



Climate plan

Draft report



FOREWORD

“Climate change is a major issue for everyone. Local steps to tackle the problems are likely to require the partners to alter their own use of energy, water and other resources. A local strategy for climate change will be developed to plan and coordinate actions to reduce global warming.” (South Cambridgeshire District Council’s Community Strategy)

There is widespread consensus within the international scientific community that human-induced climate change caused by increased carbon dioxide and greenhouse gas emissions arising from the burning of fossil fuels is well underway. Here in South Cambridgeshire, the ongoing and future impacts of climate change upon local residents, the natural environment as well as the built environment and associated infrastructure (health, transport, community and leisure facilities) are potentially far-reaching. Climate change is also an important issue requiring close consideration in relation to the new large-scale developments which will further increase the district’s population and intensify demand for energy and natural resources over the coming decades.

This climate plan marks the start of an important and ongoing process involving different service areas within the Council. Its overarching objective is to reduce the Council’s emissions in line with the Kyoto Protocol. In terms of ensuring the plan’s successful progression, the Council accepts the importance of adopting a properly coordinated, fully integrated policy approach. The plan will also continue to actively entail partnership working with all sections of the community and, most importantly, engaging with local residents.

Signed by Chief Exec and Council Leader

CONTENTS

Section	Page
1. INTRODUCTION	4
– Global Context	5
– National Context	7
– Regional Context	9
– South Cambridgeshire	9
2. DEVISING THE PLAN	12
– Public Consultation	12
– Community Strategy	12
– European Climate Menu Programme	12
– Service Plans 2005/06	14
3. KEY THEMES	15
1. Climate Policy and Cooperation	15
2. Council-Owned Buildings, Installations and Infrastructure Facilities	19
3. Urban Development and Land-Use Planning	21
4. Housing	24
5. Transport	27
6. Sustainable Energy	28
7. Biodiversity, Agriculture and the Natural Environment	30
4. REFERENCES	33
5. ADDITIONAL INFORMATION	34
6. NOTES	35

SECTION 1: INTRODUCTION

“We know the problems ... We know that if climate change is not stopped, all parts of the world will suffer. Some will even be destroyed, and we know the solution – sustainable development.” (Tony Blair, speech to the World Summit on Sustainable Development” quoted in “Securing the Future”).

1. South Cambridgeshire District Council has accepted the need to address the issue of climate change by preparing a climate plan. The plan, which has resulted from various consultations and ongoing partnership working activities, has helped identify actions intended to reduce the district’s greenhouse gas emissions and ensure it is capable of adapting to climate change over the medium to long term. The Council also acknowledges climate change is not a ‘stand alone’ issue rather it is one which concerns all Council services and activities.

2. The plan essentially marks the start of a process that will enable the Council to plan ahead and identify enduring, timely and cost-effective measures for dealing with climate change. In summary the plan has been devised in accordance with:
 - (i) The Council’s signature of the Nottingham Declaration for Climate Change which committed the authority to meeting the Kyoto targets for reducing carbon dioxide and greenhouse gas emissions by 12.5% between 2008 and 2012;
 - (ii) A public survey undertaken in May 2003;
 - (iii) The Council’s involvement in the European Climate Menu Programme which resulted in the mainstreaming of climate change across each service;
 - (iv) The Council’s Community Strategy published in early 2005 which identified climate change as a key theme;
 - (v) A series of climate change-related policy actions identified in the Council’s Service Plans for 2005/06;
 - (vi) A Member feedback session held in September 2005.

The Global Context

3. There is now compelling evidence that a rapid human-induced warming is occurring which is set to have serious implications for the stability of the climate on which much of the life on the planet depends. Levels of carbon dioxide in the Earth's atmosphere have increased by 31% since 1750 and the current 'unprecedented' rate of increase has probably not been exceeded for the past 20 million years. The Hadley Centre for Climate Prediction and Research confidently predicts a temperature rise of 2.4 degrees centigrade by 2100. Whereas the International Panel for Climate Change (IPCC) recently reported that temperature rises in the northern hemisphere during the 20th Century are "likely to be the largest of any century during the past 1,000 years". The IPCC also reported that:

- Over the past 50 years, night-time temperatures have increased over many land areas at about twice the rate of day-time temperatures;
- More intense precipitation events are being observed over the Northern Hemisphere;
- Glaciers in non-polar regions are retreating and there has been a 40% reduction in Arctic Sea ice since 1950;
- Sea levels increased by about 20 cm between 1900 and 2000.

Box 1: Defining Climate Change

Establishing definitive proof about human-induced climate change has been akin to 'tuning in' a television; having detected a clear signal, scientists were able to 'tune out' the distracting 'white noise' caused by other variables within the Earth's complex, fluctuating climate system. As a result, the occurrence of human-induced climate change is effectively proven and it is now accepted that it is being caused by the release of greenhouse gases comprising carbon dioxide, methane, nitrous oxide, ozone, halocarbons, perfluorocarbons and sulphur hexafluoride into the atmosphere. Essentially, these emissions are disrupting the Earth's 'radiative balance' by trapping more of the energy released from the Earth's surface within the atmosphere thus preventing the energy from being released into outer space.

Although some greenhouse gases are released naturally (e.g. via decaying vegetation, cattle emissions), it is the continued release of human-induced greenhouse emissions, primarily caused by the burning of fossil fuels, that is causing increasing concern. This is demonstrated by the fact that carbon dioxide levels in the Earth's atmosphere have increased by approximately 100 parts per million over the past century. This resulted in a global temperature increase of 0.6 degrees centigrade over the same period. In addition, recent research which considered the effect of temperature changes in the oceans, produced evidence indicating that over the past forty years, energy sufficient to power California for a period of 200,000 years has been released into the oceans in the form of human-induced greenhouse gas emissions.

Further research has indicated that the burning of fossil fuels is also responsible for much of the air-borne pollution comprising tiny particles of soot and other pollutants around which water droplets form. This has led to an increase in water droplets reflecting light back into space which in turn has reduced the amount of sunlight reaching the Earth's surface. A growing number of scientists believe this phenomenon (known as 'global dimming'), is having a cooling effect that may well be 'masking' the full extent of climate change. Consequently, efforts to reduce air pollution may well accelerate climate change and result in even higher temperatures (possibly an increase of 10 degrees centigrade) by the end of this century.

4. The following graph provided by the IPCC shows the projected global temperature increases in accordance with various modelling scenarios. Significantly, all the scenario models predict a temperature increase of at least 2 degrees centigrade by 2100.

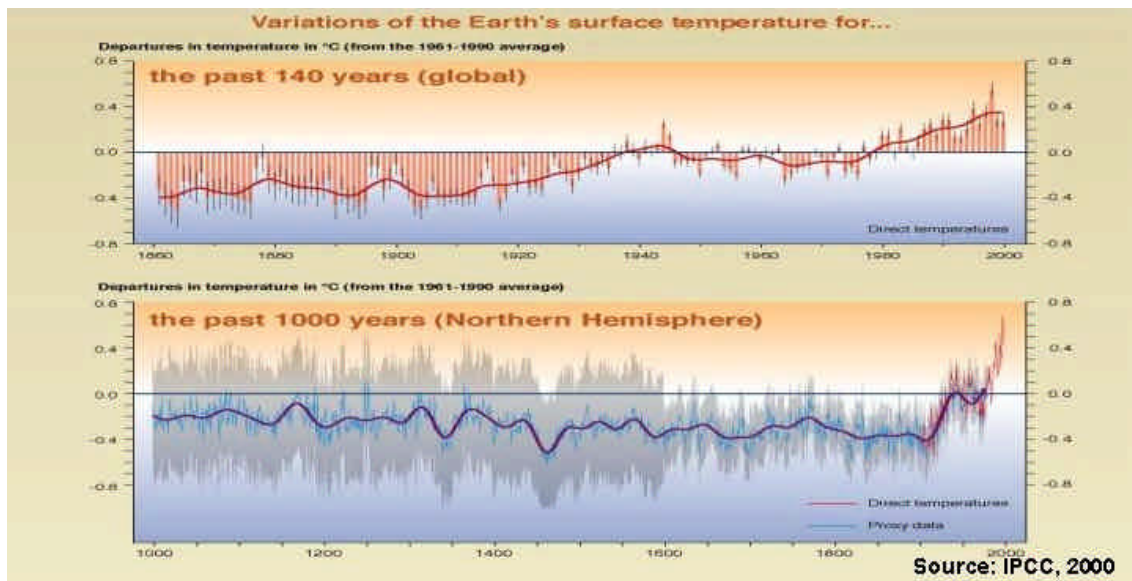


Figure 1 – variations of the Earth's surface - 1000 to 2100 here

5. The potential global impacts of climate change include freshwater shortages, increased frequency of storm events and associated flooding, heat waves and droughts. Widespread flora and fauna extinctions are also predicted as habitats change faster than species can adapt, and the World Health Organisation has warned that the health of millions could be threatened by increases in malaria, water-borne disease and malnutrition.
6. The international community's response towards climate change requires mitigation and adaptation.
- **Mitigation** concerns the reduction of carbon and greenhouse gas emissions in order to minimise the future impact of climate change, for example, encouraging the generation and use of renewable energy.
 - **Adaptation** (sometimes referred to climate protection) acknowledges some degree of climate change will occur irrespective of mitigation and that it is therefore necessary to prepare for its impacts. Essentially, adaptation concerns implementing policies and actions that will ensure countries, regions, districts and individual organisations have sufficient capacity to respond and adapt to the impacts of climate change. Examples of adaptation include the design and construction of buildings with deeper and/or raised foundations to prevent subsidence and minimise the risk of flooding and which are capable of providing a comfortable environment during higher temperatures without the need for mechanical cooling and air-conditioning.

7. The need for mitigation measures was initially identified by the United Nation's International Panel on Climate Change (IPCC) in 1988. This resulted in the IPCC's Framework Convention on Climate Change in 1992. Signatories to the framework (which by 1996 had been ratified by 149 countries including the UK) were committed to reducing their carbon dioxide and other greenhouse gases to 1990 levels by 2000. However, subsequent climate change models indicated further emission reductions were required and this culminated in the Kyoto Protocol becoming effective in February 2005. Under the protocol, signatories are required to reduce their greenhouse emissions by 5.2% below 1990 levels over the period 2008 - 2012.

The National Context

8. The UK Climate Impacts Programme (UKCIP) provides a detailed assessment of the likely impact of climate change here in the UK. Significantly, the UK's growing season has extended by one month over the past 100 years and the 1990s was the hottest decade on record since data was first collected in 1861. Other ongoing impacts include the onset of warmer, wetter winters and prolonged, hotter, drier summers. More extreme weather events are also predicted, for example, storms and intense precipitation both of which are likely to result in damage to buildings and associated infrastructure caused by high winds, flooding and subsidence.
9. The effects of higher temperatures were experienced during the summer of 2003 when 30,000 people died as a direct result of heat-related illness in France. In anticipation of hotter summers in the UK, the NHS has issued a public guide containing advice on how to deal with a heatwave. The guide explains how extreme heat is a serious threat to human health by causing heatstroke marked by the onset of severe headaches, nausea, an intense thirst and possible loss of consciousness. The NHS advice is to try and stay cool, drink lots of water and stay inside where temperatures are cooler. Such guidance further underlines the importance of ensuring buildings are designed to cope with higher temperatures.
10. In terms of flooding, the DTI's Foresight Programme¹ considered the growing risks of flooding from rivers and coastal flooding over the next 30 to 100 years in the UK. Significantly, many of these impacts are likely to be experienced within the next 20 to 30 years with 90% occurring before 2050. The study calculated 3.6 million people are likely to be at risk of flooding by the 2080s unless action is taken now to mitigate greenhouse emissions and investment is made in additional adaptation measures. In addition, an estimated 900,000 people will be at risk of intra-urban flooding caused by flash floods overwhelming urban drains.

11. The DTI study indicated that unless remedial actions are taken now and properly considered in relation to the number of large-scale developments planned for the South East and Eastern England, the eventual costs could be as high as £80 billion. Accordingly, the Institutional Investors Group on Climate Change identified climate change as “arguably the biggest environmental risk” now facing many organisations and that they need to adopt a "proactive response to what is one of the most significant environmental threats to investors, business, and society.”
12. The various impacts associated with climate change are of particular importance given 900,000 new homes and associated infrastructure (community facilities, shops, schools, hospitals, new roads and communication links etc.) are scheduled to be built across the UK within the next 20 to 30 years. Building these new homes coupled with a rising population will also require high levels of energy in terms of their construction and subsequent use.
13. Currently, the UK’s total carbon dioxide emissions comprise 536 million tonnes per annum. The Government has accepted that, unless these emissions are reduced, the consequences are likely to prove costly in human, financial and environmental terms. It is therefore seeking to manage the transition from a ‘high carbon’ to a ‘low carbon’ economy by cutting the UK’s emissions by 60% as compared with 1990 levels by 2050. This will be achieved by ensuring improved levels of resource efficiency are reduced across all sectors, promoting cleaner, more energy efficient technologies, encouraging the more extensive generation of renewable energy and ensuring new developments are built in accordance with high standards of sustainability. The Government is also reforming planning policy, for example, Planning Policy Statements (PPS) 1 and 22. PPS 1, which identifies climate change as an overarching issue requiring important consideration, states local development plans should ‘address the causes and potential impacts of climate change.’ Whilst PPS 22 requires regional planning bodies and local planning authorities to adhere to a set of key principles in their approach towards planning for renewable energy.
14. In 2001, the Department of Environment, Food and Rural Affairs (DEFRA) published its own climate change guidance for local authorities² together with a companion guide for Chief Executives. These guides identified the role of local authorities in terms their being service providers, corporate managers and community leaders. A study³ undertaken by the Local Government Association (LGA) similarly indicated local government has a “huge potential role” to play in terms of dealing with climate change. The study highlighted the fact that local authorities have a ‘major impact’ both in terms of their in-house activities (e.g. energy, waste, staff travel and purchasing) and the external services “they provide and the influence they can exercise through planning, transport, waste, energy efficiency services and advice and

housing.” The LGA also stressed the ‘real difference’, local authorities can make by reducing their emissions and linking their actions to wider national policy initiatives.

The Regional Context

15. Climate change is set to have a significant impact across the East of England given much of the region is low-lying and slowly sinking due to geological processes. The region contains a number of important habitats including ancient woodlands, wetlands, wet grasslands, chalk grasslands, lowland heaths, saltmarshes and mudflats. Eastern England is the driest region in the UK and soil erosion presents a particular problem in the Fens. Much of the region is therefore particularly vulnerable to both aspects of climate change - warmer, wetter winters and prolonged hotter drier summers. Consequently, there will be an increased risk of coastal flooding due to a continued rise in sea levels combined with a greater intensity and frequency of winter rainfall and associated flooding from rivers and streams. Whereas, more extensive summer periods are likely to increase the risk of water shortages and drought conditions.
16. It is accepted that climate change will impact across all sectors in the Eastern region. Currently much of the region has high-grade agricultural land although food production has been superseded (in economic terms) by various growth industries including pharmaceuticals, electronics, IT, telecommunications and transport. The region also contains a number of growth areas in proximity to Cambridge, Bedford, Peterborough and Norwich. As a result, a further 478,000 homes are destined to be built in Eastern England within the next 30 to 40 years.

South Cambridgeshire

17. With a current population of 130,000 people living in 101 parishes spread across a 900 square km area, South Cambridgeshire remains a mostly rural district that surrounds the city of Cambridge. 80% of the Cambridge Sub-Region lies within South Cambridgeshire where a number of new large-scale developments are scheduled including Northstowe, Cambridge East and the Southern Fringe. The new growth will result in 20,000 new homes being built and an estimated additional 26,000 people living in the district by 2016.
18. South Cambridgeshire is currently responsible for the annual emission of 2.49 million tonnes CO₂ equivalent. Figure 2 (overleaf) provides a full breakdown for each sector in percentage terms. 76% of the district’s emissions derive from the energy used in terms of domestic, transport, business and waste. This equates to 10.8 tonnes per person in the district. The inclusion of emissions from electricity production generated outside the district (but which is used by people living in South Cambridgeshire), increases the average to 15.3 tonnes per person.

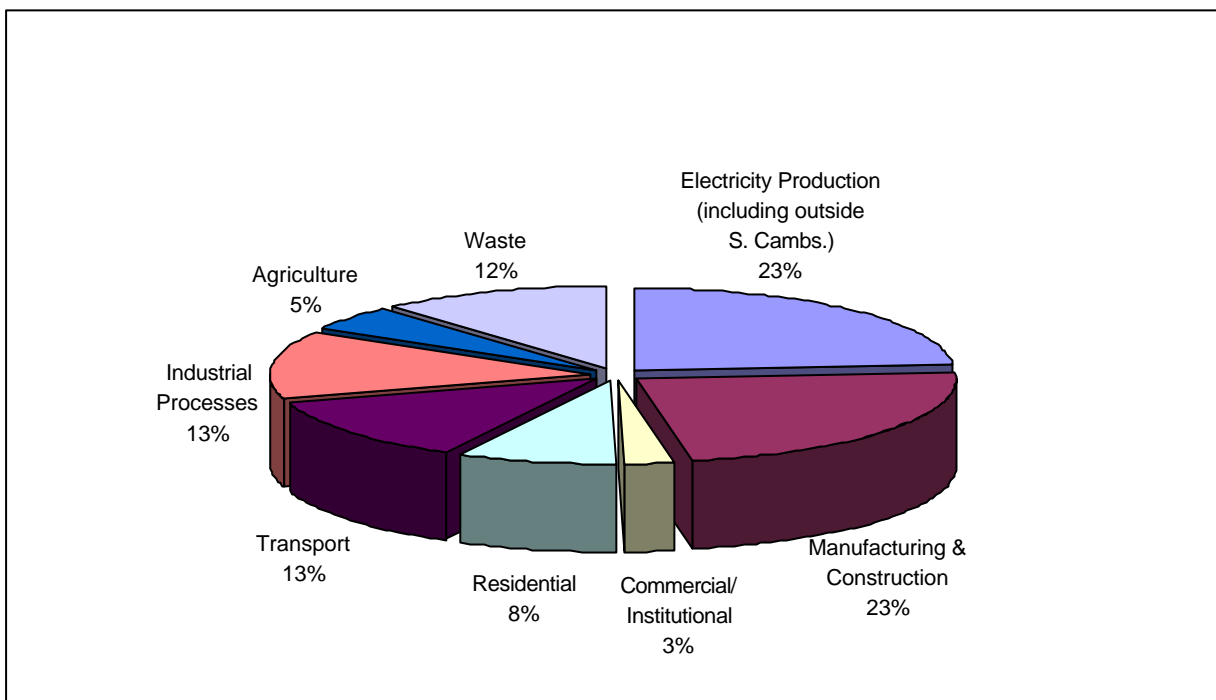


Figure 2: CO2 (Equivalent) Emissions for South Cambridgeshire (SERC, 2002)

19. Situated within the East of England's northern heartland, South Cambridgeshire is one of the areas most under pressure from new development as it includes London's commuter belt plus other towns and centres of economic growth (e.g. Cambridge). Whilst the area is less prone to the coastal impact of climate change it is increasingly likely to experience reduced soil moisture in summer and autumn and higher annual and seasonal temperatures. The district also faces the prospect of future water shortages, flooding and subsidence (especially in those areas comprising clay-based soils) and the increased prevalence of higher diurnal and nocturnal temperatures.
20. The risk of flooding is particularly likely in some areas given a significant part of the District is low-lying and situated within an indicative floodplain. In the south of the District, areas within the floodplain are mainly restricted to areas immediately adjacent to the River Rhee, Cam and Granta, and Bourn Brook. Whereas in the north of the District, the River Great Ouse floodplain covers a wider area. The impact of flooding upon the built environment and the local drainage systems needs careful consideration. In particular, managing and containing surface water may well require some innovative solutions, for example, the installation of grey water recycling, rainwater harvesting and sustainable urban drainage systems in new developments.
21. Crucially, the cumulative result of new developments, a rising population, an increasing use of available energy, water and other natural resources and growing traffic levels and congestion within South Cambridgeshire will be even higher greenhouse emissions unless

remedial actions are taken. The Council is therefore seeking to pursue a fully integrated 'joined up' policy approach towards dealing with climate change. This will require an appropriate mix of mitigation and adaptation policies, for example:

- i. Ensuring existing and new developments are climate proofed and capable of sustaining more extreme and unpredictable weather events;
- ii. Ensuring existing and new developments have low greenhouse emissions, are energy and resource efficient and utilise renewable energy;
- iii. Communicating and raising public awareness and responsibility for climate change;
- iv. Developing a purchasing and procurement policy that will ensure the council sources products and services that have reduced greenhouse emissions;
- v. Reducing the greenhouse emissions of council-owned housing stock through energy efficiency measures and the installation of renewable energy systems;
- vi. Encouraging organisations through Section 106 Agreements to implement Travel for Work Plans that promote sustainable forms of travel and commuting and thereby reduce greenhouse emissions across the district;
- vii. Supporting schemes that encourage the provision of locally grown food and produce;
- viii. Addressing climate change in the council's risk management strategy and ensuring the council develops sufficient capacity to deal with climate change in terms of 'high impact' events, for example, flooding on the scale of recent events at Boscastle and Carlisle.

Public Consultation

22. A public survey regarding climate change was jointly undertaken with Cambridgeshire County Council during May 2003. In summary, respondents believed the Council should:
- Take the lead in terms of waste minimisation and recycling;
 - Devise new policies for dealing with air pollution;
 - Assess the full impact of climate change upon the district;
 - Raise public awareness and understanding of climate change;
 - Promote more sustainable forms of travel and commuting and support measures to improve public transport;
 - Encourage the installation of water meters and ensure improved levels of water conservation in new developments;
 - Improve the energy efficiency of existing and new housing developments;
 - Introduce new policies to promote the generation and use of renewable energy across the district;
 - Ensure flood prevention and mitigation schemes are implemented;
 - Support schemes that promote locally grown food and produce;
 - Protect the district's biodiversity and natural environment.

South Cambridgeshire's Community Strategy

23. Through its Local Strategic Partnership, the Council has developed a Community Strategy which contains a series of actions to help improve the quality of life across the district. The strategy commits the Council to providing a lead on tackling climate change by working in partnership with other organisations with the aim of delivering measures to tackle climate change. As part of this objective, a key stakeholder group (South Cambridgeshire's Environment Group) has been formed to help address the issues and monitor the progress of the Community Strategy. A copy of the Community Strategy is available at www.scambs.gov.uk

European Climate Menu Programme

24. South Cambridgeshire District Council's recent participation in the two-year European Climate Menu Programme (ECM) involved partnership working with local authorities in Germany, the Netherlands, Spain, Poland and Sweden. This enabled the partners to develop

a Europe-wide version of the Climate Menu currently used by over 250 local authorities in the Netherlands. The programme facilitated the exchange of ideas and information together with the identification of best practice in relation to each partners climate plan.

Box 2: European Climate Menu Programme (www.climatemenu.org)

The following organisations participated in the programme:

- | | |
|------------------|--|
| 1. Netherlands | Ecofys BV(and international affiliates) |
| 2. Spain | Municipality Cardedeu |
| 3. Bulgaria | Energy Agency Sofena |
| 4. Italy | Energy Agency Potenza |
| 5. Sweden | Miljöaktion Värmland |
| 6. Netherlands | Municipality Maastricht |
| 7. Germany | Municipality Gelsenkirchen |
| 8. Great Britain | South Cambridgeshire District Council |
| 9. Poland | City of Gdansk |
| 10. Poland | Municipality Pniewy |
| 11. Global | Climate Alliance |

The Council's internal consultation process applied a customised version of climate menu that comprised the following themes:

- i. Climate Policy & Co-operation;
- ii. Municipal Buildings, Installations & Infrastructure Facilities
- iii. Urban Development & Land Use Planning
- iv. Housing
- v. Transport
- vi. Sustainable Energy Supply
- vii. Biodiversity including Agriculture and Forestry

Each of the above themes were reviewed in terms of the Council's existing policies and the Continuous Improvement Plan for each department. One of the following policy responses were then selected for each of the actions contained in the above themes:

- Preparation:** Requiring a preliminary engagement with the issue;
- Active:** Requiring some additional effort;
- Advanced:** Undertaking additional measures distinct from those actions already being pursued by other local authorities;
- Innovative:** Adopting and implementing a highly innovative policy approach.

The final step involved the identification of the necessary timescales for implementing the policy responses namely:

- i. **Currently implementing** policies and actions;
- ii. Future policies/actions scheduled **within a five-year period**;
- iii. Future policies/actions scheduled within a five-year period **subject to further consultation and agreement**.

Service Plans 2005/06

25. The Council publishes an annual Performance Plan based upon individual Service Plans. In 2005/06 a series of climate-related actions were 'mainstreamed' into the Service Plans. These actions are identified under each the following key themes.

SECTION 3: KEY THEMES

Theme 1: Climate Policy and Co-Operation

The Council will:

- CP 1** Work in partnership with national and locally based organisations including other local authorities across Cambridgeshire;
- CP 2** Support the newly formed Cambridgeshire and Peterborough Climate Change Forum;
- CP 3** Progress a new communications initiative designed to raise awareness and change public attitudes and behaviour towards climate change;
- CP 4** Consider making its own CRed pledge and joining the forthcoming Cambridgeshire-wide CRed initiatives intended to raise awareness and understanding of climate change amongst organisations and individuals.

26. As a signatory to the Nottingham Declaration for Climate Change, the Council is formally committed towards:
- i. Complying with the Kyoto target of a 12.5% reduction in greenhouse emissions by 2012 as compared with 1990 levels;
 - ii. Undertaking a community consultation on climate change;
 - iii. Producing a climate strategy.
27. The following maps depicting CO₂ (Equivalent) emissions for different sectors in South Cambridgeshire derive from data made available by the National Atmospheric Inventory of Emissions (www.naei.gov.uk). For each sector, those parts of the district shown in red depict the highest level of emissions. The maps are used to help illustrate which sectors have the highest emissions.

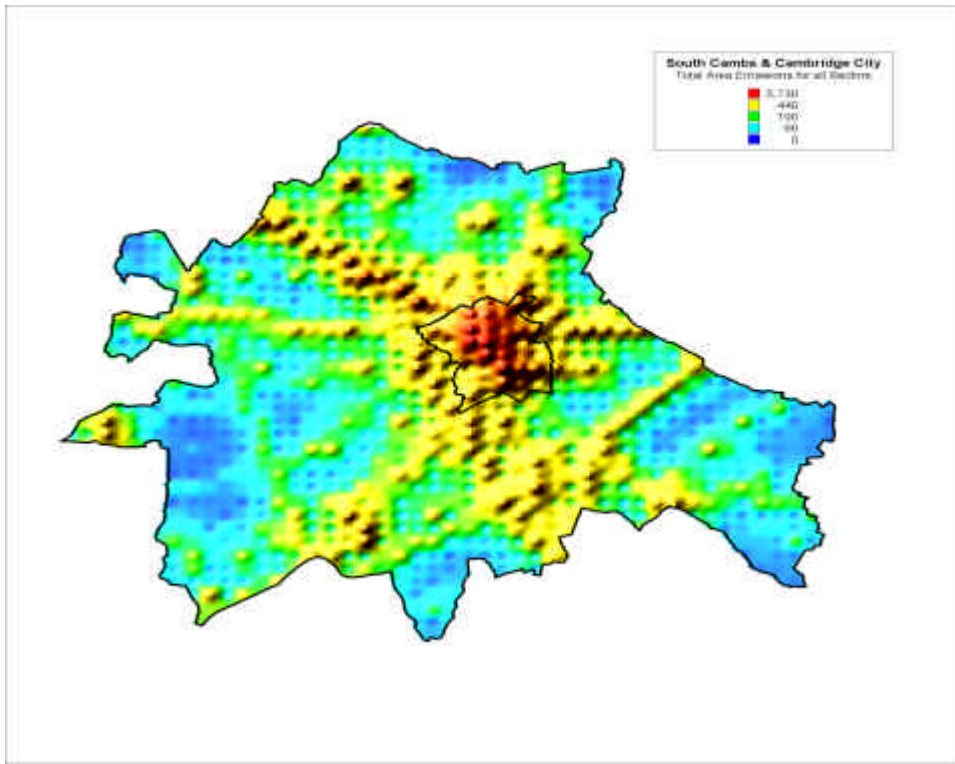


Figure 3 Total emissions - all

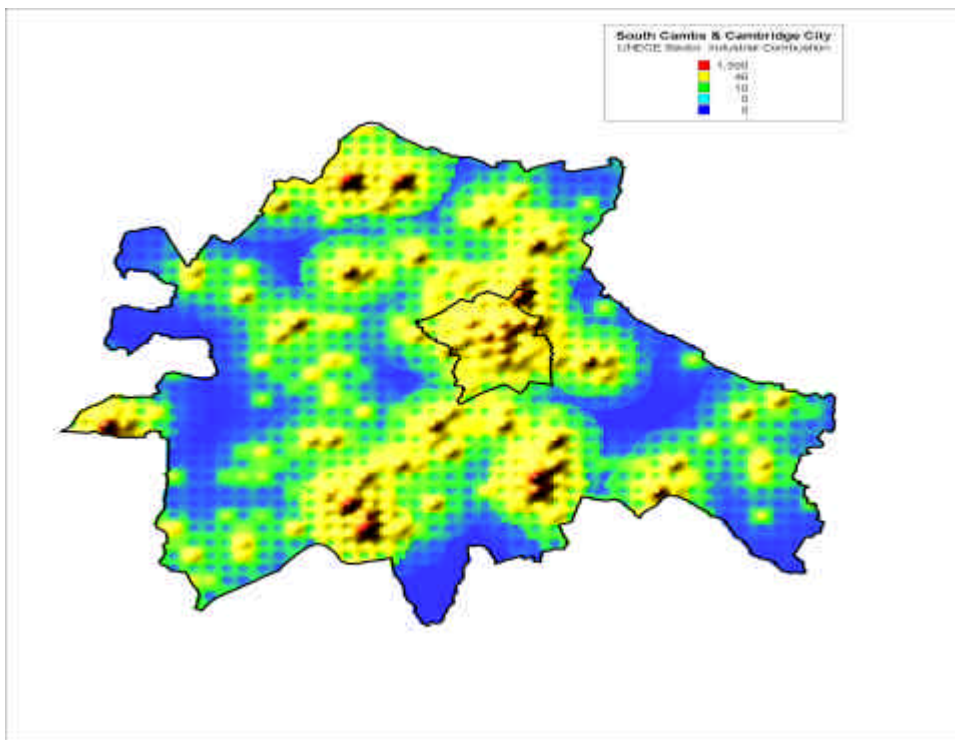


Figure 4 Industrial combustion

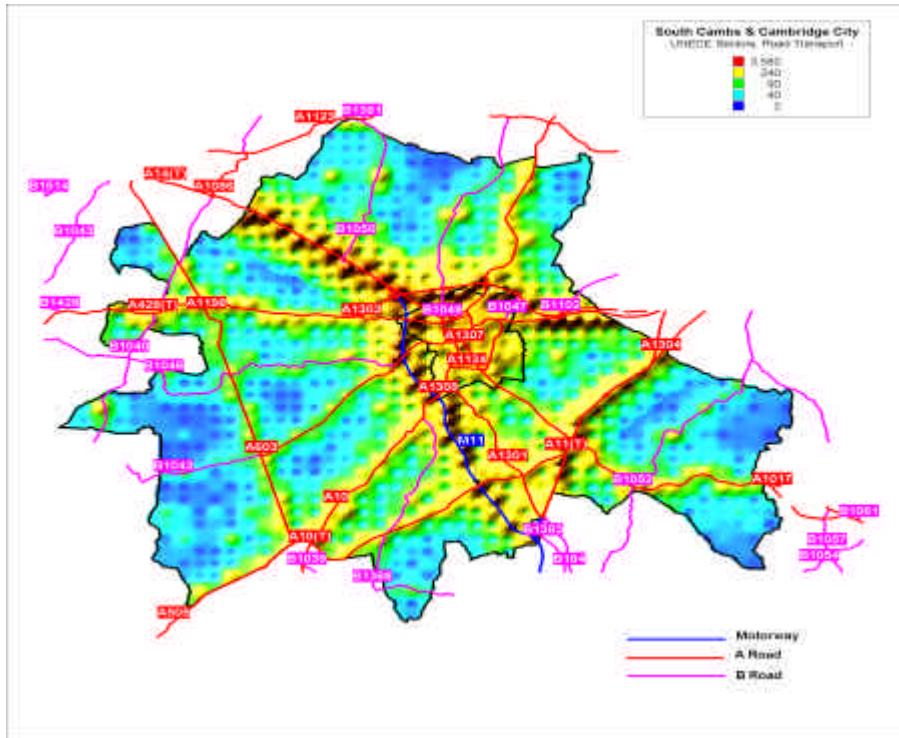


Figure 5 Road transport

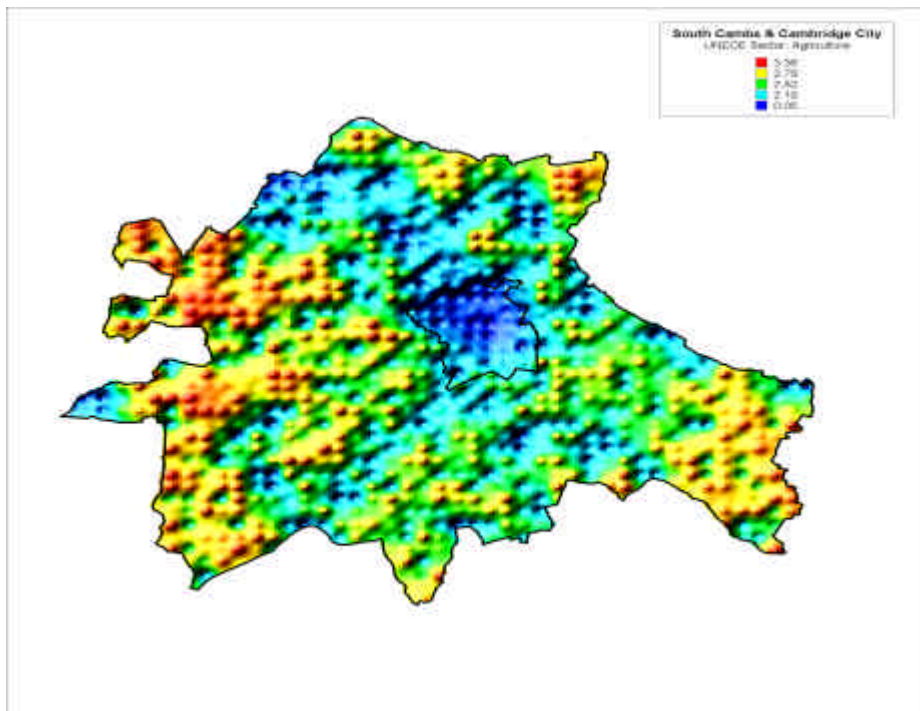


Figure 6 Agriculture

28. The climate plan was also subject to consultation including a cross-service workshop and partnership working with the Council's European partners in the ECM as well as Cambridgeshire County Council. The Council is also a member of the Cambridgeshire and Peterborough Climate Change Forum – a cross-sectoral partnership comprising public and private sector organisations seeking to reduce their greenhouse emissions.
29. The Council is currently considering whether to be involved in the launch of the Cambridgeshire-wide CRed initiative. If progressed, the Council would be required to help resource the new initiative and work alongside the other partners in terms of leading by example. The University of East Anglia (UEA), which first initiated CRed (www.cred-uk.org) will provide the necessary expertise and guide each partner in terms of their making their own CRed pledge. The Cambridgeshire CRed initiative will comprise a series of awareness raising and promotional events intended to raise awareness and understanding of climate change amongst organisations and individuals. The other potential partners include Cambridge City Council, Cambridgeshire County Council, the British Antarctic Survey, East Cambridgeshire District Council, the Cambridge Sustainable City Reference Group and the newly formed Cambridgeshire and Peterborough Climate Change Partnership.
30. To date, various climate change-related articles have appeared in the Council's quarterly "South Cambs Magazine" distributed to 57,000 households in South Cambridgeshire. The articles have helped to raise public awareness of climate change and its likely impacts across the district. The Council will continue to use this successful medium to communicate the issue of climate change to its residents. Future articles will include the publicising and promotion of:
- i. The Council's Climate Plan;
 - ii. A public information campaign concerning the ongoing and future impacts of climate upon public health and hygiene;
 - iii. Public arts events that will help raise the profile of climate change through arts theatre in villages.
31. The Council's Policy & Performance Unit will review the option of introducing new Climate Change Performance Indicators designed to help identify the carbon and greenhouse emissions arising from new large-scale developments within the district. The Unit also propose to assess the feasibility of producing a bi-annual review and update of the Council's climate plan.

32. The Council proposes to work in partnership with Cambridgeshire County Council to develop cross-sectoral datasets that will enable more accurate measurement of the district's energy use and carbon and greenhouse gas emissions. It will also assess the feasibility of producing a bi-annual review and update of the Council's climate plan.

Theme 2: Council-Owned Buildings, Installations & Infrastructure Facilities

The Council will:

- CP 5 Identify opportunities for ensuring a higher % of council-owned properties are made more energy efficient and achieve a higher SAP rating;**
- CP 6 Devise new reporting and data collection procedures to enable the calculation of the housing stock's annual greenhouse gas emissions;**
- CP 7 Review the procurement of verifiably sustainable building materials and services;**
- CP 8 Review the installation of energy efficient heating systems e.g. low Nox condensing boilers;**
- CP 9 Review the pilot installation of solar hot water systems on 3 council-owned properties;**
- CP 10 Raise tenant awareness of energy efficiency;**
- CP 11 Ensure the forthcoming purchasing & procurement review takes account of climate change and sustainability issues;**
- CP 12 Assess the exposure of council-owned properties to climate-related events e.g. flooding, subsidence, storm damage;**
- CP 13 Consider the wider provision of recycling facilities at the Council offices.**

33. Nationally, local authorities own 25% of all housing stock. They therefore have a significant role to play in terms of improving their energy efficiency and reducing greenhouse emissions. Such action will help ensure homes have lower fuel bills and benefit householders financially. Insulating the properties also provides local employment opportunities for businesses that either manufacture and/or install the insulation and related products.
34. The Council has taken some important steps towards reducing its own carbon and greenhouse gas emissions heralded by its occupation of a new, award winning, low energy 'excellent' BREEAM rated building at Cambourne Business Park in May 2004. The new building, which is highly sustainable in terms of its design and construction, has a number of important energy and resource saving features including solar louvres (designed to reduce excessive solar gain), a solar hot water system, a 36,000 litre rainwater harvesting system and a central atrium to balance light levels, summer heat gain and winter heat loss.



Top left solar panels, top right louvres,
bottom left rainwater storage tank, bottom right ventilation system

35. The Council's social housing stock contains approximately 6,000 properties. The Council's annual maintenance and refurbishment programme, will continue to identify opportunities for ensuring a higher percentage of the properties are made more energy efficient and achieve a higher SAP rating. In addition, Shire Homes is seeking to devise new internal reporting and data collection procedures that will help the Council identify its annual greenhouse emissions arising from Council owned properties. Other actions include:

- Reviewing the procurement of verifiably sustainable building materials and services;
- Monitoring and reviewing the installation of energy efficient heating systems, specifically condensing boilers;
- Reviewing, co-ordinating and recording the planned programme elements that contribute to the HECA assessment and SAP rating for the Council;
- Monitoring the benefits gained from the installation of solar panels on the three houses affected with a view to deciding whether or not to extend this to more council houses;

- Raising tenant awareness of energy efficiency measures and working with suppliers to distribute energy efficient light bulbs free of charge.
36. The Council will take account of the Government's commitment⁴ to make the UK's public sector a leader on sustainable procurement within the European Union by 2009. In response, the Council will review existing guidelines concerning the purchase of low energy/ low emission products and services and ensure its forthcoming purchasing and procurement review takes account of climate change and sustainability issues. Reviews will also be undertaken to:
- i. Assess the exposure of council owned properties and facilities to climate related events including storm damage, flooding and subsidence;
 - ii. Consider the wider provision of recycling facilities at the Council offices in Cambourne and the Waterbeach depot.

Theme 3: Urban Development & Land Use Planning

The Council will:

CP 14 Assist in the production of environmental statements and produce an air quality strategy for the district;

CP 15 Consider the declaration of low emission zones and report on the outcome of a detailed air quality assessment.

37. Given new buildings are typically designed to last between fifty to one hundred years, there is a growing recognition that new developments will need to be properly 'climate proofed'. Failure to do so could result in higher insurance premiums and maintenance costs. It may also affect the future saleability of buildings prone to the risk of higher temperatures, flooding and subsidence and which have high ongoing energy costs. Moreover, the cost of remedying the situation could prove costly in terms of 'retro fitting'. By contrast, 'factoring in' climate change from the outset in terms of planning, design, construction, maintenance and refurbishment is likely to prove cost effective especially over the medium to long term. Typical actions include:
- Dealing with high temperatures in buildings by ensuring they are capable of being cooled using high thermal mass, passive cooling and mechanical ventilation rather than energy-intensive air conditioning;
 - Promoting the use of green roofs or roof gardens which offset the impacts of climate change, most especially higher summer temperatures and increased winter rainfall;
 - Using passive solar design methods, for example, planting deciduous trees near buildings which provide shading in the summer period and allow solar gain in the winter;

- Installing water efficient fittings and appliances and grey water and rainwater harvesting systems all of which serve to significantly reduce water consumption.
38. Climate change is also set to impact upon the transport, water/sewerage and energy infrastructures. Likely impacts include:
- Roads and rails being washed away or damaged by flooding, high winds causing obstructions and twisted/buckled roads/rails caused by subsidence;
 - Rivers and sewers being overwhelmed resulting in contamination and increased risk to public health, water shortages due to increased demand and expensive damage to pipework caused by subsidence;
 - Power stations and substation transformers in coastal areas and floodplains being damaged by flooding, power lines blown down by high winds and the increased use of energy-intensive appliances (i.e. air conditioning) causing outages and overheating;
39. Although there is purportedly a low level of awareness of understanding about the expected impacts of climate change upon the built environment, perceptions are starting to change rapidly (CIRIA, 2005⁵). The Government is consulting on a draft code for sustainable buildings during 2005 and a new guide (“Climate Change Adaptation in the New Growth Areas”) is shortly due for publication by DEFRA.
40. The Office of the Deputy Prime Minister (ODPM) has also recently issued planning advice in relation to climate change⁶. The guide stresses the need for all those involved in the building of new developments (i.e. planners, architects, developers and housebuilders) to enter into a dialogue. South Cambridgeshire District Council is responding to this new agenda and is working in partnership with Cambridgeshire Horizons and other local authorities, developers and representatives from the house-building industry. The partnership working is also helping to facilitate an exchange of ideas and information concerning the merits of building low emission sustainable communities at Northstowe, Cambridge East and other future locations.
41. With regard to Northstowe, a dedicated planning team has been established and an Area Action Plan together with a Sustainability Report has been prepared for the new settlement. These will be used to guide the process and support the formal Section 106 Agreement. The Council has also commissioned a scoping study (together with Cambridgeshire Horizons and the Energy Saving Trust) to assess the merits of establishing a sustainable energy partnership with the overarching objective of ensuring Northstowe will be a low carbon development. The study will review the financial, legal, technological and organisational

implications of delivering energy efficiency, renewable energy and community heat and power systems to up to 9000 new homes. The final report, due in September 2005, will include a detailed business plan for progressing the partnership.

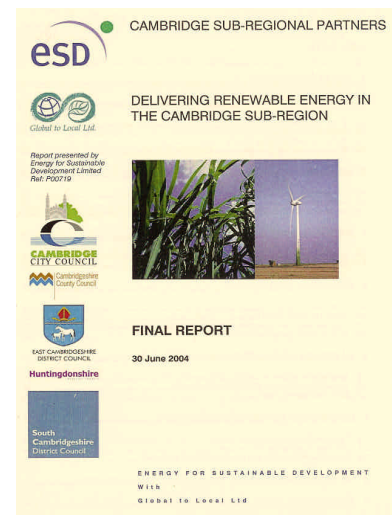
Box 3: Northstowe sustainable energy partnership scoping study

Having received funding from the Energy Saving Trust and Cambridgeshire Horizons, South Cambridgeshire District Council, together with other partner organisations recently commissioned a scoping study to assess the potential for establishing a Sustainable Energy Partnership for Northstowe, a new town development comprising approximately 8000 new homes, shops and community facilities.

The overarching objective of the proposed partnership will be to ensure Northstowe is a 'low carbon' development. This will be achieved through the delivery of investment in energy efficiency as part of an integrated sustainable energy system that will also include low carbon generation and energy distribution. The study will also examine the potential for delivering major energy efficiency improvements in New Towns and other growth areas in the Cambridge Sub-Region.

42. The Council accepts the associated impacts of all new developments (i.e. noise, air quality, gravel extraction, cement production and transportation) raise important environmental & public health issues. Environmental Health Officers will therefore assist in the production of environmental statements and produce an air quality strategy for the district. The new strategy will also consider the declaration of low emission zones (e.g. Northstowe) and report on the outcome of a detailed air quality assessment.

43. The Council's forthcoming Local Development Framework (LDF) takes account of the recent Cambridge sub-regional study "Delivering Renewable Energy in the Cambridge Sub-Region" which provided a series of recommendations designed to promote the wider generation and use of renewable energy across the Cambridge sub-region. The report's findings (approved by Cabinet September 2004) recommended the Council develop new policies to encourage the generation of renewable energy across the district. The LDF contains a policy which will require all new developments over 10 dwellings to generate 10% of its energy from renewable sources.



Renewable study

44. The Council has recently issued a Sustainability Design Guide which is intended to aid those involved in the planning, design and construction of new developments. The guides are aimed at encouraging the wider application of sustainability design principles in order to

deliver sustainable, high quality development within the district. In addition, Planning Policy will put forward appropriate actions for inclusion in the Council's Climate Plan and develop planning policies to maximise energy saving/generation measures in the Local Development Framework.

45. The Council's Building Control team will deliver the new Energy Conservation Building Regulations in respect of the Building Act 1984 and Energy Performance of Buildings Directive 2003. The implementation of policies to respond to climate change will depend on the policies included in the LDF. The Development Control service will be looking to implement these policies effectively when the LDF is in place.
46. The Council has recently negotiated an innovation fund to promote the use of renewable energy at Arbury Park, a new 900 home development on the northern fringe of Cambridge. The fund will be used to support the installation of micro and macro renewable technologies (e.g. solar hot water systems, solar PV, small-scale wind) in the development. Funding has also been agreed to help establish a Community Car Scheme. The fund will make an important contribution in terms of reducing carbon emissions in the new development.
47. Following the introduction of kerbside collections of recycled material using green wheeled bins and green boxes, the Council increased its recycling rates from 28.3% in 2003/04 to 46.8% in 2004/05. This resulted in the recycling of 209 tonnes of textiles, 3,715 tonnes of glass, 465 tonnes of cans, 16,285 tonnes of compost, 60 tonnes of books, 78 tonnes of plastic and 5,536 tonnes of paper. In previous years the bulk of these materials would have gone into landfill. The disposal of organic wastes also produces methane – a potent greenhouse gas. By contrast, recycling reduces the amount of land needed for landfill and it contributes towards achieving improved levels of resource efficiency. This is important as extending the use of materials helps maximise the energy originally used to manufacture and distribute them.

Theme 4: Housing

The Council will:

CP 16 Roll out the new Energy Conservation Building Regulations including the Building Act 1984 and Energy Performance of Buildings Directive 2003.

48. The UK's 25 million homes comprise the oldest and least efficient housing stocks in Europe. A recent report⁷ recommended some of the least efficient homes (3.2 million) be demolished by 2050 and that the bulk of the remaining stock be made more energy efficient. The report

calculated 10 million new homes will need to be built by 2050 and that these will need to be designed to take account of rising temperatures and keep cool in summer by shading, insulation and thermal mass without the need for air conditioning. Failure to do so, the report observed “could lead to air conditioning in 29% of homes in southern England by 2050 - blowing a hole through the whole plan.”⁸

49. Encouraging householders to become more energy efficient and reduce their emissions will have a significant impact in enabling the UK to meet its climate change targets. Indeed, there is considerable scope for improving energy efficiency in UK households⁹. This is illustrated by the fact that insulating approximately 4.5 million homes between 2005 and 2010 would save 1.2 million tonnes of carbon dioxide emissions and the fitting of 160 million energy-efficient light-bulbs would save a further 0.5 tonnes of carbon emissions. Moreover, currently out of the UK’s 17.5 million homes with cavity walls, only 6 million have installed cavity wall insulation.

50. In pursuit of these objectives, the Government introduced the Energy Efficiency Commitment (EEC) in 2002 which places an obligation of gas and electricity suppliers to achieve targets for improvements to household energy efficiency. In April 2005, EEC2 (which replaced EEC) was first introduced and will run until 2008. EEC2 represents a doubling in scale of EEC and is part of a £3 million campaign launched by the Energy Saving Trust which is seeking to promote energy efficiency in the home. In addition, England’s Warmfront scheme is designed to address fuel poverty among households most vulnerable to cold-related ill health and the Buildings Regulations have been revised in 2005 to further raise the standard required for new and replacement boilers to the level of the most efficient boiler types - A and B rated condensing boilers. The Government is also seeking agreement with other EU countries to influence and speed the delivery of higher energy efficiency standards for household products via the Market Transformation Programme. Finally, the Government is funding the work of the Energy Savings Trust and the Carbon Trust which both promote energy efficiency to households, businesses and public sector organisations.

51. A recent study undertaken on behalf of the Eastern Region’s Home Energy Officers Network (HEON-E) revealed “a very distinct and dramatic step change in domestic carbon emissions will be required if the East of England region domestic sector is to achieve the carbon emission reduction goal detailed in the Government’s 2003 Energy White Paper.”¹⁰ The report calculated the average carbon emission from each household must decrease from 1.68 tonnes of carbon per annum in 1996 (the HECA baseline year) to 0.5 tonnes of carbon p.a. in 2050 equivalent to an overall reduction of 70%. This equates to a corresponding pro-

rata decrease in the region's total emissions of 2.25 million tonnes per annum which equals a reduction of 62%.

52. Meeting the regional target will require a combination of energy efficiency measures and “a very significant contribution from renewable and alternative measures.”¹¹ These include solar water heating, solar PV, micro and macro combined heat and power (CHP), individual domestic wind turbines, large-scale onshore and offshore wind, biomass and energy crops.
53. Within South Cambridgeshire, the energy efficiency of much of the existing housing stock is likewise poor, resulting in high fuel bills and greenhouse gas emissions. The Council has responded by promoting various energy efficiency schemes including those provided by British Gas, HEAT Cambridgeshire, Warmfront and ENACT. The Council's Community Services are also investigating the provision of a grants policy for Community buildings which will provide grants will be given to buildings using sustainable materials or renewable energy.
54. In terms of exemplar projects within the district, the Circle 33 Housing Group have recently built an award winning low energy social housing scheme at Cambourne. The sixteen houses have various low energy measures including whole house heat recovery systems, high levels of insulation, solar hot water panels, high efficiency condensing boilers, photovoltaic panels which will provide approximately 30% of the total electricity requirements for the inhabitant. In addition, all the building materials are sustainably sourced and water butts have been provided to aid water conservation. All the measures combined will save an estimated 5 tonnes of carbon dioxide emissions annually.



Circle 33 housing

Theme 5: Transport

The Council will:

CP 17 Support Cambridgeshire's Travel for Work Partnership;

CP 18 Require the submission of Travel for Work Plan for planning applications which have significant planning implications;

CP 19 Manage its own Travel for Work Plan;

CP 20 Calculate energy and emissions data for council-owned vehicles.

55. There are now 30 million vehicles on Britain's roads - already the most congested in Europe. As a result, transport emissions rose by 2.5% in 2004 and, overall, are 10% above 1990 levels. Emissions from new vehicles in the UK are also failing to meet the EU target of 140g/km. Moreover, cars sold in the UK have larger engine sizes and are less fuel-efficient than the European average. Within the UK average carbon emissions from new cars fell from 189.9g/km in 1997 to 174.2g/km due mostly to the increased sale of diesel vehicles. There has also been a switch towards more fuel efficient smaller cars. Despite these trends, the UK is likely to fall short of the EU target for 2008/09. In order to comply average fuel efficiency would need to improve at a rate 11 times faster than that achieved in 2004¹².
56. Road transport is a significant source of air pollution and greenhouse emissions in South Cambridgeshire (316,385 tonnes CO₂ equivalent in 2002). Between 1992 and 2002 motor vehicle traffic in Cambridgeshire grew by 28%. The traffic flow is also 70% higher than the national average on trunk roads, and 35% higher on principle roads. There is a high level of commuting by car across the district caused by the rural nature of the District which has increased dependency on car travel. This has resulted in significant congestion at peak times into and out of Cambridge. Around 70% of people travel to work by car, compared to 7% using public transport. Commuting also takes place over longer distances than the national average (almost twice the national average across Cambridgeshire). Evidence reveals many people are increasingly 'leapfrogging' South Cambridgeshire, and commuting to Cambridge from Huntingdonshire, East Cambridgeshire, and Fenland. There is also significant commuting from South Cambridgeshire to London.
57. The A14 north of Cambridge is under particular pressure as it performs three functions; an east west route linking the east coast ports to the M1/M6; a north/south route linking the M11 with the A1; and carrying local traffic to and from Cambridge. The Cambridge to Huntingdon Multi Modal Study recommended improvements to the A14, including a local feeder road, traffic calming in adjoining villages, traffic demand management measures in Cambridge, and a rapid transit link along the former Cambridge to St Ives railway line.

58. The government is seeking to reduce traffic emissions and congestion by developing a fully integrated transport system. This includes Planning Policy Guidance 13 (PPG 13) which promotes the need for effective traffic management measures (e.g. Travel for Work Plans) at both a national, regional, local and organisational level. PPG 13 states “the way we travel and the continued growth in road traffic is damaging our towns, harming our countryside and contributing to global warming.” The guidance also encourages planning authorities to pursue policies that will help reduce the need to travel “especially by car” by introducing parking policies that “promote sustainable transport choices and reduce reliance on the car for work and other journeys.”
59. The Council’s Local Plan takes account of PPG 13 and similarly identifies the need to “reduce the need to travel, particularly by private car” by encouraging the wider use of sustainable modes of transport such as public transport, walking and cycling and supporting measures to limit the growth of road traffic. The Council also holds Steering Group Membership of Cambridgeshire’s Travel for Work Partnership which promotes sustainable forms of travel and commuting including car sharing, home/tele working, public transport and walking and cycling to work.
60. With regard to PPG 13, the Council has issued a number of Section 106 agreements requiring the submission of Travel for Work Plans for planning applications which have significant transport implications. The plans are intended to reduce and restrict single occupancy car use and promote alternative forms of travel and commuting including car sharing, cycling, public transport, flexible working arrangements and home/tele working.
61. The Council has devised its own Travel for Work Plan (managed by a cross-departmental steering group) which applies to both staff and Members and contains a series of actions and targets for reducing single occupancy car use by promoting more sustainable forms of travel. The plan also features a home working policy, a pool bike scheme and the Council’s promotion of Camshare – a secure online web facility which enables staff to carshare. Business mileages are used to calculate each department’s annual carbon emissions and the Council participates in various national events (i.e. Bike Week European Mobility Day). Annual energy and emissions data for council owned vehicles will also be collected.

Theme 6: Sustainable Energy Supply

The Council will:

CP 21 Review the option of purchasing 100% renewable energy for all council-owned properties.

62. In 2003, the Royal Commission on Environmental Pollution (RCEP) called for a “transformation in the use of energy in the UK to counter climate change” in order to achieve the UK’s carbon emissions reduction target of 60% by 2050¹³. The RCEP also called for a clear programme of energy demand reduction and the development of alternative energy sources including the setting of “longer-term targets for expanding the contribution from renewable sources (comprising wind, biomass, energy crops, solar thermal and solar photovoltaic) well beyond 10% of electricity supplies to cover a much larger share of primary energy demand.”¹⁴

63. The Government’s response towards reducing the UK’s emissions and producing more renewable energy is represented by its goal to generate 10% of the UK’s electricity from renewable energy sources by 2010 and to aspire to a doubling of that target to 20% by 2020. Separate targets for 2010 and 2020 have also been set for each part of the UK including the Eastern Region which has a 14% renewables target for 2010 rising to 44% by 2020. These targets are contained in the Regional Spatial Strategy (RSS) 14 which requires Local Development Documents to contain policies that will presume in favour of, and emphasise the wider sustainable development benefits associated with energy efficiency and renewable energy. Meeting these targets by generating clean, low emission renewable energy will bring a number of benefits to the region, for example, achieving the 44% target will save sixteen million tonnes of carbon emissions and help create 14,000 new jobs.

64. Significantly, these targets have been set at a time when South Cambridgeshire is set to experience unprecedented growth in housing and new development with 20,000 new homes by 2016 coupled with an increased population of 26,000. This will further intensify demand for energy in the district. In recognition of the need to contribute towards the region’s renewables target, the Council helped commission a study¹⁵ which assessed the potential for various forms of renewable energy generation across the Cambridge Sub-Region.

65. In terms of its own energy consumption, 100% of the electricity used in the Council’s building at Cambourne is now renewably sourced. Renewable energy comprises wave, wind, tidal and solar and power generated from Combined Heat and Power, biomass and landfill. During 2005/06 the Council will review the option of purchasing/sourcing 100% renewable energy for all council owned properties.

Theme 7: Biodiversity, Agriculture and the Natural Environment

The Council will:

CP 22 Support partnership working with local communities by creating and managing village greenspaces including new tree and hedge planting;

CP 23 Support a range of ongoing projects e.g. Coton Countryside Reserve, the 'Forest of Cambridgeshire' and the Wicken Fen extension;

CP 24 Support local food initiatives.

66. Climate change is having an increasingly significant impact upon the Earth's ecosystems which is expected to result in a growing number of extinctions in the coming decades. Evidence of climate change is also apparent nearly everywhere, for example, extended growing seasons, species displacement and the rapid depletion of the amphibian population. Such findings caused the International Panel on Climate Change to conclude "recent regional climate changes, particularly temperature increases, have already affected many physical and biological systems"¹⁶. The studies also further underline the need for an immediate reduction in carbon and greenhouse gas emissions if the worst impacts of climate change are to be avoided.
67. Closer to home, the ACCELERATES¹⁷ and the MONARCH research programmes are seeking to identify the likely impacts of climate change upon the natural environment and biological resources. The latter study is also endeavouring to progress scientific understanding in terms of predicting climate change upon biodiversity and determine which additional climate change factors will influence the distribution and capacity of biodiversity.
68. At a regional level, English Nature produced a set of habitat biodiversity targets for the East of England. In addition, the Cambridgeshire and Peterborough Biodiversity Partnership published a Biodiversity Action Plan (BAP) in 2000. Both documents list the species and habitats deemed to be ecological value and requiring conservation and protection measures. The latter document also informs the Council's own BAP which similarly identifies 'priority' species and habitats including various rivers and streams, woodland, meadows and pastures, barn owls and house sparrows. These documents will be taken into consideration as the Council's climate plan is progressed.
69. Biodiversity within South Cambridgeshire also faces a number of additional challenges posed by an increasing human population, new large-scale housing developments and associated land take. These activities are placing a further strain upon the district's natural environment and its natural resources including water availability. A recent study identified the need for

“biodiversity to be protected from development and enhanced where opportunities arise”¹⁸. The report also stressed that ensuring there is ‘sufficient water supply’ presents a “major problem” especially when there is an increased water demand combined with periods of low rainfall. In recognition of these emerging pressures and the threat posed to the district’s biodiversity in terms of increased habitat fragmentation restricting the movement of different species, the Council has drafted a biodiversity strategy which provides a vision for the district up until 2008.

70. A workshop involving the South Cambridgeshire Environment Group (SCEG) sought to identify and assess climate change impacts upon the district’s natural environment and biodiversity. In summary, by undertaking a SWOT analysis the following issues were identified:

- i* **Strengths.** The district contains some important chalklands and ancient woodlands which provide important public amenities. There is also the possibility of extending the woodlands at Hayley Wood and Eversden/Wimpole.
- ii* **Weaknesses.** Much of the district is already dry and there is a continued lack of national Government guidance and enforcement to address this problem. Available water resources are also being stretched and prolonged summer droughts will threaten the chalkland areas and result in higher concentrations. The growing of cereal crops will require higher water useage as temperatures increase and dry conditions will result in some soil erosion. Conversely, certain watercourses such as the River Cam near Hauxton and the Bourn and Bin Brooks in particular, are prone to flooding. There is also an increased risk of ‘intra urban run-off’ caused by extensive land take for new developments.
- iii* **Opportunities.** There is considerable scope for creating new opportunities for habitat creation, more partnership working with external stakeholders (e.g. the farming community, NFU etc.) and securing Section 106 Agreements to allow for greater protection and enhancement of the natural environment and biodiversity. The provision of wildlife corridors (including green and brown roofs) and water saving measures (e.g. water butts and greywater and rainwater harvesting systems) in new developments will also help offset the impacts of climate change.
- iv* **Threats.** Climate change will increasingly cause habitat and species fragmentation resulting in isolated, restricted and trapped natural habitats. As a result certain species may not be able to move between sites. There is also the associated risk of diseases (i.e. fungal), species displacement, increased species competition, crop failure and an accelerating decline/loss of habitats and species across the district.

71. With regard to climate change and the future of agriculture in the Eastern Region and in South Cambridgeshire, a variety of new crops are likely to be grown including grapes, sunflowers and soya beans. These will replace the wheat and barley currently grown across much of the region. The new crops would be grown as a result of the changing climate bringing hotter, drier summers and a shortage of water. Further risks include rising sea levels, an increased influx of salt water into inland areas, more flooding most especially on low lying areas, summer droughts and the increased occurrence of diseases which could threaten human health and harm crops. On the plus side, climate change could enable farmers to diversify and grow a range of new crops, for example, grapes and even olives.

72. The Council is also involved in partnership working with the local community by creating and managing “Village Greenspaces”, securing new tree and hedge planting and accessible wildlife spaces. It is also working at a strategic level on a range of projects including the Coton Countryside Reserve; the “Forest of South Cambridgeshire” and the extension to Wicken Fen. Other actions include developing proposals to deliver major new public open space provision and wildlife habitat associated with the new town and major extensions to the city.

73. The Council has provided financial support for local food producers who sell locally grown food and produce to residents living in South Cambridgeshire. These schemes are helping to reduce the need for imported food which has a higher environmental impact in terms of distance travelled and associated greenhouse gas emissions; They also help generate income for local farmers and producers and help strengthen the local economy.

SECTION 4: REFERENCES

Insert additional references ...

Cambridge Sub-Region Partners "Delivering Renewable Energy in the Cambridge Sub-Region",
June 2004

DTI's Foresight Programme "Foresight Future Flooding" Report, 1994

SECTION 5: ADDITIONAL INFORMATION

“Living with Climate Change in the East of England” see www.eera.gov.uk/Documents/About%20EERA/Policy/Environment/living%20with%20climate%20change%20summary.pdf

“Changing Climate, Changing Behaviour” see www.est.org.uk/aboutest/publications/corporate/

“The Climate is Changing: time to get ready” see www.environmentagency.gov.uk/yourenv/639312/641094/642206/642375/1003468/?lang=_e

BBC News Online http://newsvote.bbc.co.uk/1/hi/in_depth/sci_tech/2004/climate_change/default.stm

Hadley Centre for Climate Protection and Research www.metoffice.gov.uk/research/hadleycentre/

Intergovernmental Panel on Climate Change www.ipcc.ch

Local Government Association www.lga.gov.uk

UK Climate Impacts Programme www.ukcip.org.uk

SECTION 6: NOTES

¹ DTI's Foresight Programme "Foresight Future Flooding" Report, 2004

² DEFRA, "Community Leadership and Climate Change – Guidance for Local Authorities", 2001.

³ Local Government Association, "Climate Change – a survey of local authorities.", November 2002

⁴ "Securing the Future", 2005

⁵ CIRIA, "Climate Change Risks in Building – An Introduction", 2005

⁶ ODPM, "Planning Response to Climate Change – Advice on Better Practice" (September, 2004)

⁷ Environmental Change Institute. University of Oxford, "Lower Carbon Futures - The 40% House Project", 2005

⁸ Environmental Change Institute. University of Oxford, "Lower Carbon Futures - The 40% House Project", 2005

⁹ DEFRA Consultation Paper, "Review of the UK Climate Change Programme", 2004

¹⁰ National Energy Services Ltd., "Eastern (East of England) Region Home Energy Conservation Act (HECA) Research", April 2005

¹¹ National Energy Services Ltd., "Eastern (East of England) Region Home Energy Conservation Act (HECA) Research", April 2005

¹² Society of Motor Manufacturers and Traders, 2005 - www.smmmt.co.uk

¹³ Royal Commission on Environmental Pollution "Energy – The Changing Climate", HMSO, February 2003.

¹⁴ Royal Commission on Environmental Pollution "Energy – The Changing Climate", HMSO, February 2003.

¹⁵ Cambridge Sub-Region partners "Delivering Renewable Energy in the Cambridge Sub-Region", Energy for Sustainable Development and Global to Local, 2004.

¹⁶ IPCC, 2001.

¹⁷ Assessing Climate Change Effects on Land Use and Ecosystems.

¹⁸ Levitt-Thriewel, "RSSI 4 for the East of England – Report of the Strategic Environmental Assessment", October 2004