PREFACE

In Cambridgeshire the five District Councils and the County Council have worked in partnership to produce this document which represents the first comprehensive review and assessment of external ambient air quality in the county. This partnership approach has been developed as a result of a management decision by the Chief Environmental Health Officers of the five District Councils in Cambridgeshire. It represents the first attempt at joint working between local authority staff concerned with air quality matters.

The task has been complex and the resulting document is an important step in furthering understanding of air quality in Cambridgeshire. It forms a bench-mark for measuring air quality in the future. It is intended that the report should be informative. Chapters 1 to 4 have been co-written and are in the joint ownership of the 5 District Councils. Chapter 5 is sub-divided and each sub-division is in the sole ownership of the named local authority. The pollutants considered in the report are only those covered by the Air Quality Regulations 1997 although it is recognised that there are other pollutants which may be of concern in some localities.

This document forms the basis for public consultation as required by the Environment Act 1995. Consultation will be undertaken in accordance the strategy outlined in Appendix 8.

ACKNOWLEDGEMENTS

This report has been compiled by a working group of officers from the District Councils in Cambridgeshire and the County Council.

The following officers have contributed to the work of the group:

Cambridge City Council	Selwyn Andersen, Jo Dicks Barry Louth (until Sept '98), Penny Hurd (from Sept '98)
East Cambridgeshire District Council	Teresa Isaacs
Fenland District Council	Graham Carson, Toby Lewis
Huntingdonshire District Council	John Allan, Adrian Beeching
South Cambridgeshire District Council	Susan Boundy, Alan Hodgson, Michael Monk
Cambridgeshire County Council	Janet Martin, Richard Preston

Other organisations have made valuable contributions to the technical content of this report and their assistance is acknowledged:

Cambridge Environmental Research Consultants who provided assistance with mathematical modelling of point sources;

WS Atkins Consultants Ltd who provided detailed analysis of traffic data;

AEA Technology (NETCEN) who provided assistance with the technical aspects of the stage two assessment;

AEA Technology (ETSU) who provided assistance with the assessment of emissions from stationary sources;

The Highways Agency who provided technical assistance for the use of the new DMRB model.;

The Environment Agency who provided all the information relative to Part A processes;

International Mining Consultants who provided rural particulate monitoring data.

In particular the efforts of the following are acknowledged:

Selwyn Anderson of Cambridge City Council who acted as chair of the group which carried out the review and assessment and provided the motivation and encouragement necessary to meet the deadlines set by the DETR;

Adrian Beeching of Huntingdonshire District Council who acted as the lead officer on all technical matters connected with the process and his contribution was vital to the successful completion of the undertaking; and

Janet Martin at Cambridgeshire County Council who collated and compiled the report.

In 1997 the Government established a National Air Quality Strategy in response to requirements of the Environment Act 1995. An essential component of the strategy was the setting of Air Quality Standards and a new system of Local Air Quality Management. Subsequently, Air Quality Regulations set objectives for seven pollutants and required District Councils to review the level of these pollutants now and to predict whether these would be met by 2005. The five District Councils in Cambridgeshire have worked in partnership with the County Council to carry out the first and second stages of the three stage review and assessment process in accordance with guidelines provided by the Department of the Environment, Transport and the Regions.

This document sets out the legislative background to the process, gives a general description of important features in the area and sets out the context in which the Air Quality Review and Assessment has been undertaken in Cambridgeshire to date.

For ease of reference, the seven pollutants considered in this review and assessment are itemised in the following table. A tick indicates that the review and assessment process for this pollutant has been completed and a cross that the pollutant needs to be carried forward for further evaluation:

Summary of Results of Review and Assessment Stages 1 and 2

Pollutant	**Local Authority**				
	CCC	**ECDC**	**FDC**	**HDC**	**SCDC**
Benzene	✓	✓	✓	✓	✓
1,3-butadiene	✓	✓	✓	✓	✓
Carbon Monoxide	✓	✓	✓	✓	✓
Lead	✓	✓	✓	✓	✓
Nitrogen Dioxide	**x**	**x**	**x**	**x**	**x**
Fine Particles (PM_{10})	**x**	**x**	**x**	**x**	**x**
Sulphur Dioxide	**x**	**x**	**x**	**x**	**x**

Key:-
CCC = Cambridge City Council, Mandela House, Regent Street, Cambridge CB2 1BY
ECDC = East Cambridgeshire District Council, The Grange, Nutholt Lane, Ely CB7 4PL
FDC = Fenland District Council, Fenland Hall, County Road, March PE15 8NQ
HDC = Huntingdonshire District Council, Pathfinder House, Huntingdon PE18 6TN
SCDC = South Cambridgeshire District Council, 9-11 Hills Road, Cambridge CB2 1PB

The above table shows that nitrogen dioxide, fine particles (PM_{10}) and sulphur dioxide will be taken forward for further evaluation by all District Councils. The main source of nitrogen dioxide and PM_{10} is considered to be transport although in the latter case high background levels, for example from windblown dusts and secondary particles formed by chemical reactions, are known to be significant in the county. High sulphur dioxide levels are associated with combustion plant at local industrial premises where high sulphur fuels are used.

This report forms the basis for public consultation which is a statutory requirement throughout the Air Quality Review and Assessment process. Representations regarding its content should be made to your local Environmental Health Department (see above) before

the end of February 1999 Further consultation will be undertaken as the Review and Assessment process progresses.

APPENDICES

CHAPTER 1 - NATIONAL FRAMEWORK

NATIONAL AIR QUALITY STRATEGY

1.1 The Environment Act 1995 directed the Secretary of State for the Environment to prepare a National Air Quality Strategy and made provision for the establishment of a new system of Local Air Quality Management (LAQM). In the spring of 1997 the Secretary of State for the Environment published the National Air Quality Strategy (NAQS). This made it clear that the government considered Air Quality to be a Sustainability issue essential to the creation of an external environment in which individuals and communities can thrive. Although people spend much of their time indoors and indoor air quality does have an effect on health and well being, it is outside the scope of this review. The NAQS relates only to ambient, external air quality

1.2 The strategy was established on the back of two broad trends which together provide the basis for a more strategic and integrated approach to air quality issues. The first of these is the elaboration of the principles of sustainable development established at the 'Earth Summit' in Rio de Janeiro in 1992. The second is the progressive understanding of air pollution and the development of new instruments to tackle it at a national and international level.

1.3 The NAQS set standards for eight air pollutants (see Table 1.1). The standards are based on the findings and recommendations of the Expert Panel on Air Quality Standards (EPAQS). This group examined the scientific and medical evidence in relation to each pollutant in order to set a relevant health based standard. The standards were adopted by the Department of the Environment Transport and the Regions (DETR) for the NAQS and thus form the context in which this review process is carried out.

Table 1.1 : National Air Quality Standards

Pollutant	**Standard**
Benzene	=<5ppb (Annual running mean)
1,3-butadiene	=<1ppb (Annual running Mean)
Carbon Monoxide	=<10ppm (8 hr. running mean)
Lead	=<0.5 $\mu g/m^3$ (Annual mean)
Nitrogen Dio xide Ozone	=<150ppb (Hourly mean) =<21ppb (Annual mean) =<50ppb (8 hr running mean)
Fine Particles (PM_{10})	=<50 $\mu g/m^3$ (Running 24 hour mean)
Sulphur Dioxide	=<100ppb (15 minute mean)

1.4 The NAQS recognises that national policy will not provide a complete solution to all air quality problems. It also recognises that there may be situations where local action is insufficient to achieve the objectives by 2005. Where local action fails to deliver the objectives it will be for government to consider the appropriateness of further action at the national level or the need for supplementary powers for local authorities. Part I of the NAQS established the roles of business, industry, transport and local authorities in relation to their

likely individual and/or joint contribution(s) to the pursuit of air quality objectives. Part II of the NAQS provides detailed pollutant specific information.

AIR QUALITY OBJECTIVES FOR 2005 AND DETR GUIDANCE

1.5 The Air Quality Regulations 1997 came into force on 27th of December of that year and prescribed objectives for seven of the eight pollutants detailed in the NAQS (see Table 1.2). In each case the objective represents that fraction of the air quality standard that the government realistically expects to be achieved by the year 2005 from a combination of national policy and local action. Ozone is excluded from the regulations because of its transboundary nature and the consequent lack of control over concentrations in the UK.

Table 1.2 : Objectives for 2005

Pollutant	Objective Value
Benzene 1,3-butadiene	=<5ppb (Annual running mean) =<1ppb (Annual running mean)
Carbon Monoxide	=<10ppm (8 hour running mean)
Lead	=<0.5 $\mu g/m^3$ (Annual mean)
Nitrogen Dioxide	=<150ppb (Hourly mean) =<21ppb (Annual mean)
Fine Particles (PM_{10})	=<50 $\mu g/m^3$ (99^{th} %ile of max daily running 24 hour mean)
Sulphur Dioxide	=<100ppb (as 99.9^{th}%ile of 15 minute mean)

1.6 The Air Quality Regulations require every district, unitary and metropolitan authority to undertake an Air Quality Review and Assessment (AQR&A) in its locality. Where air quality objectives are unlikely to be met by 2005, Air Quality Management Areas (AQMAs) have to be declared and action plans developed in pursuit of the objectives. District councils are expected to work closely with county councils during this process.

1.7 At the present time the action that local authorities can take in partnership with other authorities and agencies is limited and will focus on the areas of Integrated Pollution Control, Local Air Pollution Control, Traffic Management and Land Use Planning. Where appropriate, action plans will have to be developed in consultation with the local community to ensure that they provide an acceptable solution to local problems.

1.8 Guidance has been issued to local authorities by DETR in relation to a number of matters and to assist them in undertaking the statutory process of review and assessment. The guidance documents are as follows:-

(a) *LAQM. G1 Framework for Review and Assessment of Air Quality* : this guidance sets out the process and the action that may flow from the resultant AQR&A;

(b) *LAQM. G2 Developing Local Air Quality Action Plans and Strategies* : this considers the action necessary to adopt local air quality strategies and action plans, and in particular consultation and joint working between relevant councils and agencies;

(c) *LAQM. G3 Air Quality and Traffic Management* : this looks at the impact various traffic management techniques can contribute to improvements in air quality;

(d) *LAQM. G4 Air Quality Land Use Planning* : this looks at the opportunities available in land use planning to improve air quality;

(e) *LAQM. TG1 Monitoring for Air Quality Reviews and Assessments*: this document details advice on the appropriate monitoring strategies and methodologies available to councils;

(f) *LAQM. TG2 Preparation and Use of Atmospheric Emission Inventories* : this document examines the benefits and uses of examining the sources of pollution and estimating emissions from the various sources in a locality;

(g) *LAQM. TG3 Selection and Use of Dispersion Models* : this examines the various mathematical models that can be used to predict pollution levels;

(h) *LAQM. TG4 Air Quality Pollutant Specific Guidance* : this document specifies how local authorities should consider each pollutant as part of the review and assessment process.

THE REVIEW AND ASSESSMENT PROCESS

1.9 In simple terms this means that local authorities have to review the current levels of prescribed air pollutants and make predictions as to their expected levels by the end of the year 2005. These predictions then have to be compared with the prescribed objectives. Assessments have to look at all local sources of each pollutant and examine the effects that national policy will have in reducing levels. For example, the predicted reductions in car exhaust pollutants due to increasingly more stringent exhaust emission control on vehicles and changes in fuel specification have to be taken into account.

1.10 The review and assessment process is split into three stages:-

Stage 1 - Every local authority has to carry out a first stage review and assessment. This is essentially an information gathering exercise but a judgement must be made to determine if specific sources have the potential, individually or in combination, to emit significant quantities of the relevant pollutants.

Stage 2 - This requires simple monitoring and modelling activities to further investigate those pollutants identified as requiring further attention in stage 1. However, local authorities can decided to proceed directly to stage 3 (a permitted option).

Stage 3 - Sophisticated monitoring and modelling techniques are required at this stage to determine the magnitude and extent of any specific pollution 'hot spots' if stage 1 or stage 2 identified a significant risk of any objective being exceeded in 2005. This third stage review and assessment has to be carried out before an AQMA can be designated..

1.11 At each stage of the review and assessment the methods, indicators and levels used are set on a precautionary basis to ensure a thorough approach is adopted. Local authorities have been given two years from December 1997 to complete the review and assessment process. This time-scale allows not only for the technical work to be undertaken, but also time for

consultation with relevant organisations and the public. The Environment Act 1995 set out a minimum list of statutory consultees although each local authority has to decide who, in addition to the statutory minimum, will be consulted. Methods of consultation at each stage of the review are also at the discretion of the local authority

1.12 In Cambridgeshire, all the District Councils and the County Council have committed themselves to work collectively in order to provide a unified and co-ordinated review and assessment for stages 1 and 2 of the process. This co-operation and joint working is essential to ensure that available expertise is used to maximum benefit. This will be kept under review.

1.13 In areas where the review and assessment reveals that all the objectives will be met by the end of 2005, without further action, DETR recommend that local authorities should as a minimum develop a local air quality strategy. This local strategy should recognise the existing regulatory responsibilities of the local authority and aim to secure improvements, or maintain the standards, of air quality. It should also seek to ensure that air quality is adequately taken into account in the wider planning and transport functions at a strategic level.

THE ROLE OF LOCAL AUTHORITIES

1.14 The government considers that the approach from local authorities should be an integrated one involving all relevant strands of local authority activity. The overall approach should be underpinned by a series of principles which aim to:

(a) Secure improvements in the most cost-effective manner with regard to local environmental needs;

(b) Seek an appropriate balance between controls on emissions from domestic industrial and transport sources;

(c) Avoid unnecessary regulation and promote clarity, consistency and certainty;

(d) Draw on a combination of an interaction of public, private and voluntary effort.

Local Air Quality Strategies

1.15 The NAQS seeks the commitment of all local authorities to contribute to improvements in air quality and points out that this is consistent with the principles of sustainable development. It recommends that each local authority should develop a local air quality strategy to ensure that air quality considerations are integral to the local policy framework and complementary to other existing local authority strategies.

1.16 Local air quality strategies should examine and encompass the following areas:

(a) A review and assessment of local air quality;

(b) Detail how that assessment will be taken into account in making future development sustainable;

(c) Explain how the local authority will work in local partnership to improve air quality;

(d) Detail how the public can receive more information about air quality and explain and educate the public as to how they can help;

(e) Specify what actions the local authority is taking to reduce its impact and to thereby lead by example.

Local Air Quality Management (LAQM)

1.17 LAQM is recognised as an essential component of the government's integrated framework for dealing with poor air quality. The primary responsibility for developing a LAQM programme rests with the local authorities. A LAQM programme is particularly important where the prescribed air quality objectives are at risk or progress in achieving them is slow. The development of such a programme should:

(a) Support Government action to achieve the national air quality objectives particularly where they are at greatest risk;

(b) Promote proportionate and cost effective action by local authorities;

(c) Focus action on problem areas in appropriate geographic locations;

(d) Be consistent with the UK's obligations under the EC Ambient Air Quality Assessment and Management Directive;

(e) Enable the Secretary of State to ensure that appropriate action is taken in those areas where local authorities may be reluctant to act.

Land Use Planning

1.18 One of the main objectives of the air quality strategy is to ensure that air quality considerations take an appropriate place in the land use planning system. Air quality strategies adopted by local authorities should ensure that:

(a) Air Quality factors are properly considered in the development plan process;

(b) Planning and environmental protection controls are co-ordinated;

(c) The land use planning process makes an appropriate contribution to the achievement of national air quality standards and objectives;

(d) That air quality considerations are properly taken into account along with other material land use considerations as part of the planning process.

Transport Planning and Traffic Management

1.19 Many traffic management and transport planning decisions are best taken at a local level. These will need to be informed by reference not only to air quality standards and

strategies but also emerging national and local transportation strategies. In this way considerations can also be linked to regional policies. Local actions should include the most appropriate package of measures for that area and will need to examine:

(a) Alternatives to car usage such as a combination of rail and taxi journeys which could come about by the integration of transport modes;

(b) Incentives to promote the use of public transport e.g. park and ride facilities and the use of season tickets or easy payment schemes;

(c) Effective management of car parking;

(d) Information and incentives to encourage car sharing;

(e) Improved information about public transport.

(f) Incentives to adopt alternative means of transport.

Progress Monitoring

1.20 The development of an integrated quality assured monitoring system is a key element to any management action plan. Such a system is essential if any accurate judgement is to be made with regard to progress.

1.21 Local authority responsibilities in relation to air quality are complex and will require an effective system of monitoring progress. The data gathered during this review and assessment of local air quality will provide the necessary information to establish baseline conditions. Periodic reviews will identify any improvements achieved in pursuit of the prescribed objectives.

1.22 This document represents the first attempt by the local authorities in Cambridgeshire to review and assess local air quality and will be used as a benchmark against which future comparisons will be made. In this way the need for, and progress towards, the achievement of improved air quality in a cost effective manner will be monitored.

CHAPTER 2

GENERAL INFORMATION

2.1 Cambridgeshire forms part of East Anglia which is probably most notable for being low lying, with many parts below sea level. It is a rural county covering a wide variety of areas. These include the chalk hills in the south and the fens in the north with river valleys and waterways meandering between the two. The county has a high proportion of good quality agricultural land and a highly developed modern farming industry which is used primarily for arable crops. There are also a number of extensive mineral deposits of economic importance.

2.2 The County is strategically placed on the trunk road network, a number of which traverse the County. These include the M11 (London to Cambridge), A1 and A1(M) (major north-south link), A10 (London to King's Lynn) and the A14 (from the east coast ports to the Midlands and north). There are also good rail links to London from Cambridge and Ely, and InterCity links with Huntingdon.

2.3 Cambridge is the main city and administrative centre in the County, although the market towns have an important economic and social role. The main centres and transport infrastructure are shown in Figure 2.1. There are also numerous villages of varying size scattered throughout the county.

2.4 On the whole the Cambridgeshire economy is generally buoyant. It is influenced by its proximity to London and the "south east". Cambridge is an international centre of education and science and as an historic University City it attracts many tourists each year. It is a sub-regional shopping centre and the dominant employment centre in the area. The large employment catchment area extends out of the County and includes Newmarket, Saffron Walden and Royston. The University with its associated professional and research activities make up a large part of the City's economic base. Cambridge and its surrounding area is renowned as a centre for high technology, and research and development.

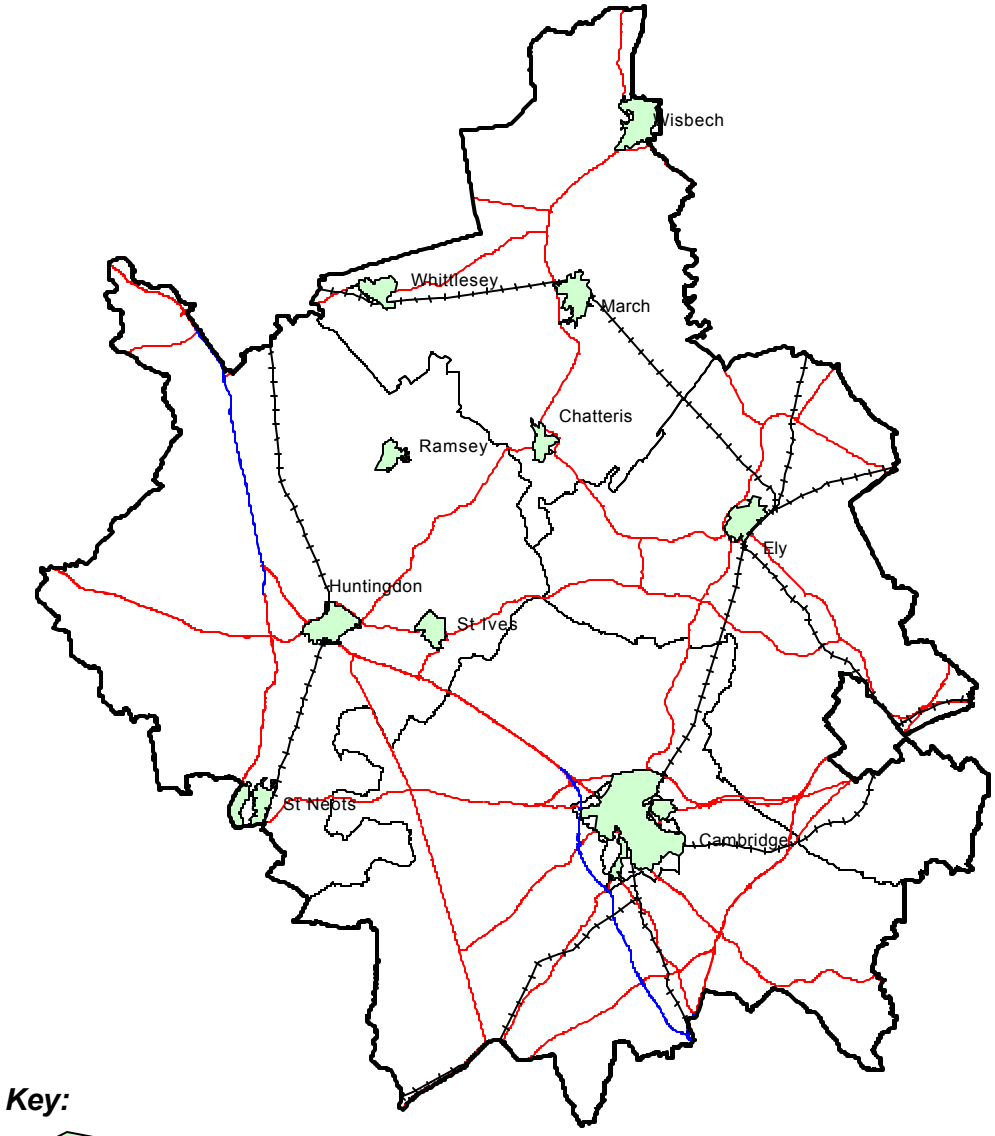
2.5 The district of South Cambridgeshire surrounds Cambridge City. This is a rural district with a number of large villages, e.g. Sawston, which provide a variety of services and facilities. Whilst there are several existing employment centres (see Figure 2.2) commuting to Cambridge is very characteristic although commuting to London is also common.

2.6 The main centre in East Cambridgeshire is Ely. This is a cathedral city and market town which attracts a large number of tourists each year. Chatteris, March, Whittlesey and Wisbech are the main Fenland towns and centres of employment. Fenland is predominantly an agricultural area although brick-making is a major industrial process in the west of the district.

2.7 Huntingdonshire is one of the busiest Cambridgeshire districts and there has been much residential and industrial development in recent years. There is a substantial industrial and commercial base which is likely to expand further due to the attraction of the existing transportation network.

Figure 2.1

Main Centres of Population and Transport Infrastructure



Key:

Urban area

Motorway

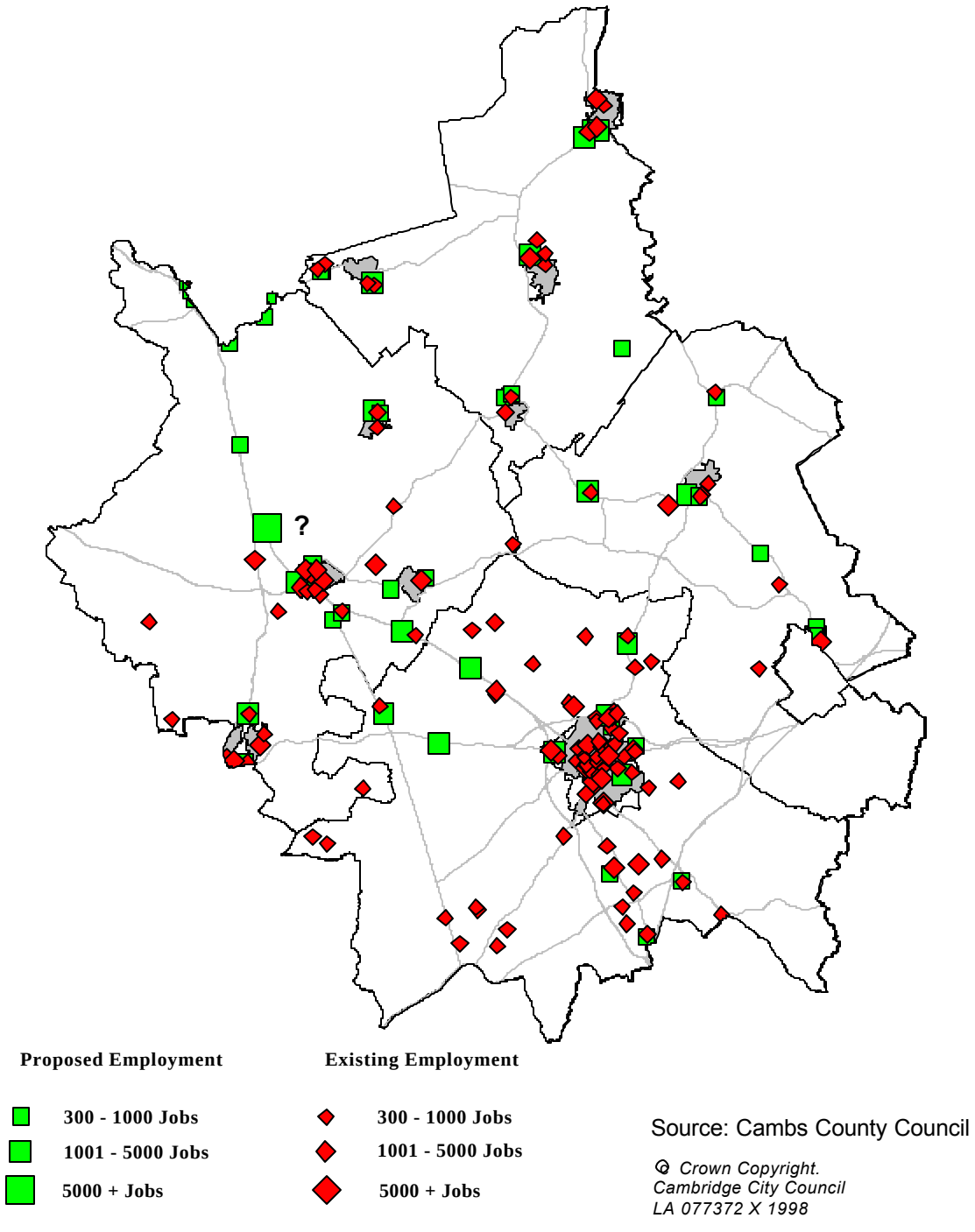
A Road

Railway

Source:
Cambs County Council

Figure 2.2

Proposed/Existing Employment Sites 1997



Source: Cambs County Council

CLIMATE

2.8 The County's low lying relief, inland easterly position and southerly latitude within the British Isles contribute to its climatological characteristics. Day to day weather conditions are governed largely by characteristics of the air masses which cover the County. Easterly continental airstreams can bring extreme conditions which result in hot and dry spells in summer and very cold weather with severe frosts in winter. These conditions contribute to the high local levels of secondary fine particles.

2.9 On average, Cambridgeshire receives between 530mm and 630mm of rainfall annually and is one of the driest areas in Britain.

POPULATION

2.10 Cambridgeshire is one of the most rapidly growing areas of the United Kingdom. Table 2.1 shows the change in population for each district between 1981 and 1996. Between 1991 and 1996 the percentage change in population was greater in all areas than for England and Wales (1.8%). Forecasts for 2001 and 2006 indicate that the County's population will continue to grow (see Table 2.2).

Table 2.1 : Population Changes 1981 -1996

	1981	1986	1991	1996	% change 1991-96
Cambridge City	100,500	102,600	106,000	109,400	+3.2%
East Cambridgeshire	54,700	58,300	61,200	65,000	+6.2%
Fenland	68,000	70,200	75,500	79,500	+5.3%
Huntingdonshire	125,400	137,200	146,500	153,400	+4.7%
South Cambridgeshire	110,200	117,600	122,500	126,500	+3.3%
New Cambs County #	458,800	485,900	511,700	533,800	+4.3%

Source: Cambridgeshire County Council
NOTES
In April 1998 Peterborough became a new Unitary Authority. The figure given for New Cambridgeshire has been calculated using 1996 district boundaries.
Fenland was affected by boundary changes between 1981 and 1991
Population figures may not add to totals due to rounding.

Table 2.2 : Population Forecasts 2001 and 2006

	2001	2006
Cambridge City	116,000	118,300
East Cambridgeshire	69,300	73,600
Fenland	86,400	93,500
Huntingdonshire	160,900	165,700
South Cambridgeshire	133,500	141,500
County	566,100	592,600

Source : Cambridgeshire County Council 1994 based forecasts

TRAFFIC GROWTH AND CAR OWNERSHIP

2.11 The volume and mix of traffic on all major roads in the county is monitored by the County Council. This has indicated that traffic growth (see Table 2.3) and congestion, particularly in peak hours of commuting, is increasing. Whilst traffic growth on all roads in Cambridgeshire has been above the national growth rate traffic flows are greater on roads in the south than in the north. For example, in 1997 traffic flows on the A14 and M11 were double those on the A47 and A10.

2.12 Traffic growth in the County is likely to continue to increase because of increased economic activity and forecasts that the number of households will become more numerous.

Table 2.3 : All vehicle traffic growth 1987 - 1997

	1987	1993	1994	1995	1996	1997	Change 96-97
All roads	100	124	127	134	136	141	4.2%
National	100	118	121	123	1126	130 (provisional figure)	3.0%

Table 2.4 : Car ownership 1981 and 1991

	1981			1991		
	no car	1 car	2 + cars	no car	1 car	2 + cars
Cambridge City	14,302 (41.1%)	16,389 (47.1%)	4,084 (11.7%)	14,119 (35,7%)	18,734 (47.4%)	6,708 (17.0%)
East Cambridgeshire	5,002 (25.3%)	10,281 (52.0%)	4,478 (22.7%)	4,694 (19.6%)	14,885 (45.3%)	8,437 (35.1%)
Fenland	7,874 (31.6%)	12,804 (51.3%)	4,274 (17.1%)	7,241 (24.1%)	10,873 (49.5%)	7,951 (26.4%)
Huntingdonshire	9,813 (23.4%)	22,302 (53.1%)	9,894 (23.6%)	9,848 (18.1%)	25,022 (46.0%)	19,534 (35.9%)
South Cambridgeshire	7,699 (20.5%)	19,505 (52.0%)	10,273 (27.4%)	7,008 (15.3%)	20,432 (44.5%)	18,494 (40.3%)

2.13 Car ownership is a key factor leading to traffic growth and the number of cars per household has increased since 1981 (see Table 2.4). In 1991:

- nearly two-thirds of Cambridge City households had at least one car (64.3%);

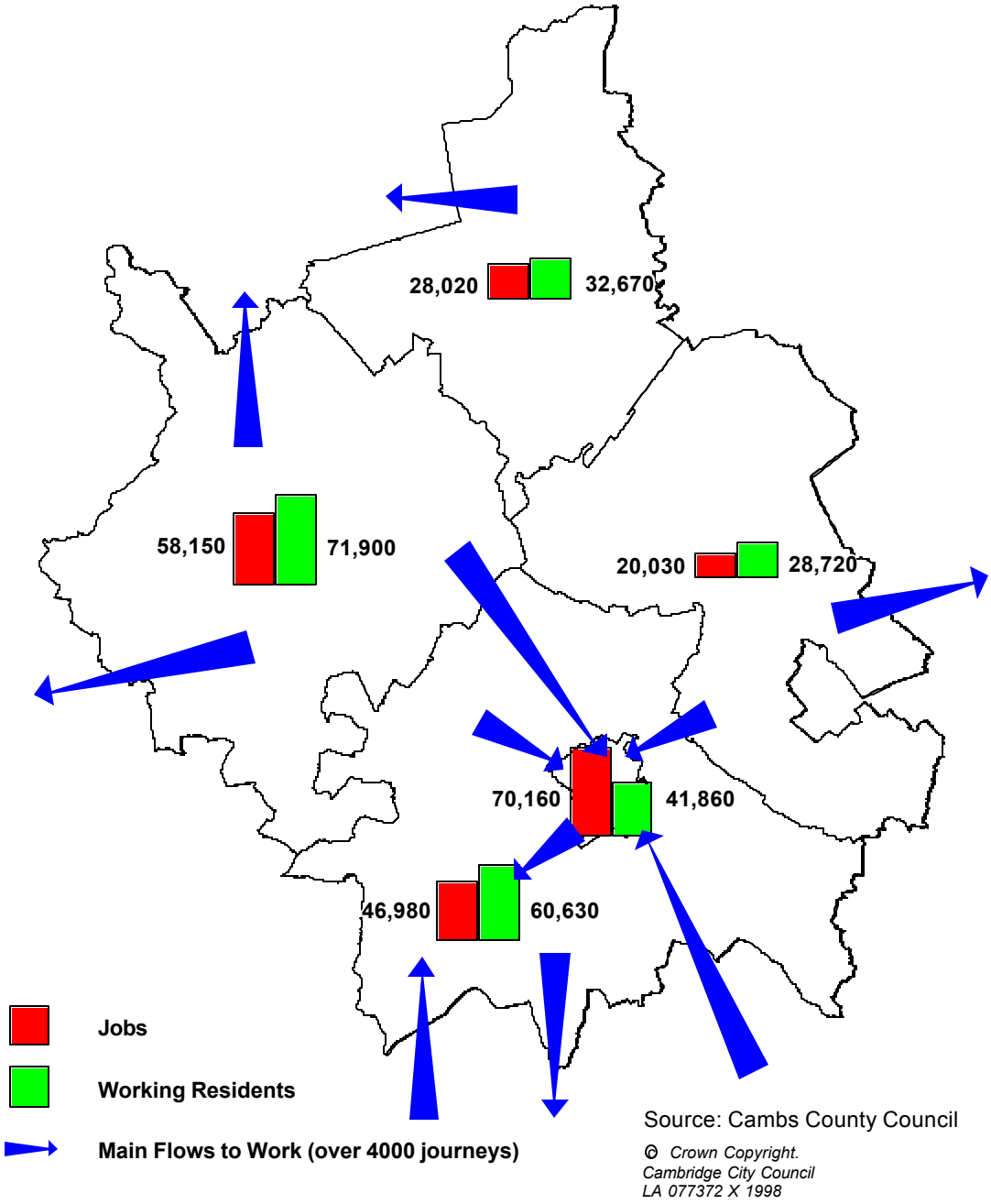
- four out of five households in East Cambridgeshire and Huntingdonshire had at least one car, and over a third of households had 2 cars or more;

- in Fenland 3 out of 4 households had at least one car and over a quarter 2 or more cars;

- in South Cambridgeshire nearly 17 out of every 20 households (84.7%) had at least one car, and 4 out of every 10 households (40.3%) had two cars or more.

Figure 2.3

Commuting Patterns



Source: Cambs County Council

COMMUTING PATTERNS

2.14 The location of main employment centres gives rise to complex commuting patterns. There is an imbalance between residents and employment in each district (see Figure 2.3). This shows that in 1991 for Cambridge City the number of jobs (70,160) was greater than the number of working residents (41,860) and the main commuting flows to be from South Cambridgeshire, Huntingdonshire and East Cambridgeshire together with a number of out of county commuters. For East Cambridgeshire, Fenland, Huntingdonshire and South Cambridgeshire the number of working residents exceeded the number of jobs, in 1991, leading to out commuting from these districts.

MODE OF TRAVEL TO WORK

2.15 Table 2.5 indicates that in 1991 the dominant mode of transport to work for working residents was by car.

Table 2.5 : Mode of travel to work for working residents - % of total

	1991 (Based on 10% Sample Census)							
	Car driver	Car passenger	Bus	Train	motor cycle	pedal cycle	on foot	home
Cambridge City	39.7	4.4	4.5	2.1	2.7	26.1	12.5	5.5
East Cambridgeshire	62.0	8.6	2.6	1.4	1.9	6.4	7.8	7.2
Fenland	57.9	10.7	2.3	1.4	1.9	9.4	7.5	6.2
Huntingdonshire	61.6	7.6	3.4	3.2	1.5	6.5	9.9	4.6
South Cambridgeshire	63.6	5.9	3.7	1.8	2.1	7.2	7.0	6.7

Source: 1991 Census, special workplace statistics
NOTE - figures exclude “not stated” category, so do not add to 100%

PLANNING BACKGROUND

NATIONAL / REGIONAL GUIDANCE

2.16 Since 1990, Government Planning Policy Guidance (PPG) has given increasing emphasis to environmental improvement. This has included protecting air quality, particularly by reducing transport related emissions, via the land use and transport planning process.

2.17 *Sustainable Development - the UK Strategy* (1994) emphasised the importance of targets for sustainable development and set an overall target of returning total carbon dioxide (CO_2) emissions to 1990 levels by the year 2000. The document also referred to “international standards and targets for a range of air pollutants”, and pointed out that “transport is the major single contributor to these pollutants, especially in urban areas”'.

2.18 Land use and transport planning to reduce transport related emissions is a key part of PPG advice. PPG13 *Transport* (1994) is particularly relevant, being aimed at reducing growth in the length and number of motorised journeys, encouraging alternative means of travel which have less environmental impact, and hence reducing reliance on the private car. These aims are intended to help meet the commitments in the Government's Sustainable Development Strategy, by reducing the environmental impacts of transport overall.

2.19 The *1995 Environment Act*, which laid the foundation for a nation-wide system of local air quality management, has strengthened the PPG13 approach. The *National Air Quality Strategy* considered the impact of transport upon air quality, looking to improvements in vehicle technology and fuels in order to secure improvements but also recognising that traffic management measures and longer term measures to reduce the need to travel and to reduce car dependency would also be necessary. The Environment Act gives powers to introduce traffic management measures on air quality grounds , including restricting the use of roads (although caution is advised when considering such measures). The Act also suggests that the Government will consider permissive enabling legislation for taxing non-residential parking and for congestion charging or area licensing.

2.20 *A New Deal for Transport: Better for Everyone*, the Government's 1998 White Paper on the Future of Transport, emphasises the importance of reducing traffic emissions in order to improve urban quality. It refers to the National Air Quality Strategy, and the intention to review it and produce conclusions by the end of 1998. It also emphasises the importance of the new system of Local Air Quality Management, and particularly the need to develop proposals to reduce emissions from traffic, as part of proposed "Local Transport Plans".

2.21 Regional Policy is contained within RPG6 *Regional Planning Guidance for East Anglia* . This was issued in 1991 and covers the period up to 2006. It is currently under review, with a view to producing new guidance up to 2016. Current regional guidance is based on some dispersal of investment in jobs to those areas in the east and north of the region where improvements in trunk roads and other resources are expected to increase their attractiveness for economic development and growth. The new draft guidance will reflect the sustainability agenda aiming to minimise travel to work by car and to encourage new improved public transport services, co-ordinated with new development. The new guidance is thus likely to be more helpful than its predecessor in promoting improved air quality in the region.

COUNTY POLICIES AND PLANS

1995 Cambridgeshire Structure Plan

2.22 The 1995 Structure Plan provides the strategic framework for development and the use of land in the County for the period up to 2006. This Plan includes the administrative area of Peterborough City Council, although since April 1998 this is now a unitary authority which will have its own Unitary development Plan.

2.23 The current Plan contains a Keynote Policy to ensure that sustainability considerations are brought to the forefront in the formulation and assessment of all development proposals and Local Plans. The Plan also includes the County Council's environmental sustainability targets which are intended to be achieved through land use/transport policies. Although there is no policy specifically referring to air quality, a number refer to environmental

considerations and impact. The most relevant target in relation to air quality aims to reduce urban air pollution and keep levels of main air pollutants within European Union (EU) guide values at all times.

Cambridgeshire Transport Strategy

2.24 The *1995 Cambridgeshire Structure Plan* sets out an overall transport strategy for the county. This gives emphasis to the energy efficient transport of goods and people, and to the effects of movement on the local environment. It sees public transport as having "a special role to play" in the transport strategy. It also states that where investment in roads is necessary, priority is to be given to the main pressure points in the primary road network, to schemes which stimulate economic and employment growth in the north and east, and to schemes which enhance safety and local amenity without causing serious damage to the built environment or the countryside.

2.25 The County Council is currently carrying out a review of transport strategy, to update it in line with the agenda set out in the Government's 1998 Transport White Paper (see paragraph 2.20). The intention is to relate the strategy to five specific areas with air quality implications being considered for each of the following:

- The Cambridge Area
- Strategic routes, both primary roads and rail lines
- Market Towns and their hinterlands
- Deep rural areas
- Villages looking to Peterborough (Yaxley, Sawtry etc).

LOCAL POLICIES AND PLANS

Cambridge Local Plan

2.26 The Cambridge Local Plan expands the policies and proposals of the Cambridgeshire Structure Plan and relates them to particular sites within the City boundary. The Plan is initially for the period 1991 to 2000, but it sets a framework for development up to 2006.

2.27 The Plan contains aims to reduce levels of pollution, to minimise the impact of that which cannot be reduced and to avoid increased pollution through new development. It commits the City Council to work with other agencies to use planning and other legislation to reduce and control pollution. The Plan contains policies which state that planning permission will not be granted for development that is likely to give rise to a significant increase in air pollution.

2.28 In addition to its development related policies, the Plan recognises that the increased demand for car use is degrading the City's environment, by factors including increased air pollution. The Plan thus contains transport policies aimed at limiting car use and promoting more energy efficient and less polluting alternatives, such as public transport, walking and cycling.

Cambridge Transport Strategy

2.29 The Cambridge Transport Strategy (1990), adopted by the County Council following widespread local consultation, has been incorporated (in a modified form) into the 1995 Structure Plan and integrated with the land-use policies. It is intended to provide a package of measures which will increase road safety, give more priority to pedestrians and cyclists, enhance the amenity of the urban area, relieve the most congested areas, and encourage a change of mode from the private car to more energy efficient means of transport including advanced passenger transport systems. The strategy favours new development opportunities where the need for travel is minimised, and journeys on foot, cycle or by public transport are encouraged.

2.30 The transport strategy is also an integral part of the Cambridge Local Plan's overall strategy. This proposes to alleviate current transport problems and allow for growth in economic activity, while at the same time maintaining accessibility and protecting the City's environment. The essential elements of this strategy are as follows:

(a) increasing the role played by public transport, particularly buses, including bus based park and ride and bus priorities;

(b) supporting increased investment in local rail services;

(c) limiting car use, particularly in the city centre and at the busiest times, by traffic management, parking controls and investigation of road pricing;

(d) providing improved facilities for people with disabilities, pedestrians and cyclists; and

(e) considering new road building only where this gives clear and sustainable benefits, particularly in terms of environmental protection and improvement.

Cambridge Package

2.31 The Cambridge Package forms an important part of the *Cambridgeshire Transport Policies and Programmes* (TPP) document. This is a statement made by the County Council to DETR of its transport policies and bid programme for capital spending on highway and public transport schemes for the coming year. This package approach to funding local transport schemes enables a more balanced approach towards public transport, cyclists and pedestrians. The Package includes a guiding principle of reducing the environmental impact of all travel within the Package area, as well as improving accessibility and safety.

2.32 The Package includes the following objectives which are relevant to air quality management:

- to increase the proportion of journeys undertaken on modes of transport other than in private cars;

- to reduce congestion and pollution, and enhance amenity, particularly in the historic City centre;

- to promote energy efficient transport;

- to meet National Air Quality Standards.

South Cambridgeshire Local Plan

2.33 The South Cambridgeshire Local Plan, adopted in 1993, covers the period from 1986 to 2001. Although this Plan was produced before most of the recent air quality legislation it does contain a section "Environmental Standards - Noise and Pollution".

2.34 This Plan is now in the process of being reviewed and will cover the period up to 2006. The *Local Plan Review 1998* recognises South Cambridgeshire's responsibility to review air quality in its area and to assess this against stated objectives. It thus contains a policy (ES4) which states that, where air quality objectives may not be met as a result of development, the applicant will need to provide a professional assessment to demonstrate that there will not be an unacceptable impact. The Plan also recognises the importance of integrated land use and transport planning which helps to achieve air quality standards and objectives.

East Cambridgeshire Local Plan

2.35 East Cambridgeshire District Council has two adopted local plans, which it is currently reviewing into a single, district wide plan that will cover the period to 2006.

2.36 The *Ely Local Plan*, adopted in 1991, was largely prepared before air quality was recognised as a general planning consideration, and before development plans were given their current status. It does not contain any explicit policies on air quality, although policy H9, which seeks to protect residential amenity, can be considered to have an air quality dimension. In strategy terms, the plan sought to increase housing, employment and local services within the largest settlement in East Cambridgeshire, thereby reducing the need to travel, particularly by car.

2.37 The *East Cambridgeshire Local Plan*, adopted in 1993, also has a strategy seeking to balance housing, employment and service development and concentrate it in the largest settlements. Policies 86-88 seek to ensure that housing and incompatible employment uses are kept apart.

2.38 The *East Cambridgeshire District Local Plan* for Deposit, 1997, carries forward the strategy of the earlier local plans. It contains a section on air quality, setting out the national framework, local situation and the plan strategy. Policy 34 states that harmful activities will be refused unless adequate controls can be imposed to ensure that emissions and discharges can be contained.

Huntingdonshire Local Plan

2.39 The *Huntingdonshire Local Plan*, adopted in 1995, covers the period up to 2001. Huntingdonshire District Council has started a review of the Plan, and produced an *Issues Report* in 1997 which has been the subject of widespread consultation.

2.40 The adopted Plan contains policies which aim to minimise the impact of pollution and avoid increased pollution through new development. In addition to these development related policies, the Plan contains policies which recognise the environmental disbenefits of unrestrained car use and the need to limit unnecessary journeys by encouraging more environmentally friendly forms of transport.

2.41 The *Issues Report* has identified a provisional strategy which concentrates new growth on and within existing major settlements and avoids widespread and dispersed sporadic development. This strategy is based upon land use and transport planning which minimises the movement of people, goods and services and hence reduces energy consumption and air pollution.

Fenland Local Plan

2.42 The *Fenland Local Plan* is initially for the period to 2001, with a base date of 1990. It will be periodically rolled forward, in line with the Structure Plan.

2.43 The Plan is opposed to developments which will give rise to unacceptable environmental pollution, but accepts that some developments with environmental problems may be permitted in appropriate locations. Policy E-20 includes the statement:

> "The District Council will resist any development which by its nature gives rise to unacceptable levels of noise nuisance and other environmental pollution".

2.44 Although the Plan does not contain a specific air quality policy, a transportation objective is:

> "To ensure that any adverse environmental effects of road traffic are kept to a minimum and to seek traffic improvement measures in those settlements or areas most at risk"

LOCAL AGENDA 21

2.45 Improving air quality is very strongly linked to the principles of Sustainable Development. This is about ensuring a better quality of life for everyone, now and for generations to come, and has had a high profile since the "Earth Summit" in Rio in 1992. From this emerged agreement on a plan for the 21st century, known as Agenda 21, which had the key aims of ensuring environmental protection, quality of life and fairness for everyone.

2.46 Local authorities are expected to play a key role in promoting sustainable development by producing their own "Local Agenda 21" statements. The County Council, and each of the District Councils support Local Agenda 21, in line with a Government requirement that all UK local authorities should adopt Local Agenda 21 strategies by the year 2000. The County

Council organises a "Cambridgeshire Local Agenda 21 Round Table" which brings together the activities of each Local Authority and other organisations in the area.

2.47 Local Agenda 21 is based on sustainability objectives which cover broad environmental and social fields. These include objectives relevant to improved air quality, such as:

- A Fairer Society: everyone having the right to a good environment, including high air quality standards, no matter what their social status;

- Our living space: planning of new development and transport systems so that they are more sustainable, including in terms of air quality;

- Our health: improving health overall, particularly in relation to environmental factors such as air quality and noise.

2.48 Government guidance on Local Agenda 21 emphasises that "developing a Local Agenda 21 strategy does not mean starting from scratch. Many existing policies and practices will already be fully in line with Local Agenda 21 objectives. They may simply not be labelled as such." Air quality management initiatives thus need to brought within the Local Agenda 21 remit, rather than separate initiatives being developed.

CHAPTER 3 - AIR POLLUTION MONITORING BACKGROUND

HISTORY OF POLLUTION MONITORING IN CAMBRIDGESHIRE

3.1 Before the Environment Act 1995, legislation did not place local authorities under any statutory duty to measure air pollution. However pollution monitoring has been undertaken in the county with varying levels of complexity since the 1960s. Early monitoring involved measuring levels of sulphur dioxide and black smoke to assess the efficiency of the Clean Air Act 1956. Airborne lead was first monitored in 1989. Levels of nitrogen dioxide were first measured, using passive diffusion tubes, in 1991 in Cambridge City, and have been measured in the rest of the County since 1995. Continuous measurements of nitrogen oxides and carbon monoxide began in Cambridge in 1993 and nitrogen oxides in Huntingdonshire in 1996. Benzene has been continuously measured in Cambridge since 1995. Continuous measurements of airborne fine particles with a diameter of 10 microns or less (PM_{10}) began in Cambridge in 1995 and in Huntingdonshire in 1998. Partisol measurements of PM_{10} began in South Cambridgeshire in 1997.

3.2 Monitoring has also been carried out by other agencies e.g. National Power, DETR, University of East Anglia (UEA)) at various locations in and around Cambridgeshire using continuous monitors since the late 1990s.

FACTORS AFFECTING AIR POLLUTION IN CAMBRIDGESHIRE

3.3 Before the enactment of the Clean Air Act in the late 1950s and the declaration of Smoke Control Areas, most urban areas experienced high levels of smoke and sulphur dioxide pollution as a result of the burning of coal, coke and other fossil fuels. The gradual change in fuel usage towards gas, light low sulphur oils and electricity has had a significant impact in reducing the levels of these pollutants.

3.4 Today, the majority of air pollution in Cambridgeshire is from road traffic. More detail of the current emission sources is given in Chapter 5.

Meteorology

3.5 The main factor that affects short-term pollution episodes is weather. These occur in summer when there are long periods of sunshine and low winds which are characteristic of anticyclonic conditions. Wintertime smogs occur when temperature inversions prevent pollutants from being dispersed away from the areas of high emissions such as roads and buildings.

3.6 Summertime air pollution or photochemical smog is caused by the action of sunlight on certain gases which are mainly produced by motor vehicles. The main reactive component is ozone that is formed in a complex chemical reaction involving hydrocarbons and oxides of nitrogen. Due to the excess of nitric oxide (NO) reacting with ozone in urban atmospheres

levels of ozone tend to be low in urban centres. The reaction of ozone and nitric oxide forms nitrogen dioxide.

3.7 Wintertime smog is formed from a complex mixture of particles, oxides of nitrogen, sulphur dioxide and other toxic chemicals. On calm winter days pollution can be trapped at ground level due to a layer of cold air forming a "lid" over a town or city. These conditions can often been seen following an early morning frost following a clear cloudless night.

3.8 Hence a comprehensive knowledge of meteorology is required to link emissions of pollution with that of measured ambient concentrations. Without such information it is not possible to determine the relative importance of different sources in contributing to population exposure. Air pollution episodes, such as those that occur producing exceedances of the short term Air Quality Objectives, are not necessarily due to large increases in emissions but are more likely to be due to unfavourable meteorological conditions.

Canyon Streets

3.9 A canyon street is defined as one where the height of the buildings lining the street is greater than half the width of the street. This type of street geometry effectively traps pollutants and prevents dispersion, giving rise to higher pollutant concentrations per unit pollutant emission than in open situations. This non-dispersive property is exacerbated as the height to width ratio increases, that is, as the canyon becomes deeper. Additionally, maximum pollutant concentrations in canyon streets are experienced when wind speeds are low and when wind direction is parallel to the street.

3.10 Many of the County's canyon streets are in the historic centres e.g. Cambridge City. Here, the problems of pollution at these sites are compounded by relatively high traffic flows and peak hour congestion. In the rest of the County canyon streets do tend not to give rise to high pollutant concentrations because of lower traffic flows, less congestion and generally lower background pollutant concentrations.

Mixtures of pollutants

3.11 One of the difficulties with assessing the health effects of air pollution is that pollutants exist as complex and in ever changing mixtures in ambient air. Also, only a few pollutants are monitored. Some of these have known health effects and can be measured with confidence. Others are generated in photochemical reactions and are so reactive that they combine with other chemicals almost instantaneously. All pollutants tend to be considered on an individual basis, with the exception of sulphur dioxide and black smoke concentrations from the European Union limit and guide values

3.12 During the years of the 'pea-soup smogs' up to and during the 1950s, there was a strong link showing that sulphur dioxide and smoke acted together synergistically (the health effects were greater when combined than for each pollutant separately). A similar phenomenon may occur with other pollutants. Controlled chamber studies with volunteers have indicated that there may be an additive effect when exposure to nitrogen dioxide is followed by exposure to sulphur dioxide and ozone.

3.13 The epidemiology of high ambient pollution levels and human health is not yet fully researched, but recent evidence indicates that peak levels of ozone, sulphur dioxide, nitrogen

dioxide and PM_{10} may have small acute effects on lung function in healthy subjects. This may cause a worsening of the condition of people with pre-existing cardiorespiratory disease. Effects could also be occurring at levels of pollution below those experienced in air pollution episodes.

3.14 Contemporary ambient levels of air pollution are associated with raised morbidity and mortality. Air pollution is a particular hazard to the elderly, children and those with pre-existing disease.

3.15 The known health effects of the seven individual pollutants considered in this review are cited in Chapter 4.

LOCATION OF POLLUTION MONITORING EQUIPMENT

3.16 The aim of locating pollution monitoring equipment at a particular site is to provide information that is representative of the area being sampled i.e. ambient air. Inlets are located in the open air, typically 1 metre away from the nearest building; and because human exposure is being measured, the sampling inlets are generally located between 1 and 3 metres off the ground (i.e. breathing height). Actual location does, however, depend on site characteristics. Types of site are further broken down into a series of classes.

3.17 AEA Technology's National Environmental Technology Centre (NETCEN) have developed two methods for specifying sites. The one used in this report was developed for the national nitrogen dioxide (diffusion tube) survey and is perhaps the least ambiguous of the two. The criteria are as follows:

- ***kerbside*** - between the kerb and 3 metres away from a busy road (carrying more than 10,000 vehicles per day);
- ***roadside*** - between 3 and 15 metres away from a busy road;
- ***intermediate*** - between 20 and 40 metres away from a busy road, or under 20 metres away from any other road;
- ***background*** - over 40 metres from any road.

3.18 A large variation in pollutant concentration can be measured in the urban environment, at any site specification, just by siting of monitors. Wind direction, proximity of large structures, and relative position in a street canyon all have an influence. The location of monitoring equipment in each of the Districts in Cambridgeshire is shown in Appendix 1.

MONITORING/MEASUREMENT METHODS USED IN CAMBRIDGESHIRE

3.19 When comparing results from different methods and sites it is important to know how well each different piece of equipment operates including the precision and accuracy of each method. These are defined as follows;

- ***accuracy*** - The nearness of a measurement to the true value of the parameter being measured.

- ***precision*** - The extent to which multiple measurements of the same parameter repeat.

3.20 A simple analogy could be described thus:

If one imagines throwing darts at a dartboard a very precise result would be achieved from a tight grouping of darts anywhere on the board. A very accurate result would be achieved by throwing all the darts in to the triple 20 segment. A tight grouping of darts in the triple 20 would be both precise and accurate.

3.21 Although these are not the only criteria to assess the efficiency of each method and piece of monitoring equipment used, they do give a simple guide to the confidence of the data collected.

3.22 The main methods used to measure the specified pollutants in Cambridgeshire are detailed in the following paragraphs.

Nitrogen Dioxide Diffusion Tubes

accuracy - not applicable
precision - not applicable

3.23 All District Councils have diffusion tube sites that are located to estimate whether the EU limit and guideline values for nitrogen dioxide are being exceeded. Four of the sites in each district form part of the National Nitrogen Dioxide Diffusion Tube Survey.

3.24 Diffusion tubes are one of the cheapest monitoring methods available giving average concentrations over a relatively long time period. The tubes adsorb the gas onto an inert medium allowing the concentrations to be determined later in a laboratory. Data are reported as annual mean concentrations. In a recent study undertaken by NETCEN on behalf of DETR, to consider all types of sites, diffusion tubes were shown to give an annual mean concentration of Nitrogen Dioxide that is within ±10% of the mean concentration measured by chemiluminescence.

Nitrogen Dioxide by Chemiluminescence

accuracy - ±10-11%
precision - ±3.5ppb

3.25 This single chamber instrument operates by pumping ambient air into a measurement cell. The amount of nitric oxide (NO) is measured by adding ozone to the measurement cell. The NO is converted to nitrogen dioxide in an excited state, which loses energy by emitting a photon of light. The amount of light emitted is equivalent to the concentration of NO. The amount of oxides of nitrogen (NO_x) is then measured by passing ambient air through a reduction catalyst converter. This reduces the NO_2 to NO. This NO is then reacted to nitrogen dioxide again and recorded. The amount of actual nitrogen dioxide in ambient air is calculated by taking the amount of recorded NO away from the amount of recorded NO_x. The problem is that other nitrogen containing compounds, such as ammonia are converted to NO, but the amounts involved are very small.

3.26 Chemiluminescent measurements of Nitrogen Dioxide from the following sites have been considered in this report:

- Cambridge City Council at a number of locations in the City,
- Huntingdonshire District Council adjacent to the Huntingdon Ring Road,
- National Power at Monks Hardwick,
- DETR at national network sites, including Wicken Fen.

Fine Particles (PM_{10}) by Tapered Element Oscillating Microbalance (TEOM)

accuracy - not applicable
precision - ± 4 $\mu g/m^3$

3.27 One of the UK Government's approved measurement method is the TEOM monitor which is used to measure PM_{10} concentrations at the national network sites. The PM_{10} fraction (particles that have an aerodynamic diameter of 10 micrometres (μm) or less) is obtained via a specially designed separator which is located on the inlet of the TEOM. Separated air is passed through an oscillating balance head which traps the particulate matter. The weight of dust landing on the balance slows down the speed of the oscillation and the energy needed to regain the original frequency is equivalent to the weight of particulate matter; giving an instantaneous concentration. The units are serviced and calibrated twice a year. Tests have shown the TEOM to give similar results to the Partisol (see paragraph 3.31) though the TEOM underestimates concentration as it operates at 50°C to prevent condensation problems in the inlet. The units are serviced and have a diagnostic check twice a year

3.28 Fifteen-minute average concentrations are collected from the analyser. Data collected is automatically corrected to 0°C (276°K) temperature and 1 atmosphere (1013.2 millibars or 760mm Hg) pressure by the monitor..

3.29 Data from the following sites where TEOM measurements of PM_{10} are made has been considered in the compilation of this report:

- Cambridge City Council at three locations in the City,

- Huntingdonshire District Council adjacent to the Huntingdon Ring Road,
- DETR at a number of national network sites, and by
- University of East Anglia at Stoke Ferry.

3.30 Cambridge City Council already operate and East Cambridgeshire District Council is about to purchase an Eberline 62 I-R PM_{10} monitor which will be located at the national network monitoring site at Wicken Fen. This is a continuously recording beta attenuation particle mass monitor with automatic data processing and logging. The monitor has a stated resolution of $\pm$ 1 $\mu g/m^3$. Real time measurements of dust on a filter and on-line measurement/display of the mass concentration of airborne suspended particulates is possible. Eberline data is directly comparable with TEOM data and the national air quality objectives although Eberline will give slightly elevated hourly averages when compared with TEOM.

Fine Particles (PM_{10}) by Partisol

accuracy - not applicable
precision - unknown

3.31 The Partisol 2000 Manual Sampler is the accepted United States of America's Environmental Protection Agency (USEPA) monitor. The filters have to be weighed before and after exposure to determine the PM_{10} concentration in air (a five-figure balance is used, which is calibrated once a year). A Partisol does not give an instantaneous reading and cannot be used directly to measure compliance with the national air quality objective.

3.32 A specially designed separator is located on the inlet of the Partisol which separates out the particles that have an aerodynamic diameter of 10µm and below. Separated air is then sucked through a filter. A number of different filter types can be used depending on the type of data required. Quality control is carried out internally by the monitor; the data collected being corrected to 0^oC (276^oK) temperature and 1 atmosphere (1013.2 millibars or 760mm Hg) pressure. Units are serviced and have a diagnostic check twice a year.

3.33 South Cambridgeshire District Council operates a Partisol instrument on a site adjacent to the A14 at Girton.

Carbon Monoxide by Non-dispersive Infra-red (NDIR)

accuracy - $\pm$ 8%
precision - $\pm$ 0.5%

3.34 This technique is the recommended standard for the national network sites. Carbon monoxide is measured with a NDIR analyser. This works by transmitting an infra-red beam of light through a cell into which ambient air is pumped. This beam of light is of a frequency that is only absorbed by the presence of carbon monoxide. The amount of absorbence is related to carbon monoxide concentration. Internal diagnostics ensure that the analyser works effectively by displaying any errors. The analyser performs an internal zero and span every 24 hours. A manual zero and span check is performed every two weeks. The analyser is serviced and calibrated every 6 months.

3.35 Cambridge City Council operates a site on Regent Street, which is affiliated to the national network.

Sulphur Dioxide by Ultra Violet Fluorescence

accuracy - ±10%
precision - ±1.4ppb

3.36 This method uses the transitional nature of the element Sulphur to detect levels of SO_2 which is possible because of the mobility of its electron structure. Within the monitor a measured flow of ambient air enters a chamber where it is subjected to a pulsed, high-energy source of ultra violet (UV) radiation. SO_2 present in the chamber becomes excited by the incident UV light and then, as the gas leaves the chamber, it returns to the normal energy level and emits light. The light levels are measured and are proportional to the SO_2 concentration.

3.37 Cambridge City Council measure this pollutant at a kerbside site in central Cambridge and South Cambridgeshire District Council operate a site at Barrington. National Power have a monitor at Monks Hardwick and DETR monitor sulphur dioxide at the national network site at Wicken Fen.

Sulphur Dioxide and Black Smoke following BS1747 Parts 2&3

accuracy - not applicable
precision - ±15%

3.38 DETR operate a national network of 159 sites for these pollutants to monitor compliance with the EU Directive. AEA Technology operates a quality assurance and quality control (QA/QC) procedure for the whole of the network. The Stoke Ferry monitoring site in Norfolk, established in 1991, forms part of the Rural Sulphur Dioxide Network . This site lies close to the northeast boundary of East Cambridgeshire and is operated by AEA Technology.

3.39 The monitors sample ambient air so that smoke particles are trapped onto a Whatman no.1 filter and sulphur dioxide is removed from the air by bubbling it through a 1% hydrogen peroxide solution. The concentrations are determined by laboratory analysis. This equipment measures daily average concentrations. The blackness of smoke is assumed to be correlated to concentration and is measured with a reflectometer; which has to be calibrated annually. Estimates for the quantification of sulphur dioxide and black smoke are contained in the international standards organisation (ISO) documents ISO4220:1993E and ISO9835:1993E.

Benzene Diffusion Tubes

accuracy - unknown
precision – unknown

3.40 Diffusion tubes are filled with Chromosorb 106 polymer and are exposed for four-week periods. These are seen to be more accurate than passive diffusion tubes used to monitor nitrogen dioxide.

3.41 Concentrations are determined using laboratory analysis: the polymer is stripped of adsorbed chemicals which are passed through a gas chromatograph that separates the pollutants out into a series of peaks. Benzene can then be identified and its average concentration measured.

3.42 Cambridge City Council has four sites in the City centre where benzene is monitored by diffusion tubes. No other diffusion tube measurements for this pollutant are made in Cambridgeshire.

Benzene and 1,3-butadiene by Gas Chromatography

accuracy - ±10%
precision - ±0.1ppb

3.43 Ambient air is passed through a scrubber for 25 minutes. This adsorbs hydrocarbons and 'concentrates' them. The scrubber is stripped and the gases are passed through a gas chromatograph to separate them. The concentrations of 25 species of hydrocarbon are measured, including Benzene and 1,3-butadiene.

3.44 Cambridge City Council operates a roadside monitor in the centre of the City but only benzene is measured. DETR operate several sites on the national network where both of the pollutants are measured. 1,3-butadiene is not measured in Cambridgeshire.

Lead in Air - Council Directive 82/884/EEC

accuracy - not applicable
precision - unknown

3.45 A M-Type pump and gas meter is used to draw 20m^3 per day through a cellulose nitrate membrane filter, with a pore size of 0.8 mm. Filters are exposed for a week and are then analysed by atomic absorption in a laboratory, giving weekly average concentrations. The pumps and gas meters are checked annually to ensure they are operating at the correct flow rates. Pumps have an annual service. This equipment is designed to sample total suspended particulates (TSP), but the amount of dust suspended in air depends on weather conditions. The equipment precision of this technique can only be estimated.

3.46 There are no lead monitoring sites in Cambridgeshire. Data used in the compilation of this report are taken from the national monitoring network which monitors compliance with the Directive.

EXPLANATION OF PERCENTILES AND AVERAGING TIMES

3.47 All the pollutants measured using continuous analysers are collected by personal computers as 15 minute or hourly averages, in line with the National Air Quality Monitoring Network. These are then used as the basis for comparison with European Community, World

Health Organisation, and DETR guidelines, limits, standards or objectives.

3.48 The averaging time for each pollutant depends on the amount of time a pollutant is calculated to have an effect on human health. For example, studies have shown that high concentrations of sulphur dioxide affect the body over very short time periods and so the Air Quality Standard adopted by DETR is for a 15 minute average. At the other extreme is a pollutant such as benzene, which has been shown to affect the body over a lifetime exposure. Hence, the adopted Air Quality Standard is considered for a years average exposure.

3.49 The Expert Panel on Air Quality Standards (EPAQS) recommendations to DETR for some pollutants (ozone, carbon monoxide, PM_{10}, benzene and 1,3-butadiene) consider a rolling average over a certain time period (e.g. 8 hours, 24 hours etc.). This is because the effects from these pollutants can accumulate in the body. A rolling average in these cases is based on hourly average concentration where, for each hour, a specific amount of previously recorded data is considered as well. For example, carbon monoxide and ozone have been given standards based on 8 hour rolling averages, so, for each hours worth of data the previous 7 hours are averaged too.

3.50 A percentile (%ile) is a statistical way of sorting out outlying or extraordinary measurements and can be described in the following way: Assuming 100 points of data are collected the 98%ile is the 98th highest reading, once the data has been ranked. The more data points collected, the more actual data can be filtered out. For example, the Government decided that the EPAQS guideline for sulphur dioxide would only be exceeded if the 99.95% ile was greater than 100 ppb.

UNITS OF MEASUREMENT

3.51 The European System International (SI) used for the collection and expression of air pollution data is reported in microgrammes per cubic metre of air ($\mu g/m^3$) or milligrammes per cubic metre of air (mg/m^3). In the UK there is a tendency to use the non-SI units of 'parts per billion' (ppb) or parts per million (ppm), except for fine particles (PM_{10}) and lead which remain in units of $\mu g/m^3$. This is the method used in the Air Quality Regulations 1997 and is how the data will be presented in this report.

CONVERSION FACTORS

Concentration Conversion factors at 20°C and 1 atmosphere or 1013 millibar pressure	
Pollutant (1 part per billion)	**Conversion factor to $\mu g/m^3$ (multiply by)**
benzene	3.17
1,3-butadiene	2.25
carbon monoxide (1 part per million)	1.16 (mg/m^3)
nitrogen dioxide	1.91
sulphur dioxide	2.66
Example : 100 ppb of nitrogen dioxide is the same as 191 $\mu g/m^3$	

CHAPTER 4 : REVIEW AND ASSESSMENT STAGE 1

INTRODUCTION

4.1 This chapter represents the first stage of review and assessment for the seven pollutants specified in the 1997 Air Quality Regulations (see Chapter 1). This is essentially an information gathering exercise but judgements have to be made to determine if specific processes and activities exist within a district that could have the potential, individually or in combination to emit significant quantities of the relevant pollutants which could lead to exceedances of the relevant air quality objectives. The approach is precautionary. Stage 1 involves initial screening of industrial, transport and other significant sources of pollution. For instance, elevated levels may be judged to occur in the vicinity of heavily trafficked and/or congested roads, Part A and Part B processes or where major planned developments may increase traffic flow. Where the level of a pollutant is judged to exceed the quantity that will give rise to an exceedance of the air quality objective, then that pollutant has to be carried forward to the second stage of review and assessment.

4.2 Within Cambridgeshire fairly unique traffic situations occur in Cambridge City with its large number of narrow canyon streets. Here, vehicle flow and speed criteria used for Stage 1 for the rest of the county (see Appendix 4) are not applicable. As part of its work as a first phase authority which trialled DETRs guidance for air quality review and assessment, Cambridge City Council and partners developed a screening tool for canyon streets in the form of a series of look up tables. From these and depending on the height to width ratio of each street, it is possible to derive traffic speeds and flows that will give rise to concentrations above the objective for individual pollutants. For Stage 1 the height to width ratios of individual streets in Cambridge City have been measured, and traffic flows and speeds have been taken from a traffic survey that followed the closure of Bridge Street in January 1997.

4.3 Whilst the rest of the County is largely rural in nature busy market towns, growing populations, heavily traffic ked roads and economic activity give rise to other transport problems.

SOURCES OF INFORMATION

4.4 A number of local and national bodies and organisations have provided information used in the compilation of this report:-

Monitoring Data.

4.5 Monitoring data from each Local Authority has been considered together with data from other organisations in an attempt to provide a holistic picture. Data collected from outside the District boundaries is used where monitoring data for a particular pollutant is not available. Continuous monitoring data sources include Cambridge City Council, Huntingdonshire District Council, South Cambridgeshire District Council, International Mining Consultants/University of East Anglia and the National Air Quality Information Archive on the Internet (http://www.aeat.co.uk/netcen/airqual/welcome.html).

Background Pollutant Concentrations.

4.6 Background pollutant concentrations have been gathered from mapped data available in the National Air Quality Information Archive - see Appendix 2 for pollutants where information is available.

Emission Densities of Pollutants.

4.7 Emission densities of pollutants have been collated from the National Atmospheric Emissions Inventory - see Appendix 3 for pollutants where information is available. (http://www.aeat.co.uk/netcen/airqual/emissions/index.html)

Traffic - Flows, Speeds and Growth Forecasts

4.8 Traffic information has been taken from Cambridgeshire County Council's 1997 Traffic Monitoring Report, supplemented by additional data on traffic speeds - see Appendix 4. For each of the major road links and segments data on annual average daily traffic flow, peak hour mean traffic speed and percentage of heavy goods vehicles is given. Identical data is also provided for the urban networks.

4.9 Traffic growth forecasts up to 2005 have also been provided by Cambridgeshire County Council - see Appendix 5. The forecasts are also compared with the national traffic growth forecasts.

Prescribed Processes – Environmental Protection Act 1990 Part 1(A).

4.10 Pollutant specific guidance issued by DETR provides information on those prescribed processes which are of significance with respect to AQR&A. In line with DETR advice and the Environment Agency Information Note on the Agency and LAQM, effective links have been established with the local Agency offices in Cambridgeshire. The Agency has provided information from the Public Register relating to processes authorised under Integrated Pollution Control (IPC). Information has been supplied not only for the relevant Local Authority area but also for neighbouring areas where emissions may influence air quality in the subject Local Authority area. Appendix 6 details processes and activities in accordance with the DETR guidance.

Prescribed Processes – Environmental Protection Act 1990 Part 1(B).

4.11 Data from the Public Register held by each Local Authority has been used to assess the impact of emissions from processes authorised under local air pollution control (LAPC). Pollutant specific guidance issued by DETR provides information on those authorised processes which are of significance with respect to local air quality. Data on authorised processes and activities are reproduced in Appendix 7 in accordance with DETR guidance. For this stage of review and assessment only prescribed processes authorised before the end of 1997 are considered. Any processes authorised after this date will be considered at the next stage of review and assessment or when local authorities carry out the next round of review and assessment prior to 2005.

Major Planned Developments.

Cambridge City Council (CCC)

4.12 Major planned developments include the Grand Arcade redevelopment, the redevelopment of the Cattle Market site and the University of Cambridge, West Cambridge development. Proposed retail development on the Cambridge Northern Fringe has been the subject of a recent inquiry and the Secretary of State's decision is currently awaited. The implications for local air quality of these developments are considered in this report.

East Cambridgeshire District Council (ECDC)

4.13 A major planned development, with implications for local air quality, is the new straw burning power station at Sutton near Ely. This has recently been given planning permission and therefore likely to be built within the next five years. The emissions will include particulates, sulphur dioxide, nitrogen dioxide and carbon monoxide. The implications of this development for local air quality are considered in this report. Details of other planned developments can be found in the Deposit Draft Local Plan.

Fenland District Council (FDC)

4.14 No major road schemes or industrial developments are currently planned. A proposed major expansion of an existing road haulage/warehousing complex, on the A47, which has been refused planning consent is currently awaiting a decision on appeal.

Huntingdonshire District Council (HDC)

4.15 The most major planned development with implications for local air quality is the redevelopment of RAF Alconbury into a freight terminal. The implications of this development for local air quality are considered in this report. Details of other planned developments can be found in the Deposit Draft Local Plan.

South Cambridgeshire District Council (SCDC)

4.16 The most major planned development with implications for local air quality is that of the new settlement at Cambourne, on the A428 west of Cambridge, consisting of 3000 houses and a major business park. Construction of this new settlement has commenced.

4.17 The Cambridge Northern Fringe lies predominantly within South Cambridgeshire District Council. The agreed strategy (South Cambridgeshire District Council, Cambridge City and Cambridgeshire County Council) for development within this area involves mixed development at the eastern end with the western end reserved for 'Hi-Tech' industry in the longer term. An application for retail development at the western end has been the subject of an inquiry (see paragraph above).

STAGE 1 - REVIEW AND ASSESSMENT OF BENZENE.

National Air Quality Objective to be achieved by 2005 5 ppb or less when expressed as the annual running mean

Sources

4.18 Benzene is a chemical consisting of six atoms each of carbon and hydrogen, arranged in a ring structure. At normal ambient temperatures it is a liquid, but it readily evaporates and small amounts are detectable in the atmosphere.

4.19 There are no well defined natural sources of benzene and all the benzene observed at ground level in the northern hemisphere is likely to have resulted from human activities, in particular the use of petrol and oil. In petrol benzene is used as an anti-knock agent and can escape into the air, for example at filling stations. Benzene is naturally broken down by chemical reactions in the atmosphere, although these reactions take several days. Thus, the population are exposed to the presence of benzene in respirable air.

4.20 Petrol filling installations have recently been brought into regulation under the Environmental Protection Act 1990 in respect of vapour recovery. The three stage implementation of this regulation programme will, over a six year period, reduce the contributions to atmospheric benzene levels from this source to negligible levels. In the UK it has been estimated that 78% of benzene is from petrol engine exhausts. It is produced by chemical reactions occurring during combustion of petrol in the engine. In addition cigarette smoke contains benzene and may contribute a significant proportion of an individual's total intake of the chemical.

4.21 Aviation gasoline also contains small quantities of benzene. Although both USAF Mildenhall and Lakenheath are in close proximity to East Cambridgeshire and there are flight paths over the district the levels of benzene from this source will be well below the prescribed objective.

Health Effects

4.22 The effect of most concern from long term exposure to benzene is leukaemia and in particular several types of this disease known collectively as the non-lymphocytic le ukaemia. It acts on the genetic material of cells causing malignant effects.

4.23 At concentrations occurring in the ambient atmosphere, benzene does not have short-term or acute effects. The risks of leukaemia in industrial workers, exposed to much higher concentrations of benzene, has been related to their calculated lifetime exposure - the more benzene they have been exposed to, the greater the risk. Levels of benzene currently found in outdoor air do not exceed levels at which a health effect would be expected.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Benzene.					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
One or more 'Part A' or 'Part B' processes which are a potential significant source of benzene.	NO	YES	NO	YES	YES
Planned developments of the above mentioned type in the locality.	NO	NO	NO	NO	NO
Pollutant threshold in Canyon Streets exceeded	YES	N/A	N/A	N/A	N/A

Assessment : Benzene

Processes or activities exist or are planned in all District Council areas, except Fenland District Council area, which could lead to the public being exposed to levels of benzene above the objective.

From the table above it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for Cambridge City, East Cambridgeshire, Huntingdonshire and South Cambridgeshire District Council areas with a view to determining the risk of exceedance more precisely.

For Fenland District Council area there is no perceived risk of the objective not being attained in 2005.

STAGE 1 - REVIEW AND ASSESSMENT OF 1,3-BUTADIENE.

National Air Quality Objective to be achieved by 2005 1 ppb or less when expressed as the annual running mean

Sources

4.24 The motor vehicle is by far the largest source of 1,3-butadiene in the UK, and in 1996 petrol vehicles contributed 67% of national emissions. 1,3-butadiene is not present in petrol or diesel but is formed during the combustion process from olefins which are added to the fuel during formulation. These olefins have been added increasingly to petrol over the last 10 years and this has resulted in increasing releases of 1,3-butadiene into the atmosphere.

Health Effects

4.25 There is evidence that workers exposed to 1,3-butadiene have a slightly higher than expected risk of cancers to the bone marrow, lymphomas and leukaemia. Laboratory studies have shown that 1,3-butadiene causes a variety of cancers in rodents and damages the genetic structures of the cell. It is thus a genotoxic carcinogen and, in theory, it is not possible to determine an absolutely safe level for human exposure.

Review

Identification of Processes and Activities with the potential to emit significant quantities of 1,3-butadiene

Process or Activity	Present in District				
	CCC	ECDC	FDC	HDC	SCDC
One or more 'Part A' or 'Part B' processes which are a potential significant source of 1,3-butadiene	NO	YES	NO	YES	YES
Planned developments of the above mentioned type in the locality.	NO	NO	NO	NO	NO
Pollutant threshold in Canyon Streets exceeded	YES	N/A	N/A	N/A	N/A

Assessment : 1,3-butadiene

Processes or activities exist or are planned in all District Council areas, except Fenland District Council areas, which could lead to the public being exposed to levels of 1,3-butadiene above the objective over the long term.

From the above table it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for Cambridge City, East Cambridgeshire, Huntingdonshire and South Cambridgeshire District Council areas with a view to determining the risk of exceedance more precisely.

For Fenland District Council area there is no perceived risk of the objective not being attained in 2005.

STAGE 1 - REVIEW AND ASSESSMENT OF CARBON MONOXIDE.

National Air Quality Objective to be achieved by 2005 10 ppm or less when expressed as the 8 hour running mean

Sources

4.26 Carbon monoxide (CO) is a colourless, odourless gas produced in the process of combustion, be it in a motor car engine, domestic heating, a cigarette or a forest fire. Indoor sources include domestic fuel burning heaters and gas cooking appliances. Outdoors, the main sources of carbon monoxide are vehicle exhausts.

4.27 Petrol engined vehicles are the greatest source of emissions of carbon monoxide in Cambridgeshire. Whilst improvements to vehicle performance and the introduction of catalytic converters have gradually decreased the level of carbon monoxide in inner cities, there may be a slight, steady increase in carbon monoxide concentration if traffic numbers increase as predicted.

Health Effects

4.28 Of all the pollutant gases carbon monoxide is one of the most dangerous since it is associated with acute morbidity and mortality. However, fatal consequences are confined to people exposed to very high levels produced, for example, by fires in buildings, blockage of flues, faulty appliances and deliberate self-poisoning by car exhaust gases.

4.29 Life threatening concentrations of carbon monoxide may be breathed without giving any warning to the victim. The first sign of severe poisoning is loss of consciousness and further inhalation of high concentrations readily leads to death. These effects are due to the interference of carbon monoxide with the processes whereby oxygen is taken up by the blood and utilised in the cells of the body. It does this both by interfering with transport of oxygen by red cells in the blood (by the formation of carboxyhaemoglobin, which substantially reduces the ability of red cells to carry oxygen) and also by blocking essential biochemical reactions in cells. In those people who recover from accidental or deliberate poisoning by carbon monoxide, brain damage to a greater or lesser degree due to lack of oxygen is a common sequel.

4.30 The formation of carboxyhaemoglobin in the blood of people exposed to carbon monoxide and the amount present depends on both the level and duration of exposure, as well as on the rate and depth of breathing. Thus someone exercising and breathing more rapidly and deeply, will have higher levels than someone resting but exposed to the same concentration. Smokers may have levels of carboxyhaemoglobin (COHb) of 4%. Uptake of carbon monoxide from multiple sources, such as smoking and traffic, is not additive, and does not cause long term health effects. Acute health effects are only likely when the levels of COHb in the blood exceed 30%. Non smokers exposed to levels of 25 to 50 ppm show blood levels of 2 to 5% COHb. It is likely that people who already have a disease affecting delivery of oxygen to the heart or brain are likely to be at particular risk if these delivery systems are further impaired by carbon monoxide. These will include angina sufferers, others with severe heart and lung disease, or anaemia, as well as young infants and the elderly.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Carbon Monoxide					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
Road links with current or projected annual average daily traffic flow greater than 50000 vehicles.	NO	YES	NO	YES	YES
'Part A' prescribed processes with the potential to emit significant quantities of carbon monoxide.	NO	NO	NO	NO	YES
Planned developments of the above mentioned types in the locality, including those that will increase traffic flow.	NO	YES	NO	YES	YES
Pollutant threshold in Canyon Streets exceeded	YES	N/A	N/A	N/A	N/A

Assessment : Carbon Monoxide

Conditions apply within all the District Council areas, except Fenland, that could lead to the public being exposed to levels of carbon monoxide above the objective.

From the table above it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for Cambridge City, East Cambridgeshire, Huntingdonshire and South Cambridgeshire District Council areas with a view to determining the risk of exceedance more precisely.

STAGE 1 - REVIEW AND ASSESSMENT OF LEAD.

National Air Quality Objective to be achieved by 2005 0.5 µg/m^3 or less per calendar year

Sources

4.31 Lead is the most widely used non-ferrous metal. The largest use globally is in the manufacture of batteries. As the compound tetraethyl lead, it has been used as a petrol additive to enhance octane rating. With the recognition of the adverse effects of lead on human health and the increasing use of catalytic converters, which are poisoned by lead, this use is declining rapidly.

4.32 At the end of 1986 the maximum permitted lead content of petrol was reduced significantly from 0.40 g/l to 0.15 g/l. This almost halved levels of lead in urban air in the space of a few months. This improvement in urban lead levels continued with the introduction of unleaded petrol in 1987. Since 1993 all new petrol engined cars have been catalyst equipped and must run on unleaded petrol.

Health Effects

4.33 Direct human exposure to lead occurs through food, water, dust, soil and air. Most people receive the largest portion of their daily lead intake via food, although other sources may be important to specific members of the population. For example, from water in areas with lead pipes and a plumbosolvent water supply, in air where populations live near to point sources, from paint flakes where young children live in houses with leaded paint or from contaminated soil.

4.34 Effects of lead on human health are quantified by using the concentration of lead in blood as an indicator of exposure. Anaemia occurs in cases of severe lead poisoning but red blood cell survival and haemoglobin production are found at low levels. Acute neurological effects of delirium, confusion and convulsions are rare and occur at blood levels above 100µg/dl. Subtle effects on children however have been shown at blood levels below 10µg/dl. Lead levels in children have halved to an average of 4-5µg/dl since the introduction of unleaded petrol.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Lead					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
One or more 'Part A' or 'Part B' processes which are a potential significant source of 1,3-butadiene	NO	NO	NO	YES	YES
Planned developments of the above mentioned type in the locality.	NO	NO	NO	NO	NO
Industrial or other sites with non-prescribed processes with the potential to emit significant quantities of lead.	NO	NO	NO	NO	NO

Assessment : Lead

Processes or activities exist or are planned in Huntingdonshire and South Cambridgeshire District Council areas which could lead to the public being exposed to levels of lead above the objective.

From the above table it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for, Huntingdonshire and South Cambridgeshire District Council areas with a view to determining the risk of exceedance more precisely.

For Cambridge City, East Cambridgeshire and Fenland District Council areas there is no perceived risk of the objective not being attained in 2005.

STAGE 1 - REVIEW AND ASSESSMENT OF NITROGEN DIOXIDE.

National Air Quality Objective to be achieved by 2005 150 ppb or less when expressed as the hourly mean, and 21 ppb when expressed as the annual mean

Sources

4.35 Nitrogen dioxide (NO_2) is primarily a secondary pollutant produced by the oxidation of nitric oxide (NO) by ground level ozone. Nitric oxide is produced by the reaction of nitrogen and oxygen in the combustion process.

4.36 Natural sources of nitrogen oxides include lightning and forest fires. The activity of bacteria in soil, and plant metabolism also produce oxides of nitrogen. However the major source of this pollutant in the U. K. is derived from the combustion of the fossil fuels, coal, oil and gas and in particular by motor transport and non-nuclear power stations. It is estimated that some 75% of oxides of nitrogen are emitted from motor vehicle exhausts in urban areas. Of the transport sources, petrol combustion in cars is currently responsible for a greater proportion than diesel, though this relationship is changing with the progressive introduction of the catalytic converter into petrol vehicles.

Health Effects

4.37 Nitrogen dioxide is an irritant gas which has been known for many years to have serious and sometimes fatal effects on health when inhaled in the very high concentrations associated with accidental exposures. Its properties as an oxidising agent can damage cell membranes and proteins. At relatively high concentrations it causes acute inflammation of the airways.

4.38 There is some evidence that nitrogen dioxide may have subtle effects on health at the much lower concentrations that may occur in the ambient atmosphere. It is thought that nitrogen dioxide may be a contributory factor in the development of asthma. During a pollution episode in London in December 1991, in which the maximum recorded hourly average concentration of nitrogen dioxide was 423 ppb the mortality rate from all causes was raised by 10% and there was an increase in admission rates among older people with chronic lung disease. No effects on younger people with asthma were detected. It is not clear whether these effects were primarily associated with exposures to nitrogen dioxide or particles.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Nitrogen Dioxide					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
An annual mean urban background concentration of nitrogen dioxide in 1996 of greater than 30ppb.	Not measured and presumed not present	Not measured and presumed not present	Not measured and presumed not present	Not measured and presumed not present	Not measured and presumed not present
One or more existing or planned roads with a projected annual average daily traffic flow of greater than 20000 vehicles per day in 2005	YES	YES	YES	YES	YES
One or more 'Part A' or 'Part B' processes in the district or surrounding areas which are a potential significant source of nitrogen oxides	NO	YES	NO	YES	YES
An indication of existing sources acting in combination to exceed an annual mean concentration of 30ppb as measured by diffusion tubes or automatic measurement methods.	YES	NO	NO	NO	NO
Pollutant threshold exceeded in canyon streets	YES	N/A	N/A	N/A	N/A

Assessment : Nitrogen Dioxide

Conditions apply within all the District Council areas which could lead to the public being exposed to levels of nitrogen dioxide above the objective

From the table above it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for all District Council areas with a view to determining the risk of exceedance more precisely.

STAGE 1 - REVIEW AND ASSESSMENT OF FINE PARTICLES (PM_{10}).

National Air Quality Objective to be achieved by 2005 50 µg/m^3 or less when expressed as the 99th percentile of daily maximum running 24 hour means

Sources

4.39 Particles in the air arise from a variety of sources both natural, such as sea spray and the erosion of soil and rocks by wind, and man-made from combustion processes and the attrition of road surfaces and the wear of tyres and brakes on motor vehicles. These particles are either *primary*, that is released directly into the air or *secondary*, that is formed in the atmosphere by the chemical reaction of gases, first combining to form less volatile compounds which in turn condense into particles. In East Anglia, recent monitoring of rural particle concentrations indicate that the secondary particle contribution may be as high as 50% of the measured PM_{10} concentrations at urban sites.

4.40 The largest single source of emitted particles in urban areas is road traffic, especially diesel vehicles. However there is considerable evidence, from analysis of filters collected from roadside locations, that sources other than traffic contribute to the total concentration measured. Some elements of the PM_{10} fraction can include salt spray that has travelled from the coast. The source and therefore the composition of PM_{10} may vary from day to day and indeed location to location.

4.41 Levels of PM_{10} are expected to increase gradually with increasing volumes of traffic, though tougher European Union regulations are due to be enacted soon to improve the emissions from diesel vehicles.

Health Effects

4.42 The Expert Panel on Air Quality Standard (EPAQS) carried out a review of particles in 1996. A number of studies investigating the effects of particles on health were considered and these provide the main source of information relating to the health effects of particles outlined in this document.

4.43 An analysis of eight studies in the United States calculated that a rise in PM_{10} of about 10µg/m^3 above any level (as a 24-hour average) may be associated with an increase in daily mortality of about 1%. In four of the eight studies a breakdown of individual causes of death was given. Deaths from heart diseases, which was responsible for 45% of all deaths, showed an increase of 1.4% in relation to a rise of 10 µg/m^3 , while death from lung diseases, which caused 5% of all deaths, rose by 3.5 %. The strongest association was between death and average PM_{10} exposure over the preceding five days.

4.44 Excess deaths are most clearly evident among older people, and are caused by acute worsening of conditions such as coronary artery disease and chronic lung disease. On the basis of best available evidence EPAQS concluded that PM_{10} pollution episodes are most likely to exert their effects on mortality by determining the time of death of susceptible individuals rather than affecting the number of individuals dying overall.

4.45 Concern that long-term exposure to particulate pollution may increase the risk of developing lung cancer as well as having an effect on mortality from heart and lung diseases has been provided in a United States study.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Fine Particles (PM_{10})					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
Urban areas with an annual mean secondary particle concentration of greater than 8 $\mu g/m^3$	YES	YES	YES	YES	YES
Emissions from low level dispersed sources greater than 10 tonnes in any single 1 km x 1 km grid square or an average of 5 tonnes in several adjacent squares.	YES	YES	NO	YES	YES
One or more 'Part A' or 'Part B' processes with the potential to emit significant quantities of PM_{10}	NO	YES	YES	YES	YES
One or more existing or planned roads with an existing or projected annual average daily traffic flow of greater than 25000.	YES	YES	YES	YES	YES
Any industrial process that emits significant quantities of dust in the form of PM_{10} from uncontrolled or fugitive sources within the plant.	NO	NO	NO	NO	NO
Pollutant threshold exceeded in canyon streets	YES	N/A	N/A	N/A	N/A

Assessment : Fine Particles (PM_{10})

Conditions apply within all the District Council areas which could lead to the public being exposed to levels of fine particles (PM_{10}) above the objective

From the table above it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will NOT be carried out because of lack of guidance from DETR. THIS POLLUTANT WILL BE TAKEN STRAIGHT TO THE THIRD STAGE OF REVIEW AND ASSESSMENT FOR ALL DISTRICT COUNCIL AREAS.

STAGE 1 - REVIEW AND ASSESSMENT OF SULPHUR DIOXIDE.

National Air Quality Objective to be achieved by 2005
100 ppb or less when expressed as the 99.9th percentile of 15 minute means.

Sources

4.46 Sulphur dioxide (SO_2) is a gas at normal temperature and pressure. It dissolves in water to form an acidic solution which is readily oxidised to sulphuric acid. In the UK the combustion of sulphur-containing fossil fuels is the main source of this pollutant.

4.47 The combination of sulphur dioxide and soot from the widespread burning of coal gave rise to the famous smogs in the 1950s. These were shown to contribute to an increase in respiratory illness and increased mortality, especially in elderly persons with pre-existing heart and lung disease. As a result, the first Clean Air Act was passed in 1956, which introduced the concept of Smoke Control Areas. The burning of unauthorised fuel (for example, coal and wood) was prohibited and householders were allowed to apply for grants to replace open fireplaces with oil, gas or electric heating. A substantial reduction in sulphur dioxide concentrations resulted in urban areas. It has been estimated that sulphur dioxide emissions have decreased by 70% nationally since the implementation of the Clean Air Acts. The majority of this fall being attributed improvements in emissions from fossil fuel power stations.

4.48 Since the generation of electricity from fossil fuels is now concentrated in large power stations in mainly rural areas there has been a change in the distribution of this pollutant. In the past, emissions were mainly from many low-level sources, which resulted in elevated long-term average concentrations in cities, with particularly high peak concentrations occurring during cold still weather conditions. Now that emissions are dominated by a relatively small number of large rural point sources with tall chimney stacks, long term average concentrations in towns are much lower. Short- term peak concentrations, lasting a few hours, at some point downwind of the source where the plume reaches ground level are now experienced.

Health effects

4.49 Sulphur dioxide is an irritant when it is inhaled because of its acidic nature. It causes its irritant effects by stimulating nerves in the lining of the nose and throat and in the airways of the lungs. This causes a reflex cough, irritation, and a feeling of chest tightness, and may lead to narrowing of the airways. This is often the case in asthmatics and people suffering from chronic lung disease whose airways are often inflamed and easily irritated. There is clear evidence that some asthmatics show reductions in breathing capacity after short-term exposure to concentrations of about 400 ppb. Healthy individuals have exhibited measurable narrowing of the airways after exposure to sulphur dioxide at concentrations above 1000 ppb.

Review

Identification of Processes and Activities with the potential to emit significant quantities of Sulphur Dioxide					
	Present in District				
Process or Activity	**CCC**	**ECDC**	**FDC**	**HDC**	**SCDC**
One or more 'Part A' processes with the potential to emit significant quantities of sulphur dioxide.	NO	YES	YES	YES	YES
One or more 'Part B' processes with the potential to emit significant quantities of sulphur dioxide	NO	YES	NO	YES	NO
A solid fuel or fuel oil combustion system with thermal power greater than 5MW.	YES	YES	YES	UNSURE	YES
A 1 km x 1 km grid square for which low level emissions are greater than 25 kg per hour or 40 tonnes per annum.	YES	YES	NO	YES	YES

Assessment.

Conditions apply within all the District Council areas which could lead to the public being exposed to levels of sulphur dioxide above the objective

From the table above it can be seen that there is a risk of the air quality objective being exceeded by the end of the year 2005.

For this pollutant a second stage review and assessment will be carried out for all District Council areas with a view to determining the risk of exceedance more precisely.

SUMMARY OF THE FINDINGS OF THE FIRST STAGE REVIEW AND ASSESSMENT IN CAMBRIDGESHIRE.

Pollutants to be taken to Stage 2 of Review and Assessment					
	CCC	**ECDC**	**FDC**	**HDC**	**SCDC**
Benzene	YES	YES	NO	YES	YES
1,3-butadiene	YES	YES	NO	YES	YES
Carbon Monoxide	YES	YES	NO	YES	YES
Lead	NO	NO	NO	YES	YES
Nitrogen Dioxide	YES	YES	YES	YES	YES
Fine Particles (PM_{10})	YES straight to Stage 3	YES straight to Stage 3	YES straight to Stage 3	YES straight to Stage 3	YES straight to Stage 3
Sulphur Dioxide	YES	YES	YES	YES	YES

CHAPTER 5 : STAGE 2 REVIEW AND ASSESSMENT

HUNTINGDONSHIRE

INTRODUCTION.

5.1 This chapter represents the second stage of review and assessment in Huntingdonshire for those pollutants brought forward from the first stage of the process. The aim of this stage of the process is to subject these pollutants to more detailed screening by way of simple modelling and monitoring techniques relevant to the Huntingdonshire area, to determine whether or not there is a significant risk of the air quality objectives being exceeded both now and at the end of the year 2005.

5.2 At this stage it is not intended to provide an accurate prediction of current or future air quality across the entire district, nor to identify every area of exceedance for each pollutant of concern, nor to estimate the geographical extent of potential exceedances. However, for the purposes of the second stage review and assessment a number of locations in Huntingdonshire have been selected for consideration. These locations are representative of places where the highest concentrations of pollutants are likely to occur as highlighted by the first stage review and assessment.

5.3 The following pollutants have been brought forward from stage one:-

- Benzene
- 1,3-butadiene
- Carbon Monoxide (CO)
- Lead
- Nitrogen Dioxide (NO_2)
- Fine Particles (PM_{10})
- Sulphur Dioxide

BENZENE.

National Air Quality Objective to be achieved by 2005 5 ppb or less when expressed as the annual running mean

5.4 Benzene has been brought through to the second stage of review and assessment because of the presence in Huntingdonshire of a Part A authorised process that DETR guidance indicates has the potential to emit significant quantities of benzene.

Stage 2 Assessment : Benzene

Examination of the authorised organic chemical use and manufacturing process shows that no benzene is used in the process or emitted to air. There is therefore no risk of exposure to the public from this pollutant and no further assessment of this pollutant will be carried out.

1,3-BUTADIENE.

National Air Quality Objective to be achieved by 2005 1 ppb or less when expressed as the annual running mean

5.5 1,3-butadiene has been brought through to the second stage of review and assessment because of the presence in Huntingdonshire of a Part A authorised process that DETR guidance indicates has the potential to emit significant quantities of 1,3-butadiene.

Stage 2 Assessment : 1,3 Butadiene

Examination of the authorised organic chemical use and manufacturing process shows that no 1,3-butadiene is used in the process or emitted to air. There is therefore no risk of exposure to the public from this pollutant and no further assessment of this pollutant will be carried out.

CARBON MONOXIDE.

National Air Quality Objective to be achieved by 2005 10 ppm or less when expressed as the 8 hour running mean

5.6 Carbon monoxide has been brought through to the second stage of review and assessment because of:-

- the presence of road links with annual average daily traffic flows in excess of 50,000 vehicles, and

- a planned major development at RAF Alconbury which is projected to increase peak hour traffic on local major highways by up to 8,500 vehicles per day.

Monitoring Data Sources.

5.7 Carbon monoxide has never been measured in the Huntingdonshire area. The nearest data source is from Cambridge City Council's monitoring site in the centre of Cambridge City. This is a kerbside site situated in a tight canyon street whose topography and street geometry are totally unrepresentative of receptor locations in Huntingdonshire. Data from this source is therefore not considered in this report.

5.8 Receptor locations in Huntingdonshire will tend to be located in corridors either side of the two heavily trafficked trunk roads in the district and for this reason monitoring data from suitably sited AUN stations is considered here, together with mapped urban background concentration data published by DETR.

Levels Monitored on the Automated Urban Network.

5.9 Data collected from four sites on the DETR's Automated Urban Network (AUN) has been compared with the air quality objective for carbon monoxide (10 ppm expressed as the maximum 8 hour running mean). These AUN sites were selected because they are located at varying distances from major roads carrying high numbers of vehicles. Results shown in Table 5.1 indicate that the air quality objective for carbon monoxide is met at AUN monitoring sites.

Table 5.1 : Carbon monoxide levels from the AUN network

Site	Description	Year	Maximum 8 hour running mean CO concentration (ppm)
Cromwell Rd, London	At the kerbside of major road carrying 60000+ vehicles per day	1996	6.42
London A3	Roadside site on the Kingston bypass	1997	2.75
London Hillingdon	Suburban site 30 metres from the M4 motorway	1996	7.8
Stevenage	100 metres east of the A1(M)	1994	2.5

Predicted concentrations for 2005 using the 1998 Draft Revision to the Design Manual for Roads and Bridges Volume 11 Section 3 Part 1 (DMRB).

5.10 The next step in the assessment is to model likely concentrations at receptor sites in Huntingdonshire for the year 2005. It must be emphasised that this exercise is carried out on a precautionary basis using the highest traffic flows in the district and choosing receptor locations as near as possible to major trunk roads. For example, receptor locations are considered at distances of 15, 30, 50 and 100 metres from the A1(M) in North Huntingdonshire. Table 5.2 indicates the inputs, which incorporate the expected traffic flow increases arising from the RAF Alconbury development.

Table 5.2 : Inputs to DMRB	
Input Parameter	**Value in 2005**
Average traffic flow in 000's per hour	3.1
% HDVs	23
Average traffic speed in kph	80

5.11 Table 5.3 gives the results of this modelling exercise. The results indicate that the air quality objective will be met at these locations. For each calculation, 0.4ppm has been added to account for the urban background concentration as derived from the mapped background data given in Appendix 2.

Table 5.3 : Predicted Maximum 8 Hour Running Mean Concentrations (in parts per million) of Carbon Monoxide Using DMRB.				
Year	**Distance from the A1(M)**			
	15m	30m	50m	100m
2005	5.6ppm	5.1ppm	4.6ppm	4.2ppm

National Perspective

5.12 The UK Government has estimated that future emissions of carbon monoxide from road sources will fall by 32% in 2000, 48% in 2005 and 54% in 2012 based on 1995 levels. These reductions in emissions have been taken into account in the above predictions.

Stage 2 Assessment : Carbon Monoxide

On the basis of measured and predicted concentrations of carbon monoxide both now and in 2005 it is concluded that the air quality objective for this pollutant will be met throughout Huntingdonshire and no further review and assessment is required.

LEAD.

National Air Quality Objective to be achieved by 2005
0.5 $\mu g/m^3$ or less per calendar year

5.13 Lead has been brought through to the second stage of review and assessment because of the presence in Huntingdonshire of a Part A authorised process that DETR guidance indicates has the potential to emit significant quantities of lead.

Stage 2 Assessment : Lead

Examination of the authorised glass manufacturing process shows that no lead is used in the process or emitted to air. There is therefore no risk of exposure to the public from this pollutant and no further assessment of this pollutant will be carried out.

NITROGEN DIOXIDE

National Air Quality Objective to be achieved by 2005
150 ppb or less when expressed as the hourly mean, and
21 ppb when expressed as the annual mean

5.14 Nitrogen dioxide has been brought through to the second stage of review and assessment because of the presence in Huntingdonshire of:-

- one or more existing or planned roads with a projected annual average daily traffic flow of greater than 20,000 vehicles in 2005;

- one or more 'Part A' processes in Huntingdonshire or surrounding areas which are a potential significant source of nitrogen oxides; and

- an indication of existing sources acting in combination to exceed an annual mean concentration of 30ppb as measured by diffusion tubes or automatic measurement methods.

Monitoring data

5.15 Nitrogen dioxide has been monitored with diffusion tubes at 10 locations throughout Huntingdonshire since September 1995. Four of the monitoring sites are part of the National Nitrogen Dioxide Diffusion Tube Survey. Figure 5.1 shows the annual average concentration at each of the diffusion tube locations for the twelve months ending March 1997. This method of measurement can only be used to monitor compliance with the annual mean objective of 21 ppb.

5.16 Table 5.4 compares data for 1996/7 and 1997/8. Annual mean concentrations for 1997/8 at these monitored sites have fallen markedly, a trend that does not appear to be reflected by national or local continuous monitoring data. It is known however that 1996 was a particularly 'high' pollution year and that 1997/8 is turning out to be a particularly 'low' pollution year. High and low are used in this report simply to define the frequency of occurrence of pollution episodes.

Figure 5.1
Annual Mean Nitrogen Dioxide Concentrations in Huntingdonshire, 1996

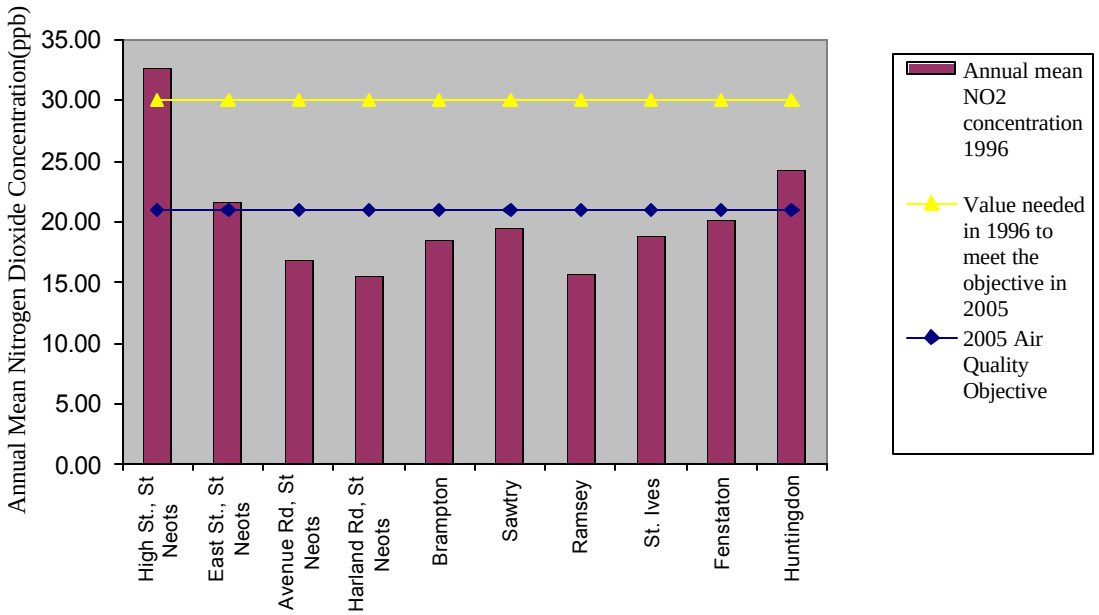


Table 5.4 : Nitrogen dioxide monitoring 1996 - 1998			
Site	**1996/7 Annual Mean NO2 (ppb)**	**1997/8 Annual Mean NO2 (ppb)**	**Fall in Annual Mean 1996/7 - 1997/8**
Diffusion Tubes			
High St, St Neots	32.7	26.9	5.8ppb (18%)
East St, St Neots	21.6	14.5	7.1ppb (33%)
Avenue Rd, St Neots	16.9	13.9	3.0ppb (18%)
Harland Rd, St Neots	15.5	13.2	2.3ppb (15%)
Brampton	18.5	13.9	4.6ppb (25%)
Sawtry	19.6	16.3	3.3ppb (17%)
Ramsey	15.7	13.6	2.1ppb (13%)
St Ives	18.8	16.3	2.5ppb (13%)
Fenstanton	20.1	16.9	3.2ppb (17%)
Huntingdon	24.2	21.2	3.0ppb (12%)
Continuous monitors			
Cambridge City	23.3	27.0	+3.7ppb (+15%)
Leicester	21.2	22.0	+0.8ppb (+4%)
Southampton	23.2	22.0	1.2ppb (5%)

5.17 To maintain a precautionary approach, and because of the variation in data, the 1996/7 data set is used for this stage 2 review and assessment. In order for the air quality objective of 21 ppb as the annual mean to be met in 2005, the annual mean in 1996 must be no greater than 30 ppb. This assessment level is being exceeded at the kerbside location in St Neots High Street.

5.18 Continuous monitoring of oxides of nitrogen has been undertaken since 1996 at a roadside location on the Huntingdon Ring Road. Results for 1997 give an annual mean concentration of 30 ppb and an hourly maximum of 135 ppb.

Predicted Concentrations at Village and Urban Locations Adjacent to Major Highways.

5.19 Predictions have been made of the annual mean and hourly maximum concentration of nitrogen dioxide at receptor locations 50, 100 and 150 metres distant from the centre of major highways in the district. It must be emphasised that this exercise has been carried out on a precautionary basis using the highest traffic flows in the district and choosing receptor locations as near as is possible to major trunk roads, where measurements can be made to confirm the predictions (see Tables 5.5 and 5.6).

5.20 The assessment of annual mean is made by adding the background concentration to the contribution derived from traffic on the major highways. The traffic contribution is calculated using the DMRB assessment method with the maximum hour concentration taken as six times the annual mean concentration. Input data for the DMRB calculations is identical to that used for the stage two assessment of carbon monoxide in rural locations. Traffic speed, flow and modal split data for urban locations has been taken from data supplied by the County Council (see Appendix 4). Background concentrations used in the DMRB method are input as total oxides of nitrogen (NO_x). The values used for the 2005 assessment are 14 ppb for the rural background and 20 ppb for the urban background. These concentrations are derived by factorising the current concentrations as recommended in DETR guidance.

Table 5.5 : Predicted Annual Mean and Maximum Hour Concentrations of Nitrogen Dioxide in ppb at Village Locations Adjacent to Major Highways (Worst Case Scenario)

Year of Assessment	Statistic	Distance from highway		
		50m	100m	150m
2005	Annual Mean	36ppb	24ppb	18ppb
2005	Maximum Hour	216ppb	144ppb	108ppb

Table 5.6 : Predicted Annual Mean and Maximum Hour Concentrations of Nitrogen Dioxide in ppb at Urban Locations Adjacent to Major Highways (Worst Case Scenario)

Year of Assessment	Statistic	Distance from highway		
		50m	125m	200m
2005	Annual Mean	37ppb	24ppb	19ppb
2005	Maximum Hour	222ppb	144ppb	114ppb

Examination of Point Sources.

5.21 Part A prescribed processes which may exert an influence on air quality in Huntingdonshire, with respect to nitrogen dioxide, are power generation in Little Barford and enamel coating in Huntingdon. Emissions from the remaining Part A authorised processes have been examined and are assessed to have negligible effect on local air quality.

Power Generation in Little Barford

5.22 National Power own and operate two continuous monitoring stations located where ground level concentrations of pollutants arising from the power generation operations are at their predicted maximum. These monitoring stations are situated at Monks Hardwick in Huntingdonshire District and Dower House in Bedford Borough. Concentrations of nitrogen dioxide at these two locations are virtually identical, giving an annual mean of 13 ppb and an hourly maximum of 58 ppb. These values are marginally higher than the results of rural monitoring at Wicken Fen in East Cambridgeshire (corresponding values are 10 ppb and 48 ppb). The difference is taken to represent the contribution of the power station to local air quality. However at Monks Hardwick there may be some influence from the nearby urban conurbation of St Neots and the A1/A428.

5.23 National Power have made model predictions of the impact of power generation on local air quality which are for a contribution of 1 ppb to the annual mean rather than the measured 3 ppb. This contribution is insignificant and therefore no further assessment of this source is required.

Enamel Manufacture in Huntingdon.

5.24 This Part A authorised process is the single largest point source of oxides of nitrogen in Huntingdonshire. The stage two assessment is carried out using Her Majesty's Inspectorate of Pollution Technical Guidance Note (Dispersion) D1 – Guidelines on Discharge Stack Heights for Polluting Emissions. This empirical calculation method provides a chimney height, which is deemed necessary to achieve an air quality standard at ground level, given a known quantity of pollutant being emitted from the source. By rearranging the calculation it is possible to predict the ground level concentration of pollutants which will arise from a known chimney height and source strength of pollutants. In this assessment, by way of continuing the precautionary approach, source strength of pollutants have been taken as the maximum allowable under the process authorisation. Using the above method, and taking into account the fact that the process is distant from a major road, the calculated annual mean nitrogen dioxide concentration is 20ppb and the annual maximum is 90 ppb. This process will be kept under review because the predicted concentration is very close to the 2005 annual mean objective of 21ppb.

National Perspective

5.25 The UK Government estimates that for background urban locations a decrease of 48% - 62% in NO_x emissions must be achieved to comply with the air quality objectives using 1995 baseline data. It is expected that urban road transport emissions of NO_x will fall by 47% based on the total for 1995. The Government expect NO_x emissions to increase again if the projected rise in car numbers occurs.

Stage 2 Assessment : Nitrogen Dioxide

There is evidence to suggest that the annual mean objective for nitrogen dioxide will be exceeded in urban centres and at receptor sites close to major highways within Huntingdonshire in 2005. Point sources are not thought to make a significant contribution to annual mean concentrations.

Maximum hourly values of nitrogen dioxide are predicted to exceed the objective value in 2005 at locations close to major roads in Huntingdonshire.

A third stage of review and assessment will be carried out for nitrogen dioxide.

FINE PARTICLES (PM_{10})

National Air Quality Objective to be achieved by 2005
50 $\mu g/m^3$ or less when expressed as the 99th percentile of daily maximum running 24 hour means

5.26 Recent DETR 'pollutant specific guidance' dictates that assessment of PM_{10} at this level be delayed until the government are able to produce adequate guidance for this process.

Stage 2 Assessment : Fine Particles (PM_{10})

A third stage of review and assessment will be carried out for fine particles (PM_{10}).

SULPHUR DIOXIDE.

National Air Quality Objective to be achieved by 2005
100ppb or less measured as the 99.9th percentile of 15 minute averages

5.27 Sulphur dioxide has been brought through to the second stage of review and assessment because of the presence in Huntingdonshire, and in areas adjacent to the Huntingdonshire boundary, of Environmental Protection Act 1990 Part A prescribed processes and also Part B prescribed processes in Huntingdonshire.

5.28 The Part A processes are gas compression, glass manufacture, manufacture and use of organic chemicals and recovery processes in Huntingdonshire, power generation at the National Power site in Little Barford (Bedford Borough) and brick manufacture at Whittlesey (Fenland District). Each of these point sources has been considered separately for potential impacts within Huntingdonshire.

5.29 The Part B process is a coated roadstone plant. This plant is in a rural part of the district where there are no other contributions to ambient sulphur dioxide. An assessment of the worst possible impact from this plant indicates that the emitted sulphur dioxide, plus the rural background contribution, will together not be greater than one third of the air quality objective.

5.30 An examination of the emissions monitoring data from Part A processes in Huntingdonshire indicates that none emit any significant quantities of sulphur dioxide and are therefore most unlikely to have any significant impact on local air quality. These processes are therefore not considered further.

5.31 In accordance with pollutant specific guidance the assessment threshold for sulphur dioxide emissions from low level dispersed sources and short stacks is 40 tonnes per annum in any 1 square kilometre. From calculations carried out during this stage of the review and assessment it has become apparent that this threshold could be delivered from a fuel oil combustion process with a thermal input rating as low as 1 MW. Such an installation would consume in the order of 700,000 litres of medium fuel oil per year.

5.32 Preliminary enquiries have been made to local and national oil supply companies to determine the presence or otherwise of local fuel users whose consumption of fuel oil reaches this level. The initial responses received indicate that there may be large scale users of such fuel but they cannot be identified for reasons of commercial confidentiality. It is not possible to make any further progress with this issue at present and for this reason these potential point sources of sulphur dioxide emissions will be assessed further at the third stage of review and assessment.

Power Generation at Little Barford.

5.33 Emissions data from this process is not available at the time of writing this report. National Power however own and operate two air quality monitoring stations located at sites where predicted (from mathematical modelling) maximum ground level concentration of pollutants arising from the process occur. One station is at Monks Hardwick in Huntingdonshire District Council's area, the other station is at Dower house in Bedford Borough Council's area.

5.34 Analysis of monitoring data from these two stations (for which data quality assurance and control is provided by the South East Institute of Public Health) is given in Table 5.7.

Table 5.7 : Sulphur dioxide levels from National Power stations

Site	Period	99.9th %ile of hourly means of SO_2	Estimated 99.9th %ile of 15 minute means of SO_2
Monks Hardwick	6 months in 1997/8	27ppb	28.4ppb

Dower House	6 months in 1997/8	36ppb	37.8ppb

5.35 Assuming that the station at Little Barford impacts on receptors adjacent to the A1/A428 it is appropriate to estimate the combined point source/traffic impact at these locations. To assess the overall likely sulphur dioxide concentrations 2ppb for every 10,000 vehicles per day using the A1/A428 is added (as recommended in DETR guidance). Assuming annual average daily traffic flows of about 50,000 vehicles per day on the A1 and 20,000 on the A428, the estimated 99.9th %ile of 15 minute averages is still less than half the air quality objective of 100 ppb.

Brick Manufacture in Whittlesey.

5.36 Assessment of this potentially polluting point source is made by reference to the reports of monitoring carried out by Hanson Brick. The monitoring programme consists of ground level measurements at a large number of sites associated with the two operational brickworks at Whittlesey. The geographical areas of interest in this assessment are Farcet and Yaxley. The relevant monitoring sites are numbered P1, P3 and P5 in the Hanson Brick Monitoring Reports. The monitoring programme uses the BS1747 method of bubblers to collect samples on a daily basis. This assessment has used the relationship given in DETR guidance to estimate the likely 99.9th percentile of 15 minute averages from the maximum daily value in a year (1997). At monitoring site P5, which is situated on the Huntingdonshire/Peterborough boundary between Farcet and Yaxley, the calculated 99.9th percentile value for 1997 is in the order of 60ppb compared with the air quality objective of 100ppb.

National Perspective

5.37 The UK Government is committed, under the Second Sulphur Protocol, to reduce emissions from large combustion plant by: 50% by 2000, 70% by 2005 and 80% by 2010 on a 1980 base.

5.38 However, there is some evidence to suggest that the prescribed air quality objective for sulphur dioxide will not be met throughout Huntingdonshire by 2005 due to point source emissions. A further stage of review and assessment for this pollutant will therefore be carried out..

Stage 2 Assessment : Sulphur Dioxide

There is evidence to suggest that the prescribed air quality objective for sulphur dioxide will not be met throughout Huntingdonshire by 2005 due to point source emissions.

A third stage of review and assessment will be carried out for this pollutant.

APPENDICES

1997 RURAL MONITORING

AAWF = Annual Average Weekday Flow
AADF = Annual Average Daily Flow

M11, 16hr AAWF TO 24hr AADT factor = 1.01
A1, 16hr AAWF TO 24hr AADT factor = 1.07
A14, 16hr AAWF TO 24hr AADT factor = 1.03
A11, 16hr AAWF TO 24hr AADT factor = 1.09
A141, 16hr AAWF TO 24hr AADT factor = 1.00

Road No.	Link Description	TFD Link Number	1997 16hr AAWF	Mean Peak Hour Traffic Speed (kph)	1997 24hr AADT	HGV's 1997 24hr AADT	%
M11	A14 Girton to A1303 Madingley Road	505-543	49,200	101	49,446	8,900	18%
M11	A1303 Madingley Road to A603 Barton Road	539-543	58,000	101	58,290	8,744	15%
M11	A603 Barton Road to A10 Hauxton	539-531	51,600	101	51,858	8,297	16%
M11	A10 Hauxton to A505 Duxford	523-531	42,600	102	42,813	6,850	16%
M11	A505 Duxford to A11 Stump Cross	523-560	35,000	102	35,175	6,332	18%
A1	A43 to B1081 Stamford	100-136	34,100	102	36,317	7,990	22%
A1	B1081 Stamford to A47 Wansford	102-136	42,200	97	44,943	8,539	19%
A1	A47 Wansford to A1139 Fletton Parkway	102-301	33,200	97	35,358	7,779	22%
A1	A1139 Fletton Parkway to A605 Alwalton	128-301	35,500	97	37,808	7,562	20%
A1	A605 Alwalton to A15 Norman Cross	128-303	34,100	97	36,317	7,263	20%
A1	A15 Norman Cross to B660 Holme	303-305	54,300	96	57,830	12,722	22%
A1	B660 Holme to A14 Alconbury	305-316	53,900	96	57,404	8,036	14%
A1	A14 Brampton to Buckden	321-334	28,800	98	30,672	6,134	20%
A1	Buckden to B645 St.Neots	334-342	34,600	97	36,849	4,790	13%
A1	B645 St.Neots to A428	342-345	32,700	97	34,826	5,224	15%
A1	A428 St.Neots to A428 Great Barford	362-363	43,300	97	46,115	6,456	14%
A10	Milton Bypass	509-510	20,431	74	20,431	2,112	10%
A10	Hauxton	555-531	19,200	76	19,200	1,344	7%

A1096	South of Meadow Lane	328-331	22,700	74	22,700	2,043	9%
A1123	North of St Ives	325-327	18,400	74	18,400	1,104	6%
A1307	N of Linton	516-517	17,300	74	17,300	1,730	10%
A14	County Boundary to Bythorn	317-318	34,800	97	35,844	8,244	23%
A14	Bythorn to B660 Catworth	318-319	32,600	97	33,578	6,716	20%
A14	B660 Catworth to Spaldwick	319-320	34,400	97	35,432	7,795	22%
A14	Spaldwick to A1 Brampton	320-321	36,900	97	38,007	7,981	21%
A14	A1 Brampton to A141 Brampton	321-356	42,100	97	43,363	8,673	20%
A14	A141 Brampton to A14 Spittals Link	356-363	37,800	97	38,934	8,955	23%
A14	A14 Spitals Link to A1198 Godmanchester	336-363	56,500	96	58,195	13,385	23%
A14	A1198 Godmanchester to A1096 St.Ives	336-337	55,400	96	57,062	14,266	25%
A14	A1096 St.Ives to Trinity Foot	337-503	60,800	96	62,624	12,525	20%
A14	Trinity Foot to B1050 Bar Hill	502-503	65,900	96	67,877	16,290	24%
A14	B1050 Bar Hill to M11 Girton	502-505	77,800	102	80,134	13,623	17%
A14	M11 Girton to B1049 Histon	505-506	54,500	96	56,135	9,543	17%
A14	B1049 Histon to A10 Milton	506-510	50,500	96	52,015	8,843	17%
A14	A10 Milton to B1047 Fen Ditton	510-561	52,000	96	53,560	8,570	16%
A14	B1047 Fen Ditton to A1303 Quy	512-561	37,300	97	38,419	6,915	18%
A14	A1303 Quy to A11 Newmarket	427-512	36,600	97	37,698	6,409	17%
A14	A11 Newmarket to A142 Exning	418-427	54,200	103	55,826	10,049	18%
A14	A142 Exning to A11 Red Lodge	418-424	53,400	103	55,002	10,450	19%
A14	A11 Red Lodge to County Boundary	420-424	29,500	97	30,385	6,685	22%
A11	Red Lodge to A14 Newmarket	424-425	30,000	97	32,700	4,578	14%
A11	Six Mile Bottom to A107 Four Went Ways	513-517	26,200	98	28,558	3,713	13%
A11	A1307 Four Went Ways to A505	517-521	33,000	97	35,970	5,036	14%
A11	N of Stumps Cross	521-554	20,000	98	21,800	2,834	13%
A428	East of Caxton Gibbet	546-567	18,700	98	18,700	2,057	11%
A428	Hardwick	544-567	18,600	98	18,600	2,046	11%
A141	Spittals Link	352-353	24,700	98	24,700	2,470	10%

A141	Huntingdon N Bypass	352-324	17,500	74	17,500	1,750	10%
A505	Royston Bypass West	565-569	18,100	98	18,100	1,810	10%
A505	Royston Bypass	569-570	22,800	98	22,800	2,280	10%
A505	East of Duxford	522-523	19,800	74	19,800	2,970	15%
A47	A1260 Nene Parkway to Bretton North	124-135	34,700	97	37,823	3,404	9%
A47	Bretton North to Bouges Boulevard	104-135	46,700	97	50,903	3,563	7%
A47	Bourges Boulevard to Fulbridge Road	104-134	30,400	97	33,136	2,651	8%
A47	Fulbridge Road to A15 Paston Parkway	129-134	27,100	98	29,539	2,659	9%
A47	Eye Bypass	109-149	24,200	98	26,378	4,484	17%
A47	North of Guyhirn	203-206	18,500	74	20,165	4,033	20%
A1260	A47 to A605 (Nene Parkway)	124-126	44,400	97	48,396	1,936	4%
A1260	A605 to A1139 (Nene Parkway)	126-130	28,000	98	30,520	1,831	6%
A1139	A1 to A1260 (Fletton Parkway)	128-130	39,200	97	42,728	5,982	14%
A1139	A1260 to A605 (Fletton Parkway)	130-131	36,400	97	39,676	5,158	13%
A1139	A605 to Boongate (Frank Perkins Parkway)	131-137	38,100	97	41,529	4,153	10%
A1139	Boongate to Oxney Road (Frank Perkins Parkway)	137-140	33,800	97	36,842	4,053	11%
A1139	Oxney Road to Eye Road (Frank Perkins Parkway)	108-140	25,200	98	27,468	3,296	12%
A15	Eye Road to A47 (Paston Parkway)	108-129	24,200	98	26,378	1,846	7%

1997 URBAN TRAFFIC MONITORING

AAWF = Annual Average Weekday Flow 12hr AAWF TO 24hr AADT factor =1.19

AADF = Annual Average Daily Flow

Road No.	Link Description	TFD Link Number	1997 12hr AAWF	Mean Average Daily Traffic Speed (kph)	1997 AADT hourly averaged directional	1997 hourly AADT HGV's	1997 24hr AADT
	Cambridge City						
	Elizabeth Way		29,174	27	723	27	34717
	Victoria Avenue		16,528	22	410	20	19668
	Bridge Street		2,720	33	67	15	3237
	Silver Street		9,533	27	237	6	11344
	Fen Causeway		19,164	20	476	15	22805
B1049	Histon Road		20,791	33	516	16	24741
A1309	Milton Road		25,763	30	639	27	30658
B1047	Horningsea Road	511-561	14,647	23	363	14	17430
A1303	Newmarket Road	511-512	16,482	36	409	19	19614
	Fulbourn Road		8,033	42	199	7	9559
	Lime Kiln Road		5,013	31	124	2	5965
	Hills Road		17,059	21	423	16	20300
	Trumpington High Street		23,915	16	593	24	28459
	Grantchester Road		1,240	34	31	1	1476
A603	Barton Road		10,049	27	249	8	11958
A1303	Madingley Road		12,209	25	303	11	14529

A1307	Huntingdon Road		16,223	36	403	16	19305
	Huntingdon						
	Godmanchester River Bridge		13,992	24	347	11	16650
C340	George Street	322-360	18,232	21	452	12	21696
	Ermine Street	352-360	12,331	25	306	13	14674
C340	Hartford Road	324-360	16,760	22	416	11	19944
	March						
A141	March Bypass Town Bridge	207-212	10,811 13,148	26 25	268 326	35 8	12865 15646
	St.Neots						
	River Bridge		11,802	26	293	13	14044
	Near Cricket Ground		3,437	32	85	4	4090
	Huntingdon Roa d		4,935	31	122	3	5873
	Cambridge Street		7,705	29	191	6	9169
	Berkeley Street		5,668	30	141	4	6745
	High Street		8,951	28	222	9	10652
	Wisbech						
B198	Cromwell Road		9,574	41	238	22	11393
B198	Lynn Road		7,663	43	190	12	9119
A1101	Leverington Road		14,126	38	351	30	16810
A1101	Churchill Road		15,344	37	381	33	18259
	Church Terrace		5,081	44	126	3	6046
	Cambridge Core Sites						
	Jesus Lane		7,124	29	177	18	8478
	Magdalene Street		1,209	34	30	15	1439
	Northampton Stree t		14,629	23	363	13	17409
	Silver Street		*9,087*	28	225	6	10814
	Regent Street (Catholic Church junction)		7,618	29	189	19	9065

	Regent Street (outside Mandela House)			20			
	Trinity Street			20			
	Pembroke Street			20			
	Victoria Avenue (Mitchams Corner)		16,528	22	410	20	19668
	Newnham Road		*11,222*	26	278	8	13354
	Parker Street		8,729	28	217	13	10388

Italics = November 1997

2005 RURAL PREDICTION

AAWF = Annual Average Weekday Flow
AADF = Annual Average Daily Flow

M11, 16hr AAWF TO 24hr AADT factor = 1.01
A1, 16hr AAWF TO 24hr AADT factor = 1.07
A14, 16hr AAWF TO 24hr AADT factor = 1.03
A11, 16hr AAWF TO 24hr AADT factor = 1.09
A141, 16hr AAWF TO 24hr AADT factor = 1.00

Road No.	Link Description	TFD Link Number	2005 16hr AAWF	Average hourly Traffic Speed (kph)	2005 24hr AADT	2005 hgv 24hr AADT	% HGV
M11	A14 Girton to A1303 Madingley Road	505-543	57,613	101	57,901	10,254	18%
M11	A1303 Madingley Road to A603 Barton Road	539-543	67,918	100	68,257	10,074	15%
M11	A603 Barton Road to A10 Hauxton	539-531	60,423	101	60,726	9,560	16%
M11	A10 Hauxton to A505 Duxford	523-531	49,884	101	50,134	7,892	16%
M11	A505 Duxford to A11 Stump Cross	523-560	40,985	102	41,190	7,295	18%
A1	A43 to B1081 Stamford	100-136	39,931	102	42,526	9,205	22%
A1	B1081 Stamford to A47 Wansford	102-136	49,416	96	52,628	9,838	19%
A1	A47 Wansford to A1139 Fletton Parkway	102-301	38,877	97	41,404	8,962	22%
A1	A1139 Fletton Parkway to A605 Alwalton	128-301	41,570	97	44,272	8,712	20%
A1	A605 Alwalton to A15 Norman Cross	128-303	39,931	97	42,526	8,368	20%
A1	A15 Norman Cross to B660 Holme	303-305	63,585	96	67,718	14,658	22%
A1	B660 Holme to A14 Alconbury	305-316	63,117	96	67,219	9,259	14%
A1	A14 Brampton to Buckden	321-334	33,725	97	35,917	7,068	20%
A1	Buckden to B645 St.Neots	334-342	40,516	97	43,150	5,519	13%
A1	B645 St.Neots to A428	342-345	38,292	97	40,781	6,018	15%
A1	A428 St.Neots to A428 Great Barford	362-363	50,704	96	54,000	7,438	14%
A10	Milton Bypass	509-510	23,925	74	23,925	2,434	10%

A10	Hauxton	555-531	22,483	74	22,483	1,548	7%
A1096	South of Meadow Lane	328-331	26,582	73	26,582	2,354	9%
A1123	North of St Ives	325-327	21,546	74	21,546	1,272	6%
A1307	N of Linton	516-517	20,258	74	20,258	1,993	10%
A14	County Boundary to Bythorn	317-318	40,751	97	41,973	9,498	23%
A14	Bythorn to B660 Catworth	318-319	38,174	97	39,320	7,737	20%
A14	B660 Catworth to Spaldwick	319-320	40,282	97	41,491	8,981	22%
A14	Spaldwick to A1 Brampton	320-321	43,210	97	44,506	9,196	21%
A14	A1 Brampton to A141 Brampton	321-356	49,299	96	50,778	9,992	20%
A14	A141 Brampton to A14 Spittals Link	356-363	44,264	97	45,592	10,317	23%
A14	A14 Spitals Link to A1198 Godmanchester	336-363	66,161	96	68,146	15,421	23%
A14	A1198 Godmanchester to A1096 St.Ives	336-337	64,873	96	66,819	16,436	25%
A14	A1096 St.Ives to Trinity Foot	337-503	71,197	95	73,332	14,430	20%
A14	Trinity Foot to B1050 Bar Hill	502-503	77,169	95	79,484	18,769	24%
A14	B1050 Bar Hill to M11 Girton	502-505	91,103	102	93,837	15,695	17%
A14	M11 Girton to B1049 Histon	505-506	63,819	96	65,734	10,995	17%
A14	B1049 Histon to A10 Milton	506-510	59,135	96	60,909	10,188	17%
A14	A10 Milton to B1047 Fen Ditton	510-561	60,892	96	62,719	9,873	16%
A14	B1047 Fen Ditton to A1303 Quy	512-561	43,678	97	44,988	7,967	18%
A14	A1303 Quy to A11 Newmarket	427-512	42,858	97	44,144	7,384	17%
A14	A11 Newmarket to A142 Exning	418-427	63,468	103	65,372	11,577	18%
A14	A142 Exning to A11 Red Lodge	418-424	62,531	103	64,407	12,040	19%
A14	A11 Red Lodge to County Boundary	420-424	34,544	97	35,581	7,702	22%
A11	Red Lodge to A14 Newmarket	424-425	35,130	97	38,292	5,274	14%
A11	Six Mile Bottom to A107 Four Went Ways	513-517	30,680	97	33,441	4,277	13%
A11	A1307 Four Went Ways to A505	517-521	38,643	97	42,121	5,802	14%
A11	N of Stumps Cross	521-554	28,924	97	31,527	3,265	10%
A428	East of Caxton Gibbet	546-567	21,741	74	21,741	2,370	11%
A428	Hardwick	544-567	21,124	98	21,124	2,357	11%

A141	Spittals Link	352-353	28,924	97	28,924	2,846	10%
A141	Huntingdon N Bypass	352-324	20,492	74	20,492	2,016	10%
A505	Royston Bypass West	565-569	21,195	98	21,195	2,085	10%
A505	Royston Bypass Central	569-570	26,699	98	26,699	2,627	10%
A505	East of Duxford	522-523	23,186	74	23,186	3,422	15%
A47	A1260 Nene Parkway to Bretton North	124-135	40,634	97	44,291	3,922	9%
A47	Bretton North to Bouges Boulevard	104-135	54,686	96	59,607	4,105	7%
A47	Bourges Boulevard to Fulbridge Road	104-134	35,598	97	38,802	3,054	8%
A47	Fulbridge Road to A15 Paston Parkway	129-134	31,734	97	34,590	3,063	9%
A47	Eye Bypass	109-149	28,338	98	30,889	5,166	17%
A47	North of Guyhirn	203-206	21,663	74	23,613	4,647	20%
A1260	A47 to A605 (Nene Parkway)	124-126	51,992	96	56,672	2,230	4%
A1260	A605 to A1139 (Nene Parkway)	126-130	32,788	97	35,739	2,110	6%
A1139	A1 to A1260 (Fletton Parkway)	128-130	45,903	97	50,034	6,892	14%
A1139	A1260 to A605 (Fletton Parkway)	130-131	42,624	97	46,460	5,943	13%
A1139	A605 to Boongate (Frank Perkins Parkway)	131-137	44,615	97	48,630	4,785	10%
A1139	Boongate to Oxney Road (Frank Perkins Parkway)	137-140	39,580	97	43,142	4,669	11%
A1139	Oxney Road to Eye Road (Frank Perkins Parkway)	108-140	29,509	97	32,165	3,798	12%
A15	Eye Road to A47 (Paston Parkway)	108-129	28,338	98	30,889	2,127	7%

2005 URBAN PREDICTION

AAWF = Annual Average Weekday Flow
AADF = Annual Average Daily Flow

12hr AAWF TO 24hr AADT factor = 1.19

Road No.	Link Description	TFD Link Number	2005 12hr AAWF	Mean Daily Traffic Speed (kph)	2005 24hr AADT (veh/hr/direction)		2005 hourly AADT HGV's	2005 24hr AADT
	Cambridge City							
	Elizabeth Way		32,830	25	814		31	39068
	Victoria Avenue		18,599	20	461		23	22133
	Bridge Street		3,061	33	76		18	3642
	Silver Street		10,728	26	266		6	12766
	Fen Causeway		21,566	18	535		18	25663
B1049	Histon Road		23,397	31	580		18	27842
A1309	Milton Road		28,992	27	719		31	34500
B1047	Horningsea Road	511-561	16,483	22	409		17	19614
A1303	Newmarket Road	511-512	18,548	35	460		22	22072
	Fulbourn Road		9,040	42	224		8	10757
	Lime Kiln Road		5,641	31	140		2	6713
	Hills Road Trumpington High Street		19,197 26,912	20 15	476 667		18 27	22844 32026
	Grantchester Road		1,395	34	35		1	1661

A603	Barton Road		11,308	26	280		9	13457
A1303	Madingley Road		13,739	24	341		13	16350
A1307	Huntingdon Road		18,256	35	453		19	21725
	Huntingdon							
	Godmanchester River Bridge		16,128	22	400		13	19192
C340	George Street	322-360	21,015	18	521		14	25008
	Ermine Street	352-360	14,213	24	352		15	16914
C340	Hartford Road	324-360	19,319	20	479		12	22989
	March							
A141	March Bypass	207-212	12,588	25	312		41	14979
	Town Bridge		15,309	23	380		9	18217
	St.Neots							
	River Bridge		13,604	24	337		15	16188
	Near Cricket Ground		3,962	32	98		4	4714
	Huntingdon Road		5,688	30	141		4	6769
	Cambridge Street Berkeley Street		8,881 6,533	28 30	220 162		7 5	10569 7775
	High Street		10,317	27	256		10	12278
	Wisbech							
B198	Cromwell Road		11,147	40	276		26	13265
B198	Lynn Road		8,922	42	221		14	10617
A1101	Leverington Road		16,447	36	408		34	19572
A1101	Churchill Road		17,865	35	443		39	21260
	Church Terrace		5,916	44	147		3	7040
	Cambridge Core Sites							
	Jesus Lane		8,017	29	199		21	9540
	Magdalene Street		1,361	34	34		17	1619

	Northampton Street		16,462	22	408		15	19590
	Silver Street		*10,226*	27	254		7	12169
	Regent Street (Catholic Church junction)		8,573	28	213		22	10202
	Regent Street (outside Mandela House)			20				
	Trinity Street			20				
	Pembroke Street Victoria Avenue (Mitchams Corner)		18,599	20 20	461		23	22133
	Newnham Road		12,628	25	313		9	15028
	Parker Street		9,823	27	244		15	11689

CAMBRIDGE CITY

EPA 1990 Part 1 (A) Authorised Processes in Cambridge City				
Name	**Address**	**No**	**Map Ref**	**Process**
There are no EPA 1990 Part1(A) Authorised Processes in Cambridge City, neither are there any in the immediate vicinity of Cambridge City that are like to influence air quality.				

EAST CAMBRIDGESHIRE

EPA 190 PART1 (A) AUTHORISED PROCESSES IN EAST CAMBRIDGESHIRE AND SURROUND AREAS		
Process	**Air Quality Regulations 1997 Prescribed Pollutants Emitted**	**Significance to Local Air Quality High / Medium / Low**
British Sugar Company, Stoke Ferry	Nitrogen Oxides Sulphur Dioxide	Low Low
Witton Chemicals, Mildenhall	Nitrogen Oxides Benzene Fine Particles 1-3 Butadiene Sulphur Dioxide	Medium Medium Medium Medium Medium
Inorgtech, Mildenhall	Fine Particles Nitrogen Oxides Sulphur Dioxide Benzene 1-3 Butadiene	Medium Medium Medium Medium Medium
Mayer Parry Recycling Limited	None	Low

FENLAND

EPA 1990 Part1 (A) Authorised Processes Near the Fenland Border That May Affect Air Quality in Fenland				
Name	**Address**	**No**	**Map Ref**	**Process**
There are no Part A authorised processes with significant emissions in the immediate vicinity of Fenland that are likely to influence air quality.				

EPA 1990 Part1 (A) Authorised Processes in Fenland and Surrounding Areas		
Process	**Air Quality Regulations 1997 Prescribed Pollutants Emitted**	**Potential Significance to Local Air Quality High / Medium / Low**
Gas Compressor Station	Sulphur dioxide Nitrogen dioxide	Medium Medium
Brick Manufacture	Sulphur dioxide Nitrogen dioxide Fine particles PM_{10}	Medium Medium Medium
Brick Manufacture	Sulphur dioxide Nitrogen dioxide Fine particles PM_{10}	Medium Medium Medium

EPA 1990 PART 1 (A) AUTHORISED PROCESSES IN FENLAND DISTRICT				
NAME	**ADDRESS**	**NO**	**MAP REF**	**PROCESS**
Transco	Catlins Lane, Four Gotes, Wisbech, Cambs	AF7401	TF 458 161	Gas Compressor Station
Hanson Brick Ltd	Saxon Works, 222 Peterborough Rd Whittlesey, Peterborough, Cambs PE7 1PD	AP6311	TL 2560 9710	Ceramic Production
Hanson Brick Ltd	Kings Dyke Works, 222 Peterborough Rd., Whittlesey, Peterborough, Cambs. PE7 1PD	AL9483	TL 2440 9770	Ceramic Production

HUNTINGDONSHIRE

EPA 1990 Part1 (A) Authorised Processes in Huntingdonshire				
Name	**Address**	**No**	**Map Ref**	**Process**
Anglian Water Services Ltd	Grafham Water Treatment Works Perry, Huntingdon, Cambs PE18 0BW	AN3931	TL 1550 6670	Recovery Processes
Chiroscience Ltd	Holmewood Hall Holme, Peterborough, Cambs PE1 5XA	AK6748	TL 1860 8780	Manufacture and Use of Organic Chemicals
Escol Products Ltd	Paisley Works, Windover Road Huntingdon, Cambs PE18 7EB	AT9033	TL 2370 7350	Glass Manufacture and Production
LaFarge Redland Aggregates Ltd	Little Paxton, St Neots Huntingdon, Cambs PE19 4HE	AG5757	TL 1320 6410	Recovery Processes
Potton Ltd	Eltisley Road, Great Gransden Sandy, Beds SG19 3AR	AU6471	TL 2700 5620	Timber Processes
Transco	Huntingdon Compressor Station Bigrams Lane, Stonely Huntingdon, Cambs PE18 0NX	AF7487	TL 1170 6940	Combustion Processes

EPA 1990 Part1 (A) Authorised Processes Near the Huntingdonshire Border That May Affect Air Quality in Huntingdonshire				
Name	**Address**	**No**	**Map Ref**	**Process**
Hanson Brick Ltd	Saxon Works, 222 Peterborough Rd Whittlesey, Peterborough, Cambs PE7 1PD	AP6311	TL 2560 9710	Ceramic Production
Hanson Brick Ltd	Kings Dyke Works, 222 Peterborough Rd Whittlesey, Peterborough, Cambs PE7 1PD	AL9483	TL 2440 9770	Ceramic Production
Peterborough Power Ltd	Storeys Bar Road Peterborough, Cambs PE1 5NT	AP1719	TL 2180 9920	Combustion Processes
Peterborough Power Ltd	Storeys Bar Road Peterborough, Cambs PE1 5NT	AR5251	TL 2180 9920	Combustion Processes
National Power plc	Little Barford Power Station Little Barford, St Neots Huntingdon Cambs PE19 4YT	AZ8552	TL 1850 5770	Combustion Processes

EPA 1990 Part1 (A) Authorised Processes in Huntingdonshire and Surrounding Areas		
Process	**Air Quality Regulations 1997 Prescribed Pollutants Emitted**	**Potential Significance to Local Air Quality High / Medium / Low**
Recovery Processes - Lafarge	Not significant - Laboratory scale operation only	Low
Recovery Processes - Anglian Water	Fine Particles	Medium
	Nitrogen Oxides	Medium
	Sulphur Dioxide	Medium
	Carbon Monoxide	Low
Combustion Processes - Gas Compression	Nitrogen Oxides	Medium
	Carbon Monoxide	Low
Combustion Processes - Power Generation	Fine Particles	Medium
	Nitrogen Oxides	Medium
	Sulphur Dioxide	Low
Ceramic Production - Brick Manufacture	Fine Particles	Medium
	Nitrogen Oxides	Medium
	Sulphur Dioxide	Medium
Manufacture and use of Fine Chemicals	None	Low
Glass Manufacture and Production	Fine Particles	Low
	Nitrogen Oxides	Medium
Timber Processes	None	Low

SOUTH CAMBRIDGESHIRE

EPA 1990 PART 1(A) AUTHORISED PROCESSES IN SOUTH CAMBRIDGESHIRE				
NAME	***ADDRESS***	***REFERENCE***	***GRID REF.***	***PROCESS***
Agrevo Uk Ltd	Hauxton Cambridgeshire CB2 5HU	AL 7758 AK 4982 AK 3510 AU 8261 AT 4716	TL 4327 5244	Production of Agrochemicals
Ciba Specialty Chemicals	Duxford Cambridgeshire CB2 4QA	AW 7096 AN 0304 AM 5998 AK 2858 AV 6205 AK 2840	TL 4818 4559	Production of Resins including some Raw Materals
Eternit UK Ltd	Meldreth Works Whaddon Road Meldreth, Royston, Herts SG8 5RL	AH 4594	TL 3641 4661	Production of Asbestos Cement
Marshall of Cambridge Aerospace Ltd	The Airport Cambridge CB5 8RX	AV 1653	TL 4838 5882	Cadmium Plating Process
Rugby Cement	Barrington Works Barrington Cambridgeshire CB2 5RG	AQ 1382	TL 3958 5072	Cement Manufacture
Safapac (Cambridge) Ltd	Hill Farm Whittlesford, Cambs CB2 4XN	AK 0286	TL 4654 4717	Formulation and Packaging of Agrochemicals
Transco	Cambridge Compressor Station Ickleton Road Duxford, Cambs CB2 4RT	AF 7479	TL 4858 4489	Combustion Process, Gas Compression
Vetspeed Ltd	The Cambridge Pet Crematorium A505 Main Road Thriplow Heath Nr Royston, Herts SG8 7RR	AM 9217	TL 4439 4473	Incineration of Animal Carcasses

EPA 1990 PART 1(A) AUTHORISED PROCESSES NEAR THE SOUTH CAMBRIDGESHIRE BORDER THAT MAY AFFECT AIR QUALITY IN SOUTH CAMBRIDGESHIRE				
NAME	***ADDRESS***	***REFERENCE***	***GRID REFERENCE***	***PROCESS***
Johnson Matthey Plc	Orchard Road Royston Hertfordshire	AH 5817 AJ 3344 AJ 8320/AS 1282 AK 2343/AV 4172 AL 8347 AN 1793 AN 6477 AN 7040 AN 8356 AN 8364 AS 7264	TL 3489 4144	Recovery of Precious Metals
National Power Plc	Little Barford Power Station Little Barford St Neots Huntingdon Cambridgeshire PE19 4YT	AZ 8552	TL 1850 5770	Combustion Processes

Review of EPA 1990 Part 1(A) Authorised Processes in South Cambridgeshire and Surrounding Areas		
Process and Schedule Reference	**Air Quality Regulations 1997 Specified Substances Emitted to Air**	**Potential Significance to Local Air Quality High/Medium/Low**
Agrevo – agrochemical production IG 4.2 - AK 4982, AK 3510, AU 8261, AT 4716 IG 4.4 - AL 7758	 Benzene 1-3 Butadiene SO2 NO2 Fine Particles SO2 NO2	 Medium Medium Medium Medium Medium Medium Medium
Ciba Specialty Chemicals – resin production IG 4.2 – AW 7096, AN 0304, AM 5998, AK 2858 IG 4.14A – AV6205 Eternit UK Ltd – asbestos cement production IG 3.2 – AH 4594	 Benzene 1-3 Butadiene SO2 NO2 Fine Particles None	 Medium Medium Medium Medium Medium Low
Marshalls – cadmium plating process IG 4.5 – AV 1653	 Lead CO SO2 NO2 PM10	 Medium Medium Medium Medium Medium
Rugby Cement – Cement manufacture IG 3.1 – AQ 1382	SO2 NO2 PM10	Medium Medium Medium

Review of EPA 1990 Part 1(A) Authorised Processes in South Cambridgeshire and Surrounding Areas		
Process and Schedule Reference	**Air Quality Regulations 1997 Specified Substances Emitted to Air**	**Potential Significance to Local Air Quality High/Medium/Low**
Safapac – Pesticide formulation IG 4.7 – AK 0286	None	Low
Transco – Combustion Process IG 1.3 - AF 7479	CO SO2 NO2	Medium Medium Medium
Vetspeed – animal incineration IG 5.1 – AM9217	CO SO2 NO2 PM10	Medium Medium Medium Medium
Johnson Matthey – metals recovery IG 2.2 – AJ 8320/AS 1282 AS 7264 IG 4.2 – AJ 3344 AK 2343/AV 4172 IG 4.4 – AL 8347 IG 4.5 – AH 5817	Lead CO SO2 NO2 PM10 Benzene 1-3 Butadiene SO2 NO2 PM10 SO2 NO2 Lead	Medium Medium Medium Medium Medium Medium Medium Medium Medium Medium Medium Medium Medium

Review of EPA 1990 Part 1(A) Authorised Processes in South Cambridgeshire and Surrounding Areas		
Process and Schedule Reference	**Air Quality Regulations 1997 Specified Substances Emitted to Air**	**Potential Significance to Local Air Quality High/Medium/Low**
AN 6477 AN 7040 AN 8356 AN 8364	CO SO2 NO2 PM10	Medium Medium Medium Medium
National Power – power generation IG 1.3A - AZ 8552	 SO2 NO2 PM10	 Medium Medium Medium

CAMBRIDGE CITY

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emissio n Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measuremen ts of Prescribed Pollutants**	**Results And Date**	**Likely Local Impact High Medium Low**	**Significan t** **Yes/No**
Addenbrooke's NHS Trust Hills Road	Clinical Waste Incinerator	54644 3 25520 9	HCL 30mg/m^3 Particulate mater 30mg/m^3 CO 50mg/m^3 Daily average or 150mg/m^3 95% values as 10 minute average values in day SO_2 300mg/m^3 Organic compounds (and particulate matter) 20mg/m^3 Dioxins + furans- 1mg/m^3 TEQ Cd + compounds - 0.1mg/m^3 11g + compounds – 0.1mg/m^3 Other heavy metals +	CO Particulate matter SO_2	Continuous Continuous Annually	Always complied to date 50mg/m^3 23-24/04/98 Always complied	L	N

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emissio n Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measuremen ts of Prescribed Pollutants**	**Results And Date**	**Likely Local Impact High Medium Low**	**Significan t Yes/No**
			compounds (As, Pb, Cr, Ni, Cu, tins, manganese) 1mg/m^3					
Roadland Readymix Cowley Road Cambridge	Cement Batching	54744 5 26112 1	Particulates – visibility	Particulate (Pm10)	None	N/A	L	N
ARC, Coldham's Lane Cambridge	Cement Batching	54775 7 25787 8	Particulates – visibility	Particulate (Pm10)	None	N/A	L	N
Wellington Garage Coldham's Road Cambridge	Waste Oil Burner	54700 0 25903 1	Free from visible smoke	N/A	N/A	N/A	L	N
Clark Cars Poundhill Garage 208 Victoria Road Cambridge	Waste Oil Burner	54440 7 25900 1	Free from visible smoke	N/A	N/A	N/A	L	N
Travis Perkins Devonshire Road	Timber Manufacturi	54635 1	Particulate matter	Particulate (Pm10)	None	N/A	L	N

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emissio n Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measuremen ts of Prescribed Pollutants**	**Results And Date**	**Likely Local Impact High Medium Low**	**Significan t Yes/No**
Cambridge	ng	25771 0						
Marshall Motor Group Cherry Hinton Road Cambridge	Vehicle Respraying	54616 3 25665 6	Particulate matter 50mg/m3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
P+R Coachworks Gog Magog Garage Babraham Road Cambridge	Vehicle Respraying	54763 9 25443 4	Particulate matter 50mg/m^3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
City Ford 350 Newmarket Road Cambridge	Vehicle Respraying	54691 1 25910 7	Particulate matter 50mg/m^3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
Herbert Robinson Cheddars Lane Cambridge	Vehicle Respraying	54673 3	Particulate matter 50mg/m^3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
Birch's 383 Milton Road Cambridge	Vehicle Respraying	54676 0 26122 0	Particulate matter 50mg/m^3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
West's Garage	Vehicle	54648	Particulate matter	Particulate	Certificate of	N/A	L	N

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emissio n Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measuremen ts of Prescribed Pollutants**	**Results And Date**	**Likely Local Impact High Medium Low**	**Significan t Yes/No**
217 Newmarket Road Cambridge	Respraying	8 25899 2	50mg/m^3	(Pm10)	compliance			
Gladwins Nuffield Road Cambridge	Vehicle Respraying	TBA	Particulate matter 50mg/m^3	Particulate (Pm10)	Certificate of compliance	N/A	L	N
Marshalls Aerospace Newmarket Road Cambridge	Aircraft Respraying	1) 54829 3 25903 0 2) 54829 3 25873 7	Particulate matter 50mg/m^3 Currently being varied	Particulate (Pm10) Currently being varied	Certificate of compliance TBA	N/A	L	N
Cambridge Electroplating Union Road Cambridge	Coating/De-Greasing metal	54614 0 25988 7	VOC 50mg/m^3 Particulate matter 50mg/m^3	Particulate	None	N/A	L	N

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emissio n Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measuremen ts of Prescribed Pollutants**	**Results And Date**	**Likely Local Impact High Medium Low**	**Significan t Yes/No**
Jet/Granta Filling Station 262 Newmarket Road Cambridge	Unloading Petrol	TBA		Benzine			L	N
Sainsburys Brooks Road Cambridge	Unloading Petrol	TBA		Benzine			L	N

EAST CAMBRIDGESHIRE

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description And Plan Reference**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Significant Yes/No**
ARC Ltd, Angel Drove Ely, Cambs	Concrete Batching Plant Plan Ref 6	TL 538794	Particles Visible Dust 100mg/m^3	Yes Particles	None		Medium	No
RMC Readicrete,Fordham Rd, Snailwell,Ely, Cambs	Concrete Batching Plant Plan Ref 14	TL 634683	Particles Visible Dust 100mg/m^3	Yes Particles	None		Medium	No
Histon Concrete, Wisbech Rd, Littleport, Ely Cambs	Concrete Batching Plant Plan Ref 1	TL 550877	Particles Visible Dust 100mg/m^3	Yes Particles	None		Medium	No
ARC Ltd, 42 Station Rd, Kennett, Newmarket	Roadstone Coating Plant Plan Ref 15	TL 700679	Particles Visible Dust 100mg/m^3	Yes Particles SO_2	Yes	Particles - 13/5/97 22mg/m^3	Medium	Yes

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description And Plan Reference**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Significant Yes/No**
Favor Parker Lynn Rd, Chettisham, Ely Cambs	Animal Feed Processing Plan Ref 3	TL 552832	Particles Visible Dust 100mg/m^3	None	Yes	Particles - 08/94 32.4 mg/m^3	Low	No
RMC Roadstone (Southern), Potter Distribution Depot, Queen Adelaide, Ely, Cambs	Roadstone Coating Plant Plan Ref 4	TL 559808	Particles Visible Dust 100mg/m^3	Yes Particles SO_2,NO_2 CO	Yes	Particles - 12/10/96 65mg/m^3	Medium	Yes
Euston Lime Co, Dimmocks Cote, Stretham Rd, Wicken, Cambs	Limestone Products Plan Ref 12	TL 543722	Particles Visible Dust 100mg/m^3	None	Yes	Particles - 22/03/95 29mg/m^3	Low	No
Ely Chemical Co, Lisle Lane, Ely, Cambs	Coating Manufacture Plan Ref 5	TL 547803		None	None		Low	No

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description And Plan Reference**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Significant Yes/No**
Barber-Butler, 12 Isleham Rd, Fordham, Ely Cambs	Waste Oil Burner Plan Ref 10	TL 638715		None	None		Low	No
B&W Mechanical Handling, Lancaster Way, Ely, Cambs	Coating of Metal Plan Ref 8	TL 515785		None	None		Low	No
JRD Mouldings 26 Regal Drive, Soham, Ely Cambs	Adhesive Coating Plan Ref 11	TL 604722		None	None		Low	No
Lovelace Furniture, Broadpiece, Soham, Ely Cambs	Coating of Wood Plan Ref 13	TL 571752		None	None		Low	No

FENLAND

Part B Processes – Environmental Protection Act 1990, Part 1

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Shire Garden Products Brigstock Rd Wisbech PE13 3JJ	Timber Process	TF 458 108	PM-50mg/m^3	YES PM	NO	NONE	L	N
ARC Central Boots Bridge Wimblington Nr March	Concrete Process	TL 483 912	PM-100mg/m^3	YES PM	NO	NONE	L	N
Redland Readymix Ltd Oldfield Lane Wisbech	Concrete Process	TL 459 090	PM-100mg/m^3	YES PM	NO	NONE	L	N
Redland Readymix Ltd Marwick Road March	Concrete Process	TL 417 984	PM-100mg/m^3	YES PM	NO	NONE	L	N

Part B Processes – Environmental Protection Act 1990, Part 1

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Readicrete Ltd Boleness Road Wisbech	Concrete Process	TF 461 081	PM-100mg/m^3	YES PM	NO	NONE	L	N
H W Racey Osborne Road Wisbech	Timber Process	TF 458 112	PM-50mg/m^3	YES	NO	NONE	L	N
CMB Foodcan PLC Weasenham Lane Wisbech Cambs	Metal Coating	TF 450 085	NONE	NO	NO	NONE	L	N
Spillers Foods Southbrink Factory Oldfield Lane Wisbech	Pet Food Manufacture	TF 457 093	PM-50mg/m^3	YES	NO	NONE	L	N

Part B Processes – Environmental Protection Act 1990, Part 1

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Oil-Dri (UK) Ltd Bannisters Row Wisbech	Gypsum Process	TF 457 109	PM-230mg/m^3	YES	YES	96mg/m^3 08/96	L	N
P J Thory Ltd Mobile Process	2 Mobile Crushers	NA	NONE	YES PM	NO	NO	L	N
Roger Giles Westfield Road Manea March	Car Bodyshop	TL 471 889	NONE	NO	NO	NONE	L	N
Neil Cawthorn Creek Road March	Car Bodyshop	TL 425 974	NONE	NO	NO	NONE	L	N
J O Walker Brigstock Road Wisbech	Timber Process	TL 457 108	YES PM	Dust – Abnormal Emissions	NO	NONE	L	N

HUNTINGDONSHIRE

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Burgess & Walker Old Railway Line Ind.Est Needingworth Road St Ives PE17 4NB	Waste Oil Burner	TL E3251 N7205	None	Yes CO NOx SO_2 PM	No	None	L	N
Mason & Darlow The Workshop Manor Farm St Ravely Huntingdon PE17 2SX	Waste Oil Burner	TL E2551 N8101	None	Yes CO NOx SO_2 PM	No	None	L	N
Mr Capano Heighton Garage Overend Elton Huntingdon PE6 8RF	Waste Oil Burner	TL E0892 N9366	None	Yes CO NOx SO_2 PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Crofton Pallets Limited Glebe Road Huntingdon PE18 7DX	Timber Pallet Production	TL E2398 N7369	Dust – abnormal emissions	Yes PM	No	None	L	N
Boardcraft Ltd Howard Road Eaton Socon St Neots PE19 3ET	Timber Process	TL E1718 N5852	Dust – abnormal emissions	Yes PM	No	None	L	N
Roverex Limited Station Road Warboys Huntingdon PE17 2TH	Timber Process	TL E3108 N8078	Dust – abnormal emissions	Yes PM	No	None	L	N
Dreamplan Limited T/A Shearform Components 10/11 Windover Road	Timber Process	TL E2363 N7367	Dust – Abnormal emissions	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Huntingdon PE18 7EA								
Horatio Myers & Co.Ltd Windover Road Huntingdon PE18 7EF	Timber Process And Wood Coating Process	TL E2372 N7377	Dust – abnormal emissions VOC – 50	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Listers (Sussex) Lts Valley Farm Winwick Huntingdon PE17 5PU	Animal Feed/Straw drying	TL E1013 N8094	PM – 50 Ca – 0.5 Nickel – 1.0 Cr, Cu + Va – 1.5 HCl – 100 Flourine - 5	Yes PM	No	None	L	N
Clarksteel Galvenising Station Road Yaxley Peterborough PE7 3EX	Hot dip galvanising	TL E1936 N9299	PM – 15 or 50 HCl - 30 Pb – 2	Yes PM	Yes	PM = 0.04 gms/sec April 1998	L	N
ARC Conbloc Meadow Lane St I ves Huntingdon PE17 4 LG	Concrete Process	TL E3231 N7077	None	Yes PM	No	None	L	N
Marshalls Mono Meadow Lane	Concrete Process	TL E3242	None	Yes	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
St Ives Huntingdon PE17 4LG		N7077		PM				

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
ARC Central Premis Plant Meadow Lane St Ives, PE17 4BU	Concrete Process	TL E3262 N7067	None	Yes PM	No	None	L	N
Redland Readymix Ltd Alms Close Stukley Meadows Ind.Est Huntingdon, PE18 4BQ	Concrete Process	TL E2345 N7327	None	Yes PM	No	None	L	N
Mission Central Force Stonehill Huntingdon PE18 6ED	Timber Process and Wood Coating Process	TL E2327 N7313	Dust – abnormal emission VOC - 50	Yes PM	No	None	L	N
Tilcon Ltd Knobbs Farm Long Drive Somersham PE17 3HU	Concrete Process	TL E3735 N7945	None	Yes PM	No	None	L	N
LeFarge	Roadstone	TL	PM - 100	Yes	Yes	PM =	L	Y

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Redland Aggregates Ltd High Street Little Paxton St Neots, PE19 4HE	Coating Process	E1970 N6291		PM		0.22gms/sec June 1998		
Mick George Haulage Second Drove Meadow Lane St Ives PE17 4YQ	Three mobile crushing plants Waste oil burner	TL E3246 N7083	Dust – abnormal emissions	Yes CO NOx SO_2 PM	No	None	L	N
Notley & Co Stukley Road Huntingdon PE18 6HQ	Vehicle Re-spraying	TL E2336 N7265	PM – 10 VOC – 50	Yes PM	No	None	L	N
Eaton Tractors Pitt Farm Little Paxton St Neots PE19 4HD	Mobile crushing process	TL E1939 N6287	Dust – abnormal emissions	Yes PM	No	None	L	N
Hunts Motor Co. 26 Cambridge Street St Neots	Vehicle Re-spraying	TL E1862 N6028	PM – 10 VOC - 50	Yes	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Huntingdon PE19 1JL				PM				
Cryovac UK Cromwell Road St Neots PE19 1QN	Printing on flexible packaging	TL E1950 N6010	VOC – 50 CO – 100 NOx – 100 (1/12/98)	Yes CO NOx	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Darex ® Container Products Cromwell Road St Neots PE19 2ER	Coating process manufacturing	TL E1936 N5975	PM - 50 VOC – 150 and 1kg/8hours (1/4/2001)	Yes PM	Yes	VOC losses only	L	Y
Inside Track Automotive 17A Little End Road Eaton Socon St Neots	Vehicle Re-spraying	TL E1673 N5854	PM - 10 VOC - 50	Yes PM	No	None	L	N
Hensby Composts Ltd "Cheffins" The Health Wodhurst Huntingdon PE17 3BS	Mushroom compost	TL E3340 N7529	Odour	None	No	None	L	N
Stewarts & Lloyds St Peters Road	Metal Decontaminati	TL E2370	PM – 50 HCl – 100	Yes	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Huntingdon PE18 7DJ	on	N7318	Organic Compounds-20	PM				
D Gladwin Church Road Warboys PE17 2RL	Vehicle Re-spraying	TL E3029 N7952	PM – 10 VOC - 50	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Colins and Aikman Automotive Systems Cromwell Road St Neots PE19 2ER	Di-isocyanate and Bitumen	TL E1927 N5966	Bitumen fume – 50 VOC – 50 PM – 50 Di-isocyanates (NCO group 0.1)	Yes PM	No	None	L	N
Munters Rotaire Ltd Blackstone Road Huntingdon PE18 6EF	Adhesive Coating	TL E2331 N7337	VOC –50 PM – 50	Yes PM	No	None	L	N
Unitrition International Station Road Tilbrook Huntingdon PE18 6JY	Veg. Matter Drying	TL E0863 N7112	PM -150	Yes PM	No	None	L	N
Linx Printing Technologies Ltd	Manufacture of Printing ink	TL E3197	VOC – 50 PM - 50	Yes	Yes	PM = not detectable	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
Burrell Road St Ives PE17 4LE		N7310		PM		VOC		

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Standard Products Ltd Ferrars Road Huntingdon PE18 6DD	Rubber	TL E2341 N7202	PM – 50 Isocyanates – 0.1 VOC – 50 CO – 100 NOx – 100	Yes PM CO NOx	No	None	L	Y
Standard Product Ltd Ferrars Road Huntingdon PE18 7HN	Coating	TL E2341 N7202	VOC – 50 PM – 50	Yes PM	No	None	L	N
Bucamb Finishings 14 St Margrets Way Stukeley Meadows Ind.Estate Huntingdon	Coating	TL E2335 N7307	VOC – 50 PM - 50	Yes PM	No	None	L	N
Limpet Tapes Bond House George Street Huntingdon	Coating	TL E2351 N7178	VOC – 50 PM – 150 CO – 100 Nox - 100	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
PE18 6BD				CO NOx				
David Smith St Ives Ltd Marley Road St Ives Huntingdon	Timber	TL E3173 N7322	Dust – abnotmal emissions	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Victaulic Ind.Polymers St Peters Road Huntingdon PE18 7DJ	Rubber	TL E2370 N7318	PM – 50 VOC – 50 CO – 100 Nox - 100	Yes PM CO NOx	No	None	L	Y
The Incinerator Company Limited Howard Road Eaton Socon St Neots, PE19 3ER	Clinical Waste Incineration	TL E1718 N5828	Chloride – 100 PM – 100 CO – 100 SO2 – 100 Organic Compounds-20 Heavy Metals-5	Yes PM CO SO2	Yes	Currently under Prohibition	N/A	N/A
F.Vindis & Sons (St Ives) Limited Low Road St Ives	Vehicle re-spraying	TL E3097 N7046	PM – 10 VOC – 50	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant Yes/No**
PE17 4EL								
Mick George Haulage Ltd Second Drove Meadow Lane St Ives PE17 4YQ	Mobile Crushing	TL E3246 N7083	Dust – abnormal emissions	Yes PM	No	None	L	N

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Serviceman Station Yard Car Park Huntingdon PE18 8NS	Waste Oil Burner	TL E2328 N7153	None	Yes CO NOx SO_2 PM	No	None	L	N
Mick George Haulage Ltd Second Drove Meadow Lane St Ives, PE17 4YQ	Mobile Crushing	TL E3246 N7083	Dust – abnormal emissions	Yes PM	No	None	L	N
Mick George Haulage Ltd Second Drove Meadow Lane St Ives PE17 4YQ	Waste Oil Burner	TL E3246 N7083	None	Yes CO NOx SO_2 PM	No	None	L	N
ARC Central Limited Roadstone Coating Plant	Roadstone Coating	TL E3261 N7057	PM – 100 Cd - 0.5 Ni – 1 Cr + Cu + V	Yes	No	None	L	Y

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All Pollutants)**	**Emissions of any Prescribed Pollutants (AQ Regs 1997)**	**Measurements of any Prescribed Pollutants**	**Results of Measurements And Date**	**Likely Local Impact High Medium Low**	**Potentially Significant** **Yes/No**
Meadow Lane St Ives			= 1.5 HCl – 100 Flouride - 5	PM				
Murketts Accident Repair Centre Home Farm Drive Alconbury Huntingdon	Vehicle re-spraying	TL E1964 N7614	PM - 10 VOC – 50	Yes PM	No	None	L	N

SOUTH CAMBRIDGESHIRE

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Nightingale's Garage London Road, Sawston, Cambridge, CB2 4EF	Waste Oil Burner	TL 4883 4827	Black smoke				Low	NO
Ouse Valley Bait Co Ltd Gransden Lodge, Little Gransden, Sandy, Beds SG19 3EB	Maggot breeding	TL 2885 5355	Ammonia - 5ppm v/v Amines and amides – 5ppm v/v Organic and inorganic sulphides – 5ppm v/v				Low	NO
Cambridge City Crematorium Huntingdon Road, Cambridge CB3 0JJ	Crematoria	TL 3998 6255	HCl 200mg/m^3 TPM 80mg/m^3 CO 100mg/m^3 VOC 20mg/m^3				Low	NO
Readicrete Ltd Winship Industrial Estate,	Ready mixed concrete	TL 4757 6222	Visible dust TPM 100mg/m^3				Low	NO

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Milton, Cambridge CB4 4BQ								
Readicrete Ltd The Grip, Hadstock Road, Linton, Cambridge CB1 6NT	Ready mixed concrete	TL 5572 4641					Low	NO
Tarmac Topmix Ltd Sawston Industrial Estate, Babraham Road, Sawston, Cambridge CB2 4LH	Ready mixed concrete	TL 4906 5044	TPM 100mg/m^3				Low	NO
Redland Aggregates Ltd Cambridge Depot, Chesterton Junction, Cowley Road, Cambridge CB4 4DL	Bitumen coating of roadstone	TL 4742 6105	TPM 100mg/m^3	PM10	Particulate matter BS 3405:1983	None	Medium	YES
Marley Building	Cement tile	TL	TPM 100mg/m^3				Low	NO

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Materials Babraham Road, Sawston, Cambridge CB2 4DB	production	4900 5038						
Omya UK Ltd Steeple Morden, Royston, Herts SG8 0NX	Production of dry chalk powder	TL 2957 4015	TPM 100mg/m^3	PM10	Particulate Matter BS 3405:1983	None	Medium	YES
Spicers Ltd Sawston, Cambridge, CB2 4JG	Printing	TL 4725 4993	TPM 150mg/m^3 VOC 50mg/m^3				Low	NO
DC Brooklyn Fen Road, Chesterton, Cambridge, CB4 1UN	Vehicle respraying	TL 4770 6054	TPM 10mg/m^3				Low	NO
Hutchings & Harding Ltd 161/163 High Street, Sawston,	Hide and skin processing	TL 4867 4888	Ammonia 30ppm v/v Hydrogen sulphide –				Low	NO

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Cambridge CB2 4HN			5ppmv/v VOC 50mg/m^3					
Hexcel Composites Duxford, Cambridge CB2 4QD	Coating process	TL 4836 4560	VOC 150mg/m^3 TPM 50mg/m^3 CO 100mg/m^3 NOx 100mg/m^3				Low	NO
Sealed Air Ltd Saxon Way, Melbourn, Royston, Herts	Printing of flexible packaging	TL 3813 4384	VOC 50mg/m^3				Low	NO
Heraeus Noblelight Ltd Cambridge Science Park, Milton Road, Cambridge	Cleaning or etching of glass	TL 4685 6196	Hydrogen Flouride – 5mg/m^3				Low	NO
Earthspan plc Dales Manor Business Park, Sawston, Cambridge	Concrete products manufacture	TL 4925 5033		PM10	Visual assessment Dust deposit guages BS 1747:Part1	None	Medium	YES

Part B Processes – Environmental Protection Act 1990, Part 1								
OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Lancaster Specialist Cars Ltd High Street, Harston, Cambridge	Vehicle respraying	TL 4292 5147	TPM 10mg/m^3				Lw	NO

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
Austins Lesanna Farm, Cantelupe Road, Haslingfield, Cambridge	Mobile concrete crusher	TL 4112 5270					Low	NO
M Dickersons Ltd Ely Road, Waterbeach, Cambridge	Mobile concrete crusher	TL 4830 6832					Low	NO
Truck & Trailer Co Toseland Road, Graveley	Vehicle respraying	TL 2447 6372	TPM – 10mg/m^3				Low	NO
West Vehicle Repairers Unit 3, Breckenwood Road, Fulbourn, Cambridge CB1 5DG	Vehicle respraying	TL 5115 5662	TPM – 10mg/m^3				Low	NO

OPERATOR **Name and Address**	**Authorised Process Description**	**Grid Ref.**	**Emission Limits (All)**	**Emissions of Prescribed Pollutants (AQ Regs 1997)**	**Measurements of Prescribed Pollutants**	**Results And Date**	**Potential Local Impact High/ Medium/ Low**	**Potentially Significant Yes/No**
John Newman Bodyworks Ltd 8 Mill Hill, Gamlingay, Sandy, Beds., SG19 3LW	Vehicle respraying	TL 2365 5127	TPM – 10mg/m^3				Low	NO
Pinewood Structures Ltd The Station, Gamlingay, Sandy, Beds SG19 3HB	Timber treatment and wood products manufacture	TL 2465 5182					Low	NO
Marshall SPV Ltd The Airport, Teversham, Cambridge CB5 8RX	Vehicle respraying	TL 4872 5953	Spraybooths :TPM – 10mg/m^3 Other Sources : TPM – 50mg/m^3				Low	NO

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Hexcel Composites Limited Duxford, Cambridge CB2 4QD	Coating manufacture	TL 4836 4560	VOC – 3kg/day				Low	NO
Krupp Camford Ltd Bourn Airfield, Bourn, Cambridge	Electrophoresis	TL 3497 5939					Low	NO
Eternit UK Ltd Whaddon Road, Meldreth, Royston, Herts SG8 5RL	Manufacture of fibre reinforced plastics	TL 3640 4657	Styrene – 20kg/tonne resin used				Low	NO
Transco	Odorising natural gas	Restricted Information					Low	NO
Melles Griot Greenfield Works, Broad Lane, Cottenham, Cambridge CB4 4SW	Coating	TL 4499 6825	VOC – 20mg/m^3 TPM – 10mg/m^3				Low	NO

Stage	Timescale	Type of Consultation	Methods	Distribution/ Contacts
1st Report - Review and Assessment Stages 1 and 2	Completion of report end 1998 Consultation mid Jan - end Feb '99	Information provision (responses not required for further action)	Distribute report Distribute leaflet Media (press. radio etc.)	Report - agreed list of statutory consultees Leaflet - wider distribution to include businesses >100 employees Both - Libraries & LA information points
2nd Report - Review and Assessment Stage 3	Completion of report End 1999 Consultation to be arranged	2 way exchange - participation	As above + Member briefings Technical briefings? (invited guests) Public meetings? Displays - roving to libraries & LAs?, Environment Week awareness campaign?	As above
Follow-on Stages 1 Designating Air Quality Management Areas (AQMAs) 2 Further Review in AQMAs 3 Action Plans	All to be completed by 2005	Participation vital	As above (all?)	As above