October 2016

# Paper 1: Climate Change

## Gloucester City Plan

Background Topic Paper for Policy Development

Gloucester City Council

*Transforming Your City*

## Introduction

Climate change is the greatest long-term challenge facing human development. It is acknowledged that spatial planning can make a major contribution to tackling climate change by shaping new and existing developments in ways that reduce carbon dioxide emissions and positively build community resilience to problems such as weather events and flood risk. Planning has the potential to deliver the right development in the right place in a fair and sustainable way.

## Internationally & Nationally

Climate change is a global issue requiring a global response that requires initiation at the national, local and personal level.

### United Nations Climate Change Conference 2015

The United Nations Climate Change Conference in Paris December 2015 Article 2 committed signatories to the following:

**A.** Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change;

**B.** Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;

**C.** Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

The agreement recognises the role of non-Party stakeholders in addressing climate change, including cities, other subnational authorities, civil society, the private sector and others. They are invited to;

- scale up their efforts and support actions to reduce emissions;
- build resilience and decrease vulnerability to the adverse effects of climate change;
- uphold and promote regional and international cooperation.

Subject to ratification this will be legally binding and subject to 5 yearly review with parties preparing and maintaining nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures with the aim of achieving the objectives (article 4).

It is likely that once ratified the Paris agreement will have implications for national policy making. These changes will be taken into account through any future plan review process.

### The Climate Change Act 2008

The Climate Change Act 2008 establishes a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% below the 1990 levels by 2050. To drive progress and set the UK on a pathway towards this target, the Act introduced a system of

carbon budgets including a target that the annual equivalent of the carbon budget for the period including 2020 is at least 34% lower than 1990. To achieve this target policy changes were made to the Planning Act.

**The Planning and Compulsory Purchase Act**

Local planning authorities are bound by the legal duty in Section 19 of the 2004 Planning and Compulsory Purchase Act, as amended by the 2008 Planning Act, to ensure that, taken as a whole, plan policy contributes to the mitigation of and adaptation to climate change. This outcome-focused duty on local planning clearly signals the priority to be given to climate change in plan-making.

The built and natural environment, the quality of design, the minimisation of waste, the use of energy and the generation of energy all have a planning element that can be positively influenced by good policy making.

**National Planning Policy Framework (NPPF)**

Chapter 10 of the NPPF concerns meeting the challenge of climate change, flooding and coastal change. It points out that planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change and supporting the delivery of renewable and low carbon energy and associated infrastructure. This, it states is central to the economic, social and environmental dimensions of sustainable development. (Paragraph 93, NPPF)

It is clear that we should adopt pro-active strategies to mitigate and adapt to climate change and support the move to a low carbon future by planning for development in locations to reduce greenhouse gas emissions, and to support energy efficiency improvements.

To help the increase in renewables and low carbon energy LPAs should have a positive strategy to promote renewable and low carbon technology and have policies that maximise development while ensuring adverse impacts are addressed. There is strong support for community led initiatives and decentralised energy production linking development to generation.

Local Plans should take account of climate change over the long term especially with regard to flooding (see Flooding topic paper).

**National Planning Practice Guidance (NPPG)**

The NPPG gives practical examples of how to mitigate against climate change through the reduction of emissions by:

- Reducing the need to travel and providing for sustainable transport
- Providing opportunities for renewable and low carbon energy technologies
- Providing opportunities for decentralised energy and heating
- Promoting low carbon design approaches to reduce energy consumption in buildings, such as passive solar design

It also gives examples of how best to adapt to a changing climate:

- Considering future climate risks when allocating development sites to ensure risks are understood over the development's lifetime.
- Considering the impact of and promoting design responses to flood risk and coastal change.
- Considering availability of water and water infrastructure for the lifetime of the development and design responses to promote water efficiency and protect water quality.
- Promoting adaptation approaches in design policies for developments and the public realm.
- When preparing local plans and taking planning decisions local planning authorities should pay particular attention to integrating adaptation and mitigation approaches and looking for 'win-win' solutions that will support sustainable development. This could be achieved in a variety of ways, for example;
  - by maximising summer cooling through natural ventilation in buildings and avoiding solar gain;
  - through district heating networks that include tri-generation (combined cooling, heat and power); or
  - through the provision of multi-functional green infrastructure, which can reduce urban heat islands, manage flooding and help species adapt to climate change – as well as contributing to a pleasant environment which encourages people to walk and cycle. (See Natural Environment Topic Paper).

## Locally

### Joint Core Strategy

One of the Strategic Objectives of the Submission Version JCS is:

**Strategic Objective 6 – Meeting the challenges of climate change**

This Objective aims to:

Make the fullest contribution possible to the mitigation of, and adaptation to, climate change and the transition to a low-carbon economy, by;

- Making the best use of land by maximising the use of previously-developed land and encouraging higher-density developments in central locations, whilst promoting food security by protecting the highest-grade agricultural land and allotments.
- Reducing the use of fossil fuels by increasing self-containment of settlements through mixed-use developments and providing new developments in sustainable locations.
- In partnership with others, promoting the efficient use of natural resources, the re-use and recycling of resources, the production and consumption of renewable energy and the decentralisation of energy generation.
- Encouraging and facilitating the development of low- and zero-carbon energy development and implementation of Sustainable Drainage Systems (SUDS) in accordance with existing standards and, where appropriate, exceeding them.
- Ensuring that new development is located in areas which are not liable to flooding, that existing infrastructure is adequately protected from the threat of flooding, and that existing flood defences are protected and enhanced.

Strategic Objective 7 also refers to reducing the need to travel by, and the reliance on the car through the promotion of sustainable transport.

Sustainable development policies within the JCS concern amongst other matters the need to curb carbon emissions and adapt to climate change.

**Policy SD4**

- Development proposals will demonstrate how they contribute to the aims of sustainability by increasing energy efficiency, minimising waste and avoiding the unnecessary pollution if air, harm to the water environment, and combination of land or interference in other natural systems. In doing so, proposals (including changes to existing buildings) will be expected to achieve and, where viable, exceed applicable national standards.
- All development will be expected to be adaptable to climate change in respect of the design, layout, siting, orientation and function of both buildings and associated external spaces. Proposals must demonstrate that development is designed to use water efficiently, will not adversely affect water quality, and will not hinder the ability of a water body to meet the requirements of the Water Framework Directive.
- Major planning applications must be submitted with an Energy Statement that clearly indicates the methods used to calculate predicted annual energy demand and associated annual Carbon Dioxide (CO2) emissions.
- Where viable, such developments should secure 10% or more of their energy demand from decentralised (on or near site) and renewable or low carbon energy sources (including the use of combined heat and power where appropriate).

## Local challenges/ issues in Gloucester

The Gloucester Climate Change Strategy 2010 identifies that even the lower emission (best case) scenarios will result in the following climate changes for the local region:

- Winters up to 42% wetter.
- More frequent flooding.
- More frequent droughts.
- Worsening summer air pollution.
- More storms and gales and the resulting damage to property.
- Loss of wildlife habitats and species.
- Social unrest through increased migration.
- Higher average temperatures will create a greater need for cooling in offices and homes along with a higher probability of extreme temperatures that could threaten the health of many people.
- Drier summers, that will put a greater strain on water resources and wildlife and put pressure on farmers to diversify crops.
- Rising sea levels that will lead to more coastal erosion and a greater risk of flooding.
- Increased heat stress to the elderly and infirm (the 2003 heat wave in France killed 14,500 people). The weather conditions causing such events will become very frequent.

The high emissions scenario (essentially business as usual) is even more stark, predicting that by 2080 a maximum increase in temperature of 6.9 degrees C. This would leave much of North Africa and Southern Europe uninhabitable.

Gloucester will clearly need to 'do its bit' and help deliver what are challenging international targets. While new development over the plan period will only be a small fraction of the built environment it is important to get it right. Low carbon techniques used on new build will also help reduce the cost of retrofitting the existing building stock as new technologies become mature and more cost effective.

While an urban area such as Gloucester may not be as well endowed with renewable energy potential as some more rural districts, there are always opportunities as has been shown in Gloucester and other urban areas with regard heat pumps, solar and low head hydro. The close proximity of the Canal/River too many development sites in particular has the potential to provide heating and cooling for new build and retrofit. While biomass has potential, being predominantly on the gas grid currently means this may be a niche market. Hempsted land fill and Netheridge sewage works currently produce methane for electricity generation. Exploiting this energy to the full including exploiting waste heat should be maximised.

Resilience will be a key issue, flooding is dealt with elsewhere but we need to be alive to other weather extremes especially the heat island effect. Gloucester will need to maintain and enhance its tree stock and generally encourage a greener urban fabric with everything from green roofs to public open space. This will also have positive implications for biodiversity.
The County Council in 2010 for published Renewable Energy Study for the County. This was for the purpose of providing an evidence base to help develop Local Plan Policy for renewable energy infrastructure provision on potential strategy development sites in Gloucestershire to help contribute to a reduction in CO2 emissions in line with Climate Change Targets.

A Key Development Principle of the City Plan Part 1 states that: "To ensure that development minimizes its impact on climate change through design and meeting building standards. The protection and enhancement of flood plains and their natural environment will be key as well as improving air quality, reducing traffic congestion and encouraging less use of the car, while adequate parking in new development will be provided. Development will be promoted that encourages greater use of walking, cycling and public transport through the integration of homes, jobs and services."

## Responses to Previous Consultations

Below is a selection of responses from residents and key stakeholders to previous City Plan consultations:

### City Plan Scope Consultation Responses

*"Woodland creation is especially important for both landscape and biodiversity (helping habitats become more robust to adapt to climate change, buffering and extending fragmented ancient woodland), for quality of life and climate change (amenity & recreation, public health, flood amelioration, urban cooling) and for the local economy (timber and wood fuel markets)"*

*"Gloucester is no island. The UK produces less than 2/3 of the food that we consume and95% of our national food production is oil based. In the future the shortage of oil production will make conventional farming and imports more expensive. Therefore, it*

*seems wise to plan ahead and provide more allotment and community agriculture sites so that the local population can contribute towards our food needs and help Gloucester to be more resilient."*

*"New developments should have high green credentials and building standards which the local authority should enforce."*

**City Plan Part 1 – Context and Key Development Principles Consultation Document Responses**

*"We welcome climate changes inclusion within principle 11. However, we would take this opportunity to stress how important a principle tackling climate change is. It is a principle that should permeate throughout the policy base. The Plan should seek to reduce dependency on fossil fuels, reduce carbon emissions, secure sustainable construction methods, aim for highest standards possible and embed resilience and adaptation to climate change. We would advocate retrofitting existing buildings with energy efficient measures. (As examples, the Forest of Dean Core Strategy has included such a policy and Uttlesford District Council have a policy in their local plan for retrofitting when undertaking house extensions)."*

*"There are a number of ways in which trees offer a particular and cost effective answer to adaptation: - Urban heat island: Trees and woods can reduce the impact of the urban heat island effect; which occurs when hard surfaces in summer act as giant storage heaters, absorbing heat during the day and releasing"*

"*The Woodland Trust believes that tree planting, even in constricted urban areas, is especially important because of the unique ability of woodland to deliver across a wide range of benefits. These include for both landscape and biodiversity (helping habitats become more robust to adapt to climate change, buffering and aesthetic public realm benefits), for quality of life and climate change (amenity & recreation, public health, flood amelioration, urban cooling, green infrastructure) and for the local economy (timber, wood fuel and 'fruiting' markets). In a letter to all Local Authorities calling for support for the Government's National Tree Planting Campaign ('The Big Tree Plant'), the Environment Minister Caroline Spelman has extolled the many virtues of trees: 'Trees offer so many benefits to our citizens. They capture carbon and hold soils together, prevent flooding and help control our climate…'"*

*"Throughout the UK winter is predicted to be wetter and summers drier and there is also a predicted increase in the frequency of very heavy rainfall. Trees can reduce the likelihood of surface water flooding, when rain water overwhelms the local drainage system, by regulating the rate at which rainfall reaches the ground and contributes to run off. Slowing the flow increases the possibility of infiltration and the ability of engineered drains to take away any excess water."*

**City Plan Part 2 – Places, Sites, City Centre Strategy Consultation Responses**

No specific comments received on climate change.

## City Plan Policy

All applications for development will be assessed against JCS Policy: Sustainable Design and Construction.

In addition, to ensure that the renewable energy potential of the river and canal are utilised and not sterilised by inappropriate development, and to promote efficiency and climate change mitigation, the following local policies will apply:

**Policy F8: Potential of River and Canal**

***Development that exploits the renewable energy potential of the River and Canal will generally be supported. Any development that could potentially disrupt or indeed sterilise this potential will be resisted.***

**Policy F9: Efficiency Measures**

***In exceptional cases major applications where no form of renewable/low carbon generation is practical or viable then the extra insulation and efficiency measures may be appropriate.***

**Policy F10: Mitigation through Planting and SUDS**

***Development will be expected to help mitigate against the impacts of climate change. In this respect development that provides for trees, green roofs, green open space and Sustainable Urban Drainage Systems will be encouraged and supported.***

**Justification/ background**

*Climate change is an issue that will impact upon us all. Gloucester needs to develop in a manner that minimizes the emission of green house gasses and in a manner that is resilient to the impacts of climate change. There are very tough international targets that need to be met. As climate change becomes more of an issue then it is likely that the pressure to do more will increase. The recent UN conference on climate change will only add impetus.*

*Policy SD4 of the JCS provides a strong policy position on these issues and applicants will need to demonstrate that they have met the requirements of the policy.*

*Buildings currently account for about a third of the UKs greenhouse gas emissions when coupled with transport between them then land use planning clearly has a significant role to play. Roofs on buildings are a vast un-exploited resource that in many cases be utilised for energy generation every effort should be exploited to ensure this resource is not wasted. Also as renewable technologies often require planning permission then the authority needs to be supportive where landscape and other constraints are not overly prohibitive.*

*With regard to resilience, flooding is perhaps the most obvious concern and this is dealt with under a separate paper. However other impacts of climate change such as extreme temperatures should also be a factor. Trees and other greenery for example are shown to have a significant cooling effect on urban areas. Trees green walls and green roofs for example should be supported. Research from Manchester University for examples suggests that trees in urban areas can reduce summer heat levels by as much as 4 degrees centigrade.*

## Objectives met

- JCS - Strategic objective 6, 7 and 9.
- City Plan Part 1 Key Development Principle 8.

## The Evidence Base

- National Planning Policy Framework.
- Regional Spatial Strategy South West evidence base.
- Revision 2020, *Centre for Sustainable Energy,* 2005.
- Merton Council, Merton Rule 2015.
- Renewable Energy Study - Final Report, *Gloucestershire County Council*, June 2010.
- Gloucester City Climate Change Strategy, *Gloucester City Council,* 2010.

## Monitoring

The City Plan will align with the monitoring framework within the JCS. More detailed Indicators and targets will be developed in consultation with the City Council Neighbourhood Management team and others following the end of the City Plan consultation 16th January to 27th February 2017.