New monitor 2008

Appendix 4

Progress based on NO2 diffusion tube results

5-year rolling means

(Link back to Section 8)

Appendix 4. Progress based on NO_2 diffusion tube results: 5-year rolling means

CCC = Cambridge City Council

HDC = Huntingdonshire District Council

SCDC = South Cambridgeshire District Council

	2006 base	2007	2008	Target 2015	On Target ?
CCC Emmanual Street	64	61	59	40 µg/m^3	No
CCC Emmanual Road	58	57	56	40 µg/m^3	No
CCC Victoria Avenue	52	50	49	40 µg/m^3	No
CCC Victoria Road	45	44	43	40 µg/m^3	No
CCC Downing Street	47	47	47	40 µg/m^3	No
CCC Maids Causeway	46	47	47	40 µg/m^3	No
HDC NO_2 Tenniscourt Avenue Huntingdon	38	37	36	40 µg/m^3	Yes
HDC NO_2 High Street St Neots	42	41	41	40 µg/m^3	No
HDC NO_2 Laws Crescent Brampton	38	38	37	40 µg/m^3	Yes
HDC NO_2 Hilton Road Fenstanton	*Annual mean* 47	*2 year mean* 43	*3 year mean* 43	40 µg/m^3	No
SCDC High Street Histon	39	39	42	40 µg/m^3	No
SCDC Water Lane Histon	*2 year mean* 41	*3 year mean* 41	*4 year mean* 35	40 µg/m^3	Yes
SCDC Weavers Field Girton	39	37	38	40 µg/m^3	Yes

	2006 base	2007	2008	Target 2015	On Target ?
SCDC Lonetree Avenue Impington	28	27	30	40 µg/m^3	Yes
SCDC Cambridge Road Impington	*2 year mean* 32	*3 year mean* 27	*4 year mean* 31	40 µg/m^3	Yes
SCDC Catchall Farm Cottages A14	N/A	N/A	31 (2008 only)	40 µg/m^3	Yes
SCDC Topper Street Arbury Park	N/A	N/A	29 (2008 only)	40 µg/m^3	Yes
SCDC Chieftain Way Arbury Park	N/A	N/A	30 (2008 only)	40 µg/m^3	Yes

(Link back to Section 8)

Appendix 5

Growth Areas

(Link back to Section 7)

Orchard Park. Work began in late 2005 to build Orchard Park, a new mixed-use community of 900 homes with a school, shops and employment facilities on the Northern Fringe of Cambridge, A further 220 dwellings were proposed for allocation adjacent to this site by South Cambridgeshire District Council in March 2009, the inspectors report is currently awaited.

Cambridge East will form an urban extension to Cambridge of approximately 10,000 to 12,000 new homes with associated employment, services, facilities and infrastructure**.** The aim is to create a new and distinctive sustainable community on the eastern edge of Cambridge which will enhance the special character of the city and its setting and is connected to the rest of the city by high quality public transport and non-motorised modes of transport. The majority of this development will not take place until after 2016 subject to the relocation of the Marshalls Aerospace Business although a first phase of 1,500-2000 dwellings is planned to be delivered before that date.

Cambridge Southern Fringe consists of five main sites in the district of Cambridge City Council. Trumpington Meadows, Glebe Farm, Clay Farm and the Bell School developments will provide around 4,100 homes, new schools and community facilities. The expansion at Addenbrooke's Hospital will provide for a range of new clinical facilities and a biomedical research park. A new road is under construction to provide access to the new neighbourhoods of Glebe Farm and Clay Farm and to serve the major expansion of Addenbrooke's Hospital. The Cambridgeshire Guided Busway from Huntingdon will provide services to the area and to Addenbrooke's Hospital and the Trumpington Park and Ride site.

Clay Farm will provide 2,300 homes including 40% affordable housing; a new secondary and primary schools; community, sport and recreation facilities; local shops; public open space, including allotments; roads, footpaths, cycleways and crossings of Hobson's Brook.

Glebe Farm will provide 300 homes including 40% affordable housing; open space including allotments; and landscaping and access from Addenbrooke’s Access Road.

Trumpington Meadows will provide 1,200 homes including 40% affordable housing; a primary school (including community facilities); local shops; a 60-hectare country park; a children's play area; a multi-use games area; tennis courts; allotments; access roads, footpaths and cycle ways.

Bell School will provide 347 homes including 40% affordable housing and 100-bed student accommodation for the Bell Language School; public open space, including allotments; access roads, footpaths and cycle ways.

Addenbrookes Hospital will expand to provide new clinical facilities as well as research labs. A link road, the Addenbrookes Access Road will link Hauxton Road in Trumpington to Addenbrookes as well as linking to the proposed residential developments on the Southern Fringe.

Northstowe will be a new town comprising 9,500 new homes with a town centre and local centres containing a mix of uses and community facilities. The site covers 427 hectares and is located near Longstanton and Oakington, just 5 miles north west of Cambridge. The application is for a range of dwellings, employment, community and entertainment establishments, open space including town park and town square, sport and recreation facilities, public transport routes, footpaths and cycleways, landscaping, cemetery/burial ground, allotments, household waste recycling facilities and all related infrastructure (including roads, car and cycle parking, electricity and power generation plant and equipment, gas facilities, water supply, telecommunications foul and surface water drainage systems and floodplain compensation (including pumping station). Northstowe will be served by the Cambridgeshire Guided Busway which will link Huntingdon to Cambridge and has direct road links onto the A14 corridor.

North-west Cambridge. Two new residential areas are planned (The University site and the NIAB site). The final dwelling numbers are not fixed yet but they could provide up to 6,000 new homes (up to 3,000 between Madingley Road and Huntingdon Road; 1,780 dwellings between Huntingdon Road and Histon Road within the City; and a further 1,200 dwellings between Huntingdon Road and Histon Road in South Cambridgeshire). The development will also include

additional faculty and research space to meet the longer term needs of Cambridge University.

North Eastern Fringe. Following a feasibility study, employment led development is now planned for the North Eastern Fringe including around 25,000m² office space and light industrial units.

Station Area. A mixed use area is planned with approximately 300 homes, 1,250 student units, new public transport interchange, community facilties, offices, shops, GP surgery and a hotel.

Cambourne is South Cambridgeshire's newest settlement which welcomed its first resident in 1998. It now comprises three distinct areas Great Cambourne, Lower Cambourne and Upper Cambourne with the commercial centre and business park located in Great Cambourne. There are currently 3,300 dwellings with an application for a further 950 houses pending decision.

Loves Farm is to the east of the east coast mainline railway on the edge of St Neots. Construction commenced in 2006 and completion is expected to be 2012 or thereabouts. It is a predominantly residential development with 1350 dwellings and a small retail centre.