



Draft Worcestershire Climate Change Strategy

2012 – 2020

A Framework for securing a low carbon & climate resilient County

Please return your comments and contributions to:

www.worcestershire.gov.uk/researchweb/climate/climatechange.htm

Liz Harris, Worcestershire County Council, Spetchley Road, Worcester, WR5 2NP

01905 765519 or email sustainability@worcestershire.gov.uk

Contents

Forewords	3
Draft Climate Change Strategy Consultation	5
1. Introduction	7
1.1 Worcestershire's Successes	7
1.2 Worcestershire's Challenges	7
2. Making the Transition to a Low Carbon County	11
2.1 Our target	13
2.2 Our aim	14
3. Building Resilience in Worcestershire	15
3.1 Our aim	16
4. Community Engagement and Empowerment	17
5. Raising Awareness of the Issue of Climate Change through Education Settings	19
6. Health & Wellbeing	21
6.1 Improving Health and Wellbeing through Carbon Reduction	21
6.2 Improving Health and Wellbeing through Resilience to Climate Change	24
7. Infrastructure	26
7.1 Infrastructure for a Low Carbon Economy	26
7.2 Infrastructure for a Climate Resilient County	30
8. Economy	33
8.1 Building our Low Carbon Economy	34
8.2 Building our Climate Resilient Economy	35
9. Public sector	36
9.1 Public sector - leading the way on Carbon Reduction	36
9.2 Public sector - ensuring Climate Resilience	38
10. Natural Environment	39
10.1 The role of the natural environment in Carbon Reduction	39
10.2 The role of the natural environment in Climate Resilience	40
11. Delivery and Monitoring	42
Glossary and abbreviations	44
Appendices	
Appendix 1 Worcestershire carbon emissions data & projected targets	46
Appendix 2 About the Worcestershire Partnership	48
Appendix 3 Members of the Worcestershire Partnership Climate Change group	49
Appendix 4 Contributing to the Climate Change Strategy Action Plan	50
Appendix 5 Case study proforma	52

Forewords

In the early decades of the twenty first century the twin challenges of climate change, (the need to cut carbon emissions, and the need to ensure resilience to extreme weather), present both challenge and opportunity for Worcestershire to transform our homes, our businesses, our public services and the way we live and work. Over the last couple of decades there has been concerted action across the county to cut emissions and protect our county from extremes of weather. Worcestershire has an enviable reputation for a high quality environment, with some exemplar sustainable buildings, innovative low carbon businesses and thriving environmental organisations. This is reflected in high levels of public concern and care for the environment across all ages and backgrounds. While carbon emissions are currently falling, there is much to be done. This strategy is a response to the very real impacts that climate change, coupled with increasing volatility of energy prices, has continued to have on the county: periods of extreme flooding and drought and rises in fuel costs leading to increasing fuel poverty for residents and difficulty for businesses.

This is a strategy not just for one or two concerned organisations; it is a strategy building on what has already been achieved by businesses, organisations and people across Worcestershire: people ready, able and willing to make changes in their own lives, businesses aware of the opportunities, with the skills and resources to take advantage of them, public organisations willing to lead by example, with the skills and direction to enable change to happen.

At a time of seismic change in the global economy, now is the time to harness our collective knowledge, skills and resources and rise to the challenge of climate change together as a county. By doing this we can look forward to more competitive businesses that are taking advantage of new markets, warmer homes, a more secure and affordable energy supply, a reduction in the rise of fuel poverty, cleaner air, improved natural habitats and healthier, fitter people. We can also create a county more prepared for extreme weather with resilient infrastructure that limits disruption and enables the opportunities that a changing climate brings. We have the tools and the experience; a history of creativity, innovation and taking business opportunities, coupled with respect for our beautiful natural environment. We can do this by working together.

1 county, 6 districts, 26,000 businesses, a quarter of a million homes, half a million people; that's a huge challenge and a huge opportunity for change.

Cllr Adrian Hardman
On Behalf of the Worcestershire Partnership

We are living through an age of uncertainty. On the one hand, it is a time of increasing austerity as the country tries to tackle the structural deficit. Worcestershire's public sector is going through a period of continual adaptation as its organisations must innovate to maintain and enhance service delivery, but with reduced resources. Worcestershire's business sector is similarly responding to the challenging economic situation. On the other hand, this time of austerity is transitory and only one element of our uncertain times. There are other elements that have the potential to transform lifestyles for the long term. Climate change has become a known unknown; the economic downturn will eventually pass, but climate change is here to stay. Our climate is changing and these changes are impacting on the lives of everyone living and working in Worcestershire. There is no question that Worcestershire has been experiencing more extreme weather events – from drought to flooding. We do not need to debate the causes of climate change, but we do need to appreciate that individual and organisational behaviour must adapt to alterations in climate.

There is another important element and this is energy. The price of energy in the UK will continue to rise and this has important implications both for individuals and firms. For individuals, it involves ensuring that their homes are well-insulated and using energy efficient heating systems. For businesses it is critical that they adapt to ensure that the cost of energy does not destroy their competitiveness. Energy poverty is a major problem. Without alterations to Worcestershire's housing stock, combined with behavioural adaptation, more people will experience energy poverty.

Responding to alterations in climate is a long-term task. It requires changes to transportation infrastructure and building stock as well as alterations in attitudes and behaviours. This new climate change strategy provides a way forward for Worcestershire to ensure that the County continues to provide an excellent environment for families, for childhood, work and employment and retirement. By continuing to take climate change and sustainability seriously we can enjoy warmer homes, reduced fuel bills, tackle fuel poverty and create a climate friendly and productive local economy. This is a major challenge but all challenges are also opportunities.

Professor John R. Bryson,
Chair Worcestershire Partnership Climate Change Task Group

Consultation on the Draft Worcestershire Climate Change Strategy

What is the Draft Worcestershire Climate Change Strategy?

The Worcestershire Partnership¹ is the Local Strategic Partnership for the county. In 2003 we published the first "Worcestershire Climate Change Strategy". The Strategy² was produced in response to the Government's call for organisations and authorities across the country to take action to ensure that we are prepared to deal with the impact of climate change and to urgently take action to slow its progress. The Strategy set out a framework for action by members of the Worcestershire Partnership to: -

1. **Raise awareness of the issue of Climate Change & its impact on the County**
2. **Reduce Climate Change causing gas emissions across the County**
3. **Plan for and adapt to the inevitable impacts of Climate Change on the County**

The Strategy covered the period 2005 – 2011, and was reviewed in 2008. We promised to renew the Strategy after 2011 to

- Check on our progress
- Refine and update our objectives in the light of new information and
- Set out further actions and activity for the period up till 2020

This draft document is the result of that renewal process.

In drafting it we have called on a range of expertise and evidence. We have: -

- Held a **Climate Change Strategy Workshop** in October 2011 attended by more than 50 stakeholders to examine the evidence and establish priorities for action
- Used the Worcestershire Viewpoint **Panel** to canvas residents opinion and priorities in respect of climate change
- Invited a wide range of **experts and partners** to contribute to the drafting of this document through the **Worcestershire Partnership Climate Change Group**³
- Commissioned a **Carbon Modelling** exercise to identify where best to focus partners' actions

How can you contribute to the Worcestershire Climate Change Strategy?

This document is intended for the many agencies, organisations and community groups that will shape and deliver the Worcestershire Climate Change Strategy. The Strategy is still a "draft" and therefore open to change and amendment. Your **contribution and comments are invited and welcomed**.

As this is a **renewal of an existing strategy** we are not starting from a blank sheet. The purpose of the draft document is to stimulate debate and further development of actions for agreement by partners over the next 3 months. Whilst all views on the Strategy are welcome we would like you to **concentrate your feedback on the contribution you can make to the Strategy** by developing actions that can be included in the detailed Action Plan that will accompany this Strategy. You can therefore contribute by:

- Completing the Action Planning template at Appendix 4,
- Contributing a case study from your organisation, see Appendix 5.
- Contributing to the **on line survey** – this can be found under consultation at www.worcestershire.gov.uk/researchweb/climate/climatechange.htm

¹ For a list of Worcestershire Partnership Board members see Appendix One

² When we use the term Strategy in this document we are referring to this Worcestershire Climate Change Strategy unless otherwise specified

³ For a list of Worcestershire Partnership Climate Change Group Members see Appendix Three

Draft Worcestershire Climate Change Strategy 2012 - 2020

A Framework for Securing a Low Carbon & Climate Resilient County

1. Introduction

Our Vision

- **A county making the most of opportunities that a low carbon economy brings,**
- **A county resilient to volatile costs of fossil fuels⁴ and severe weather,**
- **A county with businesses and residents empowered to take action themselves and the most vulnerable people and assets protected.**

This draft climate change strategy for Worcestershire is for the years to 2020. Actions shaped by the strategy will impact on the county's performance up to 2050. It brings together countywide strategies alongside carbon reduction plans, and strategies to build resilience that have been put in place by organisations across the county. Four strands run through this second Worcestershire-wide strategy on climate change.

- **building our low carbon economy**
- **hitting tough but critical carbon targets**
- **adapting to inevitable climate change**
- **empowering people to take action**

The draft strategy builds on the county's first climate change strategy, which was reviewed in 2008. It is a response to developments in national policy; the UK Carbon Plan 2011, which sets out how the Government intends to reach its targets to reduce national CO₂ emissions by 34% from 1990 levels by 2020 and by 80% by 2050, and the UK Climate Change Risk Assessment 2012, which sets out key risks to the UK from a changing climate, and the subsequent National Adaptation programme due to start in 2013. These are underpinned by a legal framework, which includes the Climate Change Act 2008, the Flood and Water Management Act 2010, the Localism Act, the National Planning Policy Framework and the Energy Acts 2008 & 2011.

Climate Change is identified in the Sustainable Community Strategy for Worcestershire as a major issue for the county, and Worcestershire Partnership (WP) organisations have a vital role to play in tackling climate change. This strategy shows how climate change can be addressed through the WP's priorities: a skilled and prosperous Economy, a cherished and resilient Environment and improving Health & Wellbeing. It is also a response to the drive for a low carbon economy expressed as a priority by the Worcestershire Local Economic Partnership.

This strategy recognises both progress made and the changing landscape in which Worcestershire now finds itself. It is essential that best use of available resources is made to focus where organisations can have most impact and where they can help Worcestershire's businesses and communities take action themselves. To this end a carbon modelling study⁵ has been undertaken, a strategy workshop⁶ held with partners and public opinion⁷ has been surveyed. This draft strategy is based on their outcomes.

It is intended that this strategy will guide the actions of, and be owned by, the **Worcestershire Partnership** (WP). We will report on progress via the **Worcestershire Local Nature Partnership** (LNP) and engage with the **Worcestershire Local Enterprise Partnership** (LEP) and partners from all sectors to drive our low carbon and climate resilient future.

This strategy seeks to ensure that the action Worcestershire organisations take to reduce carbon dioxide emissions and adapt to climate change creates opportunity - **bringing financial savings, safeguarding and creating jobs, creating new markets, improving health and wellbeing, protecting and enhancing the natural environment and building resilience.** As documented in the previous climate change strategy, it is recognised that Climate Change poses huge risks globally, nationally and locally and that taking action to reduce carbon emissions and protect against the impacts of climate change is a matter of urgency.

⁴ DECC provide fossil fuel price projections up to 2030. For example, based on their central estimate (which follows the IEA production forecast and World Economic Outlook growth assumptions), oil price is expected to be \$130/bbl by 2030. All scenarios available online <http://www.decc.gov.uk/assets/decc/11/about-us/economics-social-research/2933-fossil-fuel-price-projections-summary.pdf>

⁵ Carbon modelling study was completed by Aether and Ruralnet futures in 2012

⁶ Worcestershire Climate Change Strategy Workshop Oct 2011

⁷ Worcestershire View point survey 2012

Worcestershire's Successes

This strategy builds on action of which Worcestershire can be justly proud. The WP has achieved national recognition for tackling climate change and several of its organisations, for example the County Council and University of Worcester, have received awards for their work.

The Low Carbon Economy

The County is the location for a number of high profile businesses working successfully in the low carbon sector, and hosts innovative schemes taking the lead in sustainable construction and energy, such as the new Worcester Library and History centre, [The Hive](#), built to exacting environmental standards using river water cooling and biomass heating; and a ground breaking heating scheme using excess heat from [Redditch crematorium](#) to warm a nearby sports centre. There has been a rapid increase in the uptake of small scale renewable energy in Worcestershire. From April 2010 to March 2012 there were over 2100 Solar PV installations⁸, with an accompanying increase in companies providing installation and maintenance services. Woodfuel is being used to heat a number of public buildings, including schools and offices.

Meeting Carbon Targets

From 2005 to 2010 Worcestershire's carbon emissions per person reduced by 11%⁹. This exceeds targets set in Worcestershire's last climate change strategy.

Adapting to Inevitable Climate Change

Flood protection measures have been put in place in towns such as Bewdley, Worcester, and Upton on Severn¹⁰. A number of buildings have been designed to cope with future climate change. Many public organisations and some businesses have put in place plans to help them cope with severe weather events.

Empowering People to take Action

Thousands of Worcestershire homes have been insulated through the [Warmer Worcestershire](#) energy saving project, hundreds of schools are taking part in the county's [Eco Schools programme](#) with the highest number in the country receiving the top Eco Schools Green Flag award. Concern about climate change in Worcestershire remains higher than average for the UK. This is accompanied by action; 98% of people surveyed¹¹ say they are recycling, 64% say they are improving the energy efficiency of their homes, 57% say they are reducing car use. There is evidence that this is the case. In recent years measures have shown increased recycling rates, a drop in use of motor transport, an increase in cycling and walking, an increase in numbers of properties insulated and a fall in energy use. There is an increasing number of Transition groups¹² setting up in the county. These community based groups, which are taking action at a local level to reduce reliance on fossil fuels, are now working in all Worcestershire districts. Some have made strong a contribution to area plans, such as [Wychavon District Council's Intelligently Green Plan](#).

Worcestershire's Challenges

The Low Carbon Economy

Fuel costs have increased and Worcestershire now has one in five households in fuel poverty. Some areas of the county are among those experiencing the highest levels of fuel poverty in the country. It is particularly prevalent in areas of the county without mains gas or where there are older properties that are not easy to insulate. Increasing fuel costs are putting pressure on businesses¹³. While there are some businesses taking advantage of the transition to a low carbon economy, many more, especially SMEs, need help with skills and resources. It is critical that all businesses make process and product alterations to reduce energy consumption and use of raw materials. This will enhance their competitiveness and profitability, enabling

⁸ Full data set available from Ofgem Feed in Tariff registration records <http://www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx>

⁹ Data from DECC Local Authority Area emissions data set. NB CO₂ emissions within the scope of influence of local authorities

¹⁰ The Upton-upon-Severn flood alleviation scheme opened in July 2012 <http://www.environment-agency.gov.uk/homeandleisure/floods/122561.aspx>

¹¹ Viewpoint survey results

¹² Transition Towns are grass root community groups with the aim to build resilience to the end of cheap fuel and reduce CO₂ emissions while strengthening a local community.

¹³ [Midlands Business News](#), increased fuel costs could force companies to increase prices thus influencing inflation

them to invest in their business. Meanwhile changes in government policy have meant uncertainty for businesses in the renewable energy sector.

Meeting Carbon Targets

While county carbon emissions have reduced, there is evidence that a significant part of this is due to the economic downturn. There is a need to decouple the link between carbon emissions and economic growth to avoid a corresponding increase in emissions when economic conditions improve. This decoupling is possible through the use of effective energy management systems by businesses and a reduction in the use of fossil fuels for energy generation. Worcestershire's projected increase in population will also place an upward pressure on emissions¹⁴.

Adapting to Inevitable Climate Change

The need for effective water resource management in the county has become more urgent. Lack of water is becoming an increasing issue, especially for those businesses in the county reliant on water abstraction, such as agriculture and horticulture. Worcestershire businesses have been severely hit by weather events in recent years, with some businesses severely compromised, while others have shown how, through effective business continuity planning, they can limit disruption to staff and production. Further communities require flood protection. As Worcestershire's population ages, increasing measures will be needed to reduce residents' vulnerability to extreme weather.

Empowering People to Take Action

Concern about climate change in Worcestershire appears to remain higher than average for the UK, however in common with the rest of country, there has been a fall in the intensity of that concern as economic concerns have increased. In the workplace, in schools and in colleges, there is a need to educate our citizens of the importance of taking action and to develop the skills needed to move to a low carbon and climate resilient economy.

National and European Changes

Since the last climate change strategy was revised in 2008, there have been fundamental changes in national and European policy relating to carbon reduction, energy security and dealing with the impact of climate change. These changes have been accompanied by increasing energy costs. Further changes are set to come.

The Low Carbon Economy

Following the 2008 Energy Act, Government legislation for initiatives, such as Feed in Tariffs (FiTS) for renewable energy and the establishment of large scale wind power, particularly off shore, has led to an increase in business opportunities in the renewable energy sector. It is anticipated that the Renewable Heat Incentive (RHI) will have a similar impact. The Government's Green Deal scheme, legislated for in the Energy Act 2011 and due to start in Autumn 2012, represents a fundamental change in financing energy efficiency for homes and businesses and a significant business opportunity. Fuel prices have increased, (since 2006 household heating bills have increased by £500 per year for a typical home¹⁵), leading to increasing urgency to improve energy efficiency in businesses and homes, as well as increasing fuel poverty.

Meeting Carbon Targets.

The Climate Change Act 2008 brought in legally binding UK targets for carbon reduction (34% from 1990 levels by 2020 and by 80% by 2050). The UK Low Carbon Transition Plan 2009 and 2011 Carbon Plan outline how these targets will be achieved. The recession has made a notable contribution to reducing emissions across the country, as has the shift away from heavy industry and the move towards low carbon energy generation including renewable energy (the EU Renewable Energy Directive set a target of 15% of UK energy from renewables by 2020). Increasingly tightening EU vehicle emissions requirements and EU energy performance in buildings regulations, alongside changes in UK building standards have also

¹⁴ Projections from the [Office of National Statistics](#) suggest a 10% increase in population by 2030 compared to 2010 figures

¹⁵ [Committee on Climate Change report](#) 'Household energy bills- impact of meeting carbon budgets'

contributed to a decline in emissions and will continue to do so. The installation of smart meters in every home and small business by 2019 is aimed at having a similar effect. The introduction of the Carbon Reduction Commitment (CRC) energy efficiency scheme, which charges large energy users, such as hospitals, hotel chains and large councils for the carbon they emit, has increased focus on carbon management in large organisations.

Adapting to Inevitable Climate Change

Following the severe flooding across the UK in 2007, the focus of flood risk management has changed nationally. The Flood and Water Management Act 2010 has increased the requirements of Local Authorities to address flood risk by giving them responsibility for flooding from ordinary water courses (the Environment Agency retain responsibility for main rivers). This resulted in Worcestershire County Council being named Lead Local Flood Authority and Sustainable Urban Drainage systems (SUDs) Approval Body. The introduction of the Climate Change Act in 2008 led to the completion in January 2012 of a national assessment of the risks posed by climate change¹⁶. The Climate Change Act 2008 also set out a requirement for many public bodies and statutory undertakers, such as water companies, to report to central government on the risks they identify to their service delivery and how they plan to address these. The [first phase of reports](#) has been completed. The reports demonstrate that most organisations required to report are assessing their risks and in most cases are well-placed to mitigate them.

Empowering People to Take Action

The Localism Act 2011 made a number of provisions including making it easier for local residents to have a say in local planning decisions and to take on the running of council services. The Transition movement has gained in strength across the country enabling local communities to take action, such as developing local sustainable energy schemes and forming local food co-operatives.

Our Ambition

It is the Worcestershire Partnership's ambition for the county to remain at the forefront of innovation and be a national benchmark for action on Climate Change

We aim to:

- ***build our low carbon economy***
Stop the growth of fuel poverty, improve energy efficiency, increase take up of renewables and associated business opportunities in Worcestershire's business sector, decoupling the link between economic growth and carbon emissions
- ***hit tough but critical carbon targets***
Reduce the county's carbon emissions by 30% from 2005 levels by 2020 and put in place measures to enable reduction by 80% by 2050.
- ***adapt to inevitable climate change***
Protect the county's residents and businesses from the impacts of climate change, including severe weather, and support the local environment to adapt. Ensure every organisation and business in the county has plans to deal with extreme weather events and that long term infrastructure and plans take account of projected impacts of climate change.
- ***empower people to take action***
Work with Worcestershire's communities, businesses, public sector and NGOs to make the transition to a low carbon, climate resilient county

The following sections outline how we intend to achieve these aims:

Sections 2 and 3 introduce the scale of the challenge to reduce emissions and ensure resilience to the impacts of climate change in Worcestershire.

Sections 4 - 10 detail both current action and future work required in terms of community engagement, education, health and wellbeing, business, infrastructure, the public sector and the natural environment.

Section 11 outlines how it is intended to ensure delivery of the strategy.

¹⁶ [UK Climate Change Risk Assessment](#)

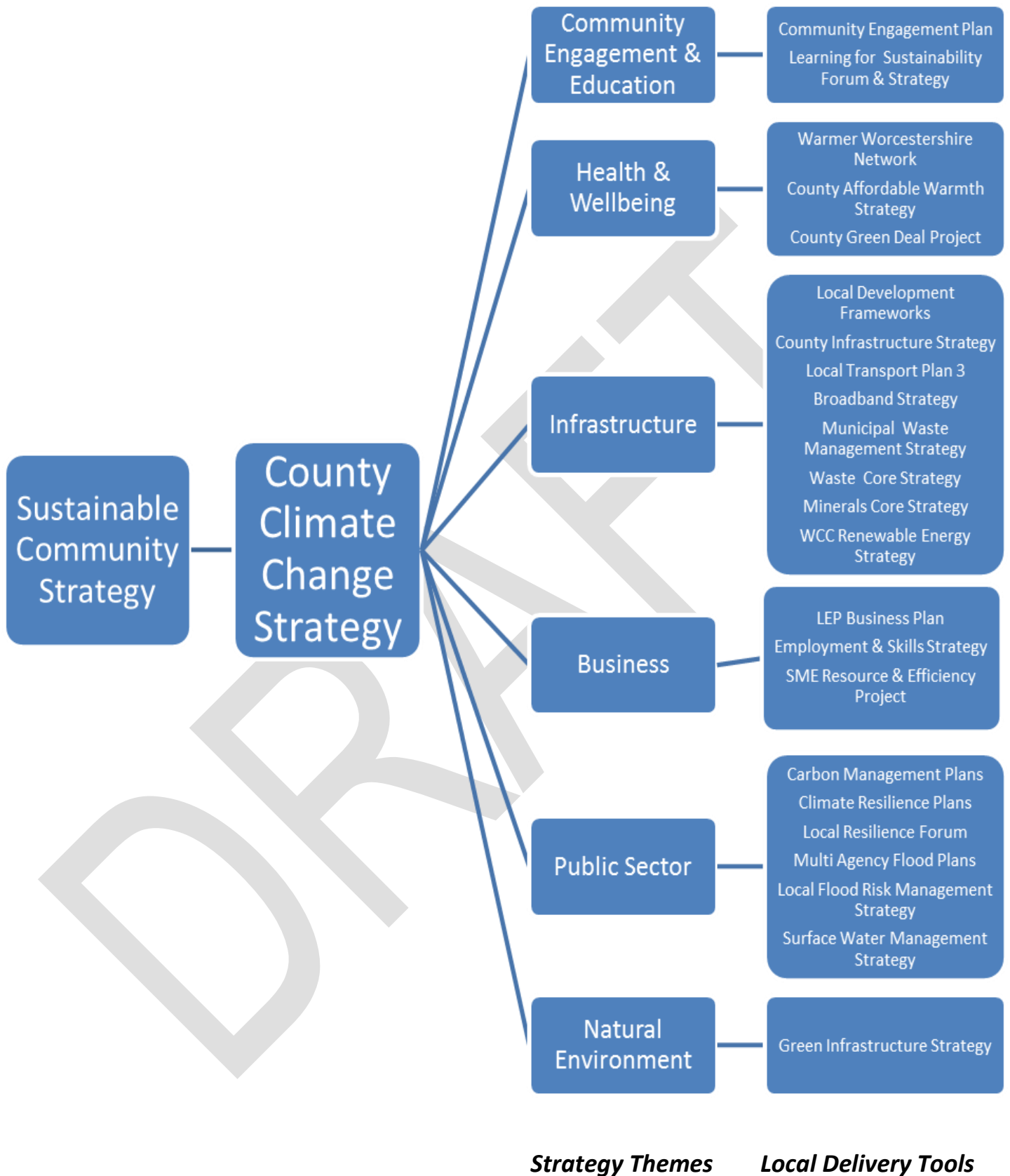


Fig 1
Worcestershire Climate Change Strategy
Delivery Structure

2. Making the Transition to a Low Carbon County

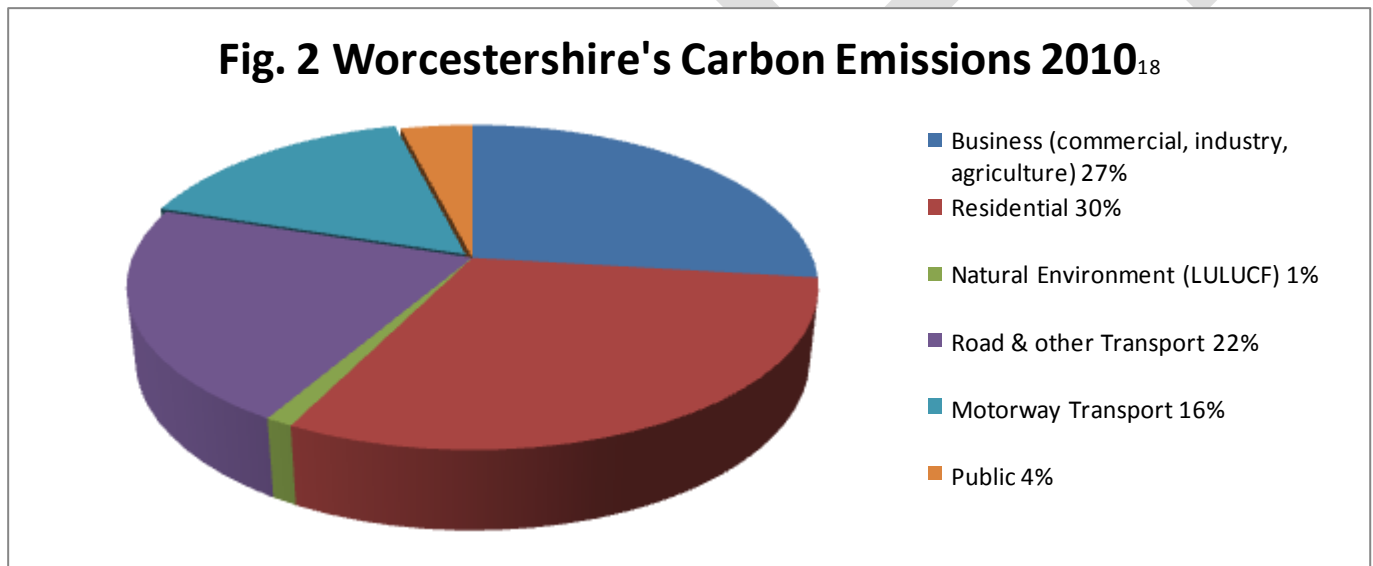
Setting tough but critical carbon targets

We all have a role to play in moving Worcestershire to a low carbon economy. While it is recognised that much work will need to be done at national and international levels, Worcestershire organisations' support and action will be vital to meet the strategy's carbon reduction targets and ensure that Worcestershire's businesses and residents benefit from a transition to an economy with high levels of energy efficiency, no longer solely reliant on energy generated from fossil fuels.

This strategy concentrates predominantly on reduction of CO₂ emissions, as these comprise the vast proportion of climate change gases. Actions needed to reduce other greenhouse emissions, such as methane¹⁷ from waste disposal and livestock are also addressed.

Including motorways, it is estimated that Worcestershire was responsible for the emission of **4.42 million tonnes of CO₂ in 2010**¹⁸. This was a reduction of 9% since 2005¹⁹ or 800kg per person. While emissions rose from 2009 due to a very cold winter, as well as a short term national change to more carbon intensive energy generation, there currently appears to be an overall downward trend in emissions, which can be attributed to the recession, as well as loss of heavy industry, a move to less carbon intensive energy generation and increasing energy efficiency measures.

The diagram below shows Worcestershire's emissions by sector in 2010¹⁸.



Excluding motorways (over which there is limited local control), Worcestershire's residential sector produced the greatest proportion of the county's CO₂ emissions (30%) in 2010, with the business sector and road transport not far behind.

¹⁷ Methane is a 23 times more potent greenhouse gas than CO₂

¹⁸ DECC Local Authority carbon emissions statistics 2010 & Carbon Baseline and Scenario Modelling for Worcestershire – Aether

¹⁹ Table 5 in Appendix 1 shows Worcestershire's total CO₂ emissions by sector for 2005 and their reduction from 2005 – 2010¹⁸

Table 1: per capita emissions for each Worcestershire district and overall county total for 2005-2010 including the percentage reduction in CO₂ emissions, (figures exclude motorways and railways)²⁰

	(t) per capita emissions 2005	(t) per capita emissions 2006	(t) per capita emissions 2007	(t) per capita emissions 2008	(t) per capita emissions 2009	(t) per capita emissions 2010	% reduction
Bromsgrove	6.3	6.4	6.3	6.2	5.6	5.8	7.9%
Malvern	7.1	7.4	7.3	7.1	6.5	6.7	5.6%
Redditch	6.9	7.0	6.8	6.6	5.7	6	13%
Worcester	6.6	6.4	6.1	5.9	5.3	5.6	15%
Wychavon	9.1	9.4	9.0	8.8	8.1	8.4	7.7%
Wyre Forest	7.0	6.9	6.8	6.4	5.7	6.1	12.9%
Worcestershire	7.3	7.3	7.1	6.9	6.2	6.5	11%

The above table shows how CO₂ emissions per person in each district and the county have changed since 2005. 2005 is used as a baseline for local authority area emissions as this is the best data set available. Wychavon appears as a high emitter of CO₂, possibly because of its relative affluence, its rural nature requiring greater use of private cars to access services and employment, the comparatively high number of properties which are not connected to gas and the relatively large proportion of emissions coming from the business sector. Worcester City, followed by Bromsgrove and Redditch, have made the greatest reductions.

It is useful to consider the figures in a wider context. **Table 2** below ²⁰ shows how Worcestershire's emissions per person compare with the UK, West Midlands and other similar counties, (similar counties are identified using nearest neighbour analysis (based on DECC data)).

Area	t per capita CO ₂ 2010	Percentage reduction 2005-2010
Worcestershire	6.5	11%
Staffordshire	6.8	8%
Gloucestershire	6.7	11%
Warwickshire	7.3	10%
West Midlands	6.3	12.5%
UK	6.6	12%

This data shows that compared to similar areas of Gloucestershire and Warwickshire, we have achieved a similar percentage reduction over time although Worcestershire has lower per capita emissions. The West Midlands region as a whole has seen a reduction of 12.5% between 2005 and 2010 with per capita emissions below the Worcestershire average. **The target for the Worcestershire Partnership, which was set in the last Climate Change Strategy, was to achieve a 9% reduction in emissions per person by 2011. It appears that this target has already been achieved, however, due to delays in the release of data by DECC, the final figures will not be known until Autumn 2013.** For the longer term future, it is predicted that unless measures to further reduce the carbon intensity of energy generation and

²⁰ Source: DECC CO₂ emissions within the scope of influence of local authorities

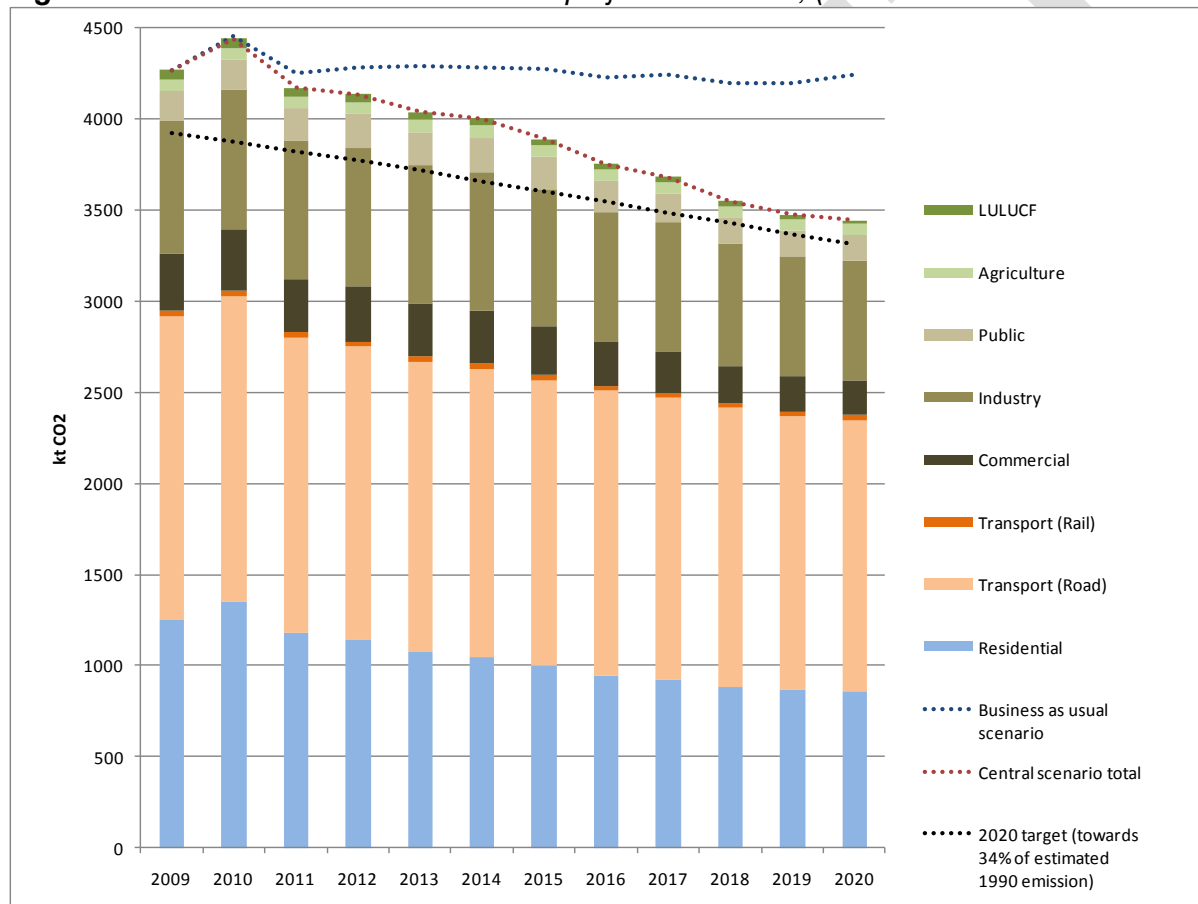
improvements in energy efficiency of homes, transport, business and public sector are made, emissions will rise again when the economic situation improves.

Our Target

By 2020 Worcestershire's total CO₂ emissions²¹ will have reduced by 30% from 2005 levels.
 This tough target is in line with the UK Carbon Plan and will require concerted local action.

Making use of data generated by a study into the potential for carbon reduction in Worcestershire²², the graph below shows a carbon emissions projection for Worcestershire from 2009 to 2020. Dotted lines show the emissions estimates for business as usual, central scenario (the predicted future impact of national and European policies), and the UK 2020 target on which this strategy is based. It shows that we cannot rely on national and European policy alone to reach our target. We need to take local action as well.

Fig 3 Worcestershire estimated emissions projection to 2020, (based on DECC central scenario)



Source: Aether²⁰

Table 6 in Appendix 1 shows projected emissions reductions by sector from 2009 to 2020²²

The above study²² shows that in order to meet our target, at least 22% of the reduction will require local intervention. Table 7 and Figure 8 in Appendix 1 show the type of measures that will have most local impact on reducing Worcestershire's emissions.²²

²¹ Including motorway and railway emissions

²² Carbon Baseline and Scenario Modelling for Worcestershire – Aether

Our Aims

The Worcestershire Partnership will work with communities, businesses and the public sector to make the transition to a low carbon economy. We will work to:

Reduce total countywide carbon emissions by 30% from 2005 levels by 2020²¹ and put in place measures to enable reduction by 80% by 2050 by:

- **facilitating community level action to reduce carbon emissions** (see Section 4)
- **delivering effective education and awareness raising programmes related to climate change** (see Section 5)
- **improving the energy efficiency of Worcestershire's homes and stopping the growth of fuel poverty (post 2012 utilising Green Deal & ECO)** (see Section 6.1)
- **utilising spatial planning processes to enable transition to a low carbon economy** (see Section 7.1)
- **helping to realise the county's potential to harness the power of renewable energy, recognising the importance of public perception** (see Section 7.1)
- **developing smarter travel choices programmes, (including smarter use of ICT to help residents avoid travel), and facilitate use of alternatively fuelled vehicles** (see Section 7.1)
- **building a low carbon economy by working with private sector organisations through the Worcestershire LEP, focusing on resource efficiency, skills development, business opportunities, green jobs and best practice sharing** (see Section 8.1)
- **working together to implement Worcestershire organisations' existing carbon management plans and encourage other organisations to take action too** (see Section 9.1)
- **enabling the management of land to reduce carbon emissions, maximise natural carbon sinks and promote local food production** (see Section 10.1)
- **ensuring all key strategies and plans address carbon reduction** (see Section 11)

These areas have been identified^{22&6} as where Worcestershire organisations can have most influence on reducing the county's CO² emissions. More information is given in the sections noted above.

3. Building Climate Resilience in Worcestershire

Adapting to inevitable Climate Change

'Resilience - The ability of a social or natural system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organisation and the capacity to adapt to stress and change.' DEFRA

To build climate resilience we are aiming for a county which can withstand or recover quickly from the natural hazards resulting from the climate system, such as severe weather. Our knowledge of how the climate is likely to change over time is still evolving; there will be new and emerging findings which can support our understanding and response to change. Knowing how the climate may change over time can help us to better prepare for future severe weather events to limit disruption to services, reduce potential impacts and associated costs, protect our most vulnerable residents and remain open for business. We have seen the impacts of severe weather in recent years, especially during the summer of 2007. It is estimated that this flooding had an overall cost to Worcestershire of around £6.4 million per week²³.

Headline projections for Worcestershire

Changes in temperature are seen in local records. The central England temperature record covers Worcestershire and provides a proxy for county records. Since the 1990s there has been a positive anomaly in the annual temperature record. Recent years have seen the greatest maximum summer temperatures (2006 and 2011). Since the 1900s the record illustrates a trend towards a slight increase in all seasonal maximum and minimum temperatures over time. This is not a year on year increase but an overall trend over the defined period.

There has been a noticeable change from the projections, (UKCIP02), used in the previous climate change strategy, illustrating that changes are likely to be greater than previously expected. Projections indicate milder but wetter winters, warmer but drier summers and more frequent and intense extreme weather. For example by 2020:

- the temperature on the warmest day in summer could increase by as much as 5.5°C²⁴
- Summer precipitation could decrease by as much as 25%²⁵
- Winter precipitation on the wettest day could increase by as much as 20%²⁶
- The temperature on the coolest day in winter could increase by as much as 3.8°C²⁷

Physical measures for building resilience to the impacts of climate change.

There are a number of physical measures which can support strategies to build resilience to a changing climate. Some need to be designed in from the start and others can be retrofitted to reduce impacts to existing infrastructure:

- Use of Green Infrastructure to offer flood alleviation, cooler spaces within the urban environment and for connectivity between green spaces to support species movement.
- SUDs, such as water attenuation and green roofs, to allow for more natural movement of water through infiltration.
- Orientation of buildings to keep them cooler in warmer weather
- Shading over windows to protect rooms from direct sunlight during warmer weather

Physical measures also need to be supported by the levels of awareness of what the likely risks will be. This will enable the development of a flexible resilience strategy which can cover a range of activity with the knowledge to support the decisions.

²³ Worcestershire Local Climate Impact Profile

²⁴ Projection for medium emissions scenario for 2020s using 90% probability level

²⁵ Projection for medium emissions scenario for 2020s using 10% probability level

²⁶ Projection for medium emissions scenario for 2020s using 90% probability level

²⁷ Projection for medium emissions scenario for 2020s using 90% probability level

Building resilience to the impacts of climate change

Physical measures are not always the most appropriate option for building resilience to climatic change and the response need not be one single solution. For example, a flood alleviation scheme may be erected enabling a property owner to obtain more favourable insurance against the risk of flooding. Adaptation options can be considered across five different categories:

- Building adaptive capacity, e.g. need to monitor a situation or conduct further research before appropriate action can be decided upon
- Bearing losses and managing impacts: accept the consequences and repair damage. e.g. there is currently no cost effective alternative road surfacing which could better withstand the temperature range we now experience. Each year Worcestershire County Council has to accept the consequences the weather has on our roads and repair the damage.
- Sharing risks e.g. through insurance or through diversifying the service
- Preventing losses or reducing consequences e.g. business continuity planning, physical measures
- Exploiting opportunities e.g. potential opportunity to expand tourism with warmer summers

Our Aims

The Worcestershire Partnership will work with communities, businesses and public sector to increase the resilience of the county's residents, businesses and environment to the impacts of climate change, including severe weather.

We will work to:

Ensure every organisation and business in the county has plans to deal with extreme weather events and that long term infrastructure and plans take account of projected climatic change by:

- **continuing with awareness raising and support for community level action** (see Section 4)
- **supporting the most vulnerable residents who may be affected by a changing climate** (see Section 6.2)
- **increasing resilience of buildings and infrastructure** (see Section 7.2)
- **encouraging business continuity planning in the local business community and public sector** (see Sections 8.2 & 9.2)
- **promoting better understanding of the economic value of the natural environment** (see Section 10.2)
- **ensuring all key strategies and plans address resilience** (see Section 11)

These areas have been identified as those where Worcestershire Partnership organisations can have most impact. More information is given in the sections noted above.

4. Community Engagement and Empowerment

Empowering people to take action

When considering engagement of community stakeholders we need to consider what is meant by the term 'stakeholder'. There are many definitions of stakeholder engagement and any successful strategy should consider all stakeholders:

'Stakeholders are not just members of communities or non-governmental organisations. They are those individuals, groups of individuals or organisations that affect and/or could be affected by an organisation's activities, products or services and associated performance with regard to the issues to be addressed by the engagement. (AA1000 Stakeholder Engagement Standard 2011)'

The engagement of stakeholders is key to the successful implementation of the Climate Change Strategy. This engagement process needs to include the wider Worcestershire Partnership, residents, businesses and the people and communities that can deliver change in their own areas. For change to take place we will need people's support; our communities need to understand why action needs to happen, what they can do themselves, what their role can be, and be helped to do this. This Strategy recognises the value of community level action and the need for two way communication.

Many of the activities required in response to climate change will require life-style changes and difficult decisions being made, on what is feasible, acceptable and preferable at the local community and individual level. Community engagement, through awareness raising, education and active participation in the decision-making process, is essential if the necessary mitigation and adaptation activities are to be effective.

What is the current situation?

Although more than 60% of Worcestershire residents in a recent survey²⁸ think that direct impacts of global climate change have yet to be felt in Worcestershire, nearly 80% of residents polled listed climate change as a concern, and more than 70% agreed with the need for a reduction in CO₂ emissions in the county. There is clearly a level of awareness and concern about climate change within the community but there are still people less accepting of climate change science. It is therefore important that the messages used to engage with our communities are appropriate to the audience. One such example is the Warmer Worcestershire campaign, which has met with a pleasing level of success, with 23% of residents surveyed installing loft insulation²⁹, and in fact continues to deliver key messages on affordable warmth whilst achieving carbon savings. In addition there have been a number of community-targeted projects; a recent event, 'Powering the Future: Towards Sustainable Energy' organised by Transition groups from across south Worcestershire, was well attended and engaged with around 600 people. There are many community-based and voluntary groups with an interest, both direct and indirect, in climate change that already exist in Worcestershire. These range from relatively new groups, such as those belonging to the Transition movement, to more established groups with interests in the environment, wildlife conservation, urban parks and gardens, local food production and use, community support and activities and many other areas.

Five communities across Worcestershire have engaged with an Eco-communities pilot coordinated by Keep Britain Tidy and Worcestershire County Council. The pilot built on the sustainability learning already taking place in schools and how this could be shared with the wider community. This involved a community wide approach to sustainability with schools and centres such as libraries and youth clubs engaging with the local residents to take the learning into the home. More than 2000 people have been involved with the scheme so far.

What are we aiming to achieve?

- ***A fully engaged and consulted community with knowledge of what is required to tackle the challenge of climate change, why measures are needed, an understanding of what they can do themselves and the support available to help them.***

²⁸ Worcestershire Viewpoint Survey 2011

²⁹ Worcestershire Viewpoint Survey 2011

How will we do this?

- Through the implementation of a structured engagement plan that looks at different stakeholders and what methods of engagement are most appropriate to ensure increased levels of support and action of the climate change strategy. The engagement process is illustrated below in **Fig 4**.



- Profiling will be used to target action to those communities most in need of and/or most likely to take up initiatives. This profiling will identify the people most likely to take action on sustainability issues.
- Local authority support for community groups, such as Transition Town groups, will be encouraged, to raise awareness, educate and involve local communities in climate change issues.
- Ensuring that climate change, its effects and possible local responses, remains on the agenda of local authorities, and the recognition of the links between the physical environment, the economy and local communities is recognised in local policy decisions.
- The strategy and its associated action plan will initiate and/or support community-targeted projects and campaigns that highlight practical aspects of climate change and community responses to that change. Appropriate areas will include energy saving/generation, local food production/use, waste reduction/disposal, travel, environmental protection/reclamation, etc. with an emphasis on community involvement.
- Engagement will be with a variety of communities of interest, e.g. religious groups, WI, University of the Third Age etc., not just groups with a focus on environment
- Engagement will build on EcoCommunities work and work of organisations such as Community First, centred on key buildings in the community, such as the local church, library, community centre or sports club.

We will track activity through the Worcestershire Viewpoint attitudes and behaviours related to Climate Change survey, every other year.

5. Raising Awareness of the Issue of Climate Change Through Education Settings

Aim: Deliver effective education programmes related to Climate Change

“Educating people from an early age about how our actions influence the environment is a vital element in promoting responsible behaviour. Creative and practical ways can be found to help pupils translate the study of climate change into actions in their everyday lives.” Nicholas Stern, October 2006

Formal education has an important role to play in raising awareness of the issue of climate change. Developing the **knowledge, understanding, values, attitudes and skills** of both formal and informal education settings and present and future generations will be vital as we prepare to meet the challenges facing us, both in mitigating and adapting to climate change. Focusing on climate change in education lays the **groundwork for further action** at the level of family, school, community, further and higher education and business / organisation. Over 80% of 1st year University students in a recent study believe sustainability skills are important to their future employers. Crucially, the opportunities to engage, think critically and creatively and to take action are likely to lead to both more action in school, college and community, but also build the necessary predisposition and life-skills to be both proactive and reactive in terms of mitigation and adaptation.

The Higher Education sector has an important role to play in addressing carbon emissions, both as an educator and as an employer; as employers and major influencers and participants in local communities, graduates will be future managers/decision makers.

What is the current situation?

1. **Leading by example** –Worcestershire County Council has established a **Learning for Sustainability Forum** with representation from the County and District Councils, University and local voluntary organisations and businesses working with schools around this theme.
2. **Strategy** - Through the Forum a **Learning for Sustainability Strategy*** (LfSS) is being delivered which focuses on work with schools, pre-school / nursery and the need for more work with young people of school leaving age, both within formal and informal educational settings.– The strategy is currently being revised in line with new Government structures
- 2-3. **Eco Schools**
 - a. The strategy has **enabled more than 260 schools in Worcestershire** to register with the international **Eco Schools Award Scheme**. This includes 90+ percent of all state schools in the County, the highest percentage in the country.
 - b. **75 of these schools** have obtained the prestigious **Green Flag Award**, the highest figure in the country, with **Meadows First School**, Bromsgrove, the first Eco Schools Ambassador School to be given this advocate role. The Ambassador role is given to schools which are seen as inspirational in the work they are doing around sustainability and how it is embedded into the curriculum.
4. **Eco Ambassadors:** Several of Worcestershire’s High and Middle School Eco Action Teams are working as **Ambassadors** with feeder schools, local parents etc. around the themes of sustainability and climate change.
5. **Switch it Off:** Our work with schools on this campaign has now been taken up nationally via The Pod (EDF energy’s educational programme). The campaign has demonstrated the potential for energy saving for schools including some longer-term energy saving measures (e.g. IT systems shutting down overnight at a fixed time).
6. **Training:** Rolling out training for Whole School Approaches to Energy Management linked with the installation of Automated Meter Reading (AMR) strategy, built into Service Level Agreement for participating schools (90+% of all County schools 2011-12).
7. **Eco Schools as an Indicator:** the involvement with Eco Schools is an indicator within the Partnership’s [State of the Environment Report](#) that demonstrates the numbers of children, young people and adults taking an active role in leading around sustainability and climate change themes.
8. **EcoCommunities:** over 2010-11 the Learning for Sustainability Team piloted the first Eco Communities project in the UK and the increased emphasis on working with community has

raised the profile of this work considerably. As this rolls out over this and next year, more schools will be engaging with more households, local businesses, etc.

9. The University of Worcester is successfully implementing both staff and student behaviour change programmes and has a lot of success in greening the campus, ranked third in the University People and Planet Green League in 2011.
10. There are many opportunities, both paid and unpaid, for university students to support climate change projects in extra curricula activities, for example through the NUS Green Impact Programme. The University was recognised in the 2011 Green Gown Awards for developing these skills.
11. The University is due to offer a sustainability module open to all its students in 2013 and environmental sustainability should be addressed when all courses are reviewed or when new courses are being introduced.

What are we aiming to achieve?

Everyone involved in education, formal and informal, at all levels, will play a key role in creating a more sustainable future, locally and globally

How will we achieve this?

Review the county's Learning for Sustainability Strategy. Current aims include:

(Note specific numerical targets listed below are to be achieved by 2013 from 2008)

- **Increase** by 40 percent the number of **Green Flag Ecoschools**
- **Increase** by 5 percent the number of **Green Flag nurseries**
- **Increase** the number of **high schools** (by 20 percent) and **Further or Higher Education** settings (by 20 percent) working with students as **Ambassadors** around the theme of climate change and sustainability
- Meet the specific targets in the LfSS on pupils leading **audits on energy, transport, water use and waste in school** through working with schools on action planning, monitoring and evaluation to help schools track changes and progress
- Support **curriculum development**, making links with businesses and supporting work with colleges of further and higher education and the University
- Share the work that goes on in school with a **wider community** - focusing on encouraging schools to help encourage more awareness, auditing and action planning with local groups within the community through an Eco Communities approach
- Work with **pre-school, family and young adults** on climate change - taking a partnership approach to building awareness and action around climate change priorities
- The University of Worcester will promote environmentally sustainable ways of working and living, and encourage students to act in a sustainable and environmentally enhancing way. The strategic review currently being undertaken by the University, will strengthen its commitment to this agenda, broadening it to ensure it encompasses arts and culture as well as social and economic sustainability and the environment.
- Work with the Association of Colleges to explore the **current gap in terms of supporting Further Education with Learning for Sustainability** (Eco Schools does not apply to 6th Form Colleges / Technology Colleges and Eco campus tends to be too expensive for them).
- **Choose how you move** - the Redditch project will engage with local schools on sustainable modes of transport.

* *The Learning for Sustainability Strategy is currently under review and may be subject to change*

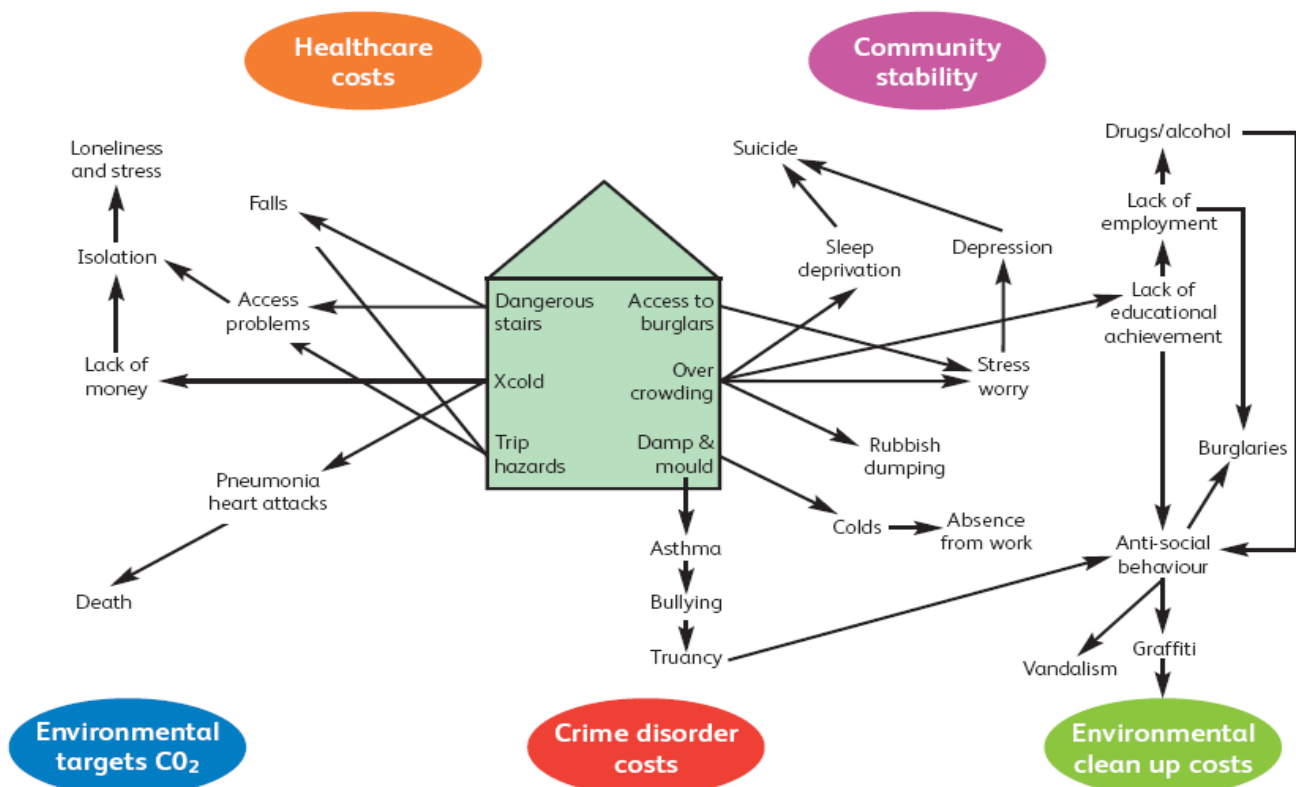
6. Health and Wellbeing

6.1 Improving Health & Wellbeing Through Carbon Reduction

Through the utilisation of links between colleagues working on carbon reduction and those involved in Health and Well Being, the Partnership can have significant impacts on reducing household energy demand and ultimately carbon emissions. The current success of the [Warmer Worcestershire Winter Warmth Campaign](#) has highlighted the benefit of these links and should be developed further. Residents struggling to heat their homes could be putting their health at risk through living in cold, potentially damp properties. These living conditions can exacerbate existing health complaints and could result in a resident needing treatment or a hospital stay, which could have been avoided by keeping warm and well.

Thus there are close links to improved health outcomes and reduction in CO₂ levels. If a home is well insulated and has an energy efficient heating system the householder will experience a warmer home and lower bills, which will improve the health and wealth of that household. In addition this will reduce CO₂ emitted. Over the last decade the importance of living in a 'Decent Home' has been recognised as a benefit to the health of the occupier and has led to the recognition of its importance to the wider community and society as a preventive action that will reduce the burden on the health services. Public Health England has recognised the importance of energy efficiency measures. For every £ spent, 43p is saved by the Health Service and, of course, there are substantial annual savings for the householder.

Quantifiable evidence of health benefits can be difficult to illustrate. The Chartered Institute of Environmental Health (CIEH) diagram below, **Fig 5**, illustrates how the home is linked to multiple issues and opportunities and clearly shows that the link between housing and public health is far reaching and multifaceted.



Source: CIEH: *Good Housing Leads to Good Health: a Toolkit for environmental health practitioners*

What is the Current Situation?

Worcestershire's 240,000 homes emit nearly a third of Worcestershire's CO₂ emissions, over 1.3 million tonnes in 2010. This was a 5.4% reduction from 2005. See *Appendix 1 table 5*

Energy bills have risen steeply in the last few years, (the average West Midlands household spent ³⁰£725 on heating and hot water in 2006. In 2012 this figure rose to £1225, an increase of £500.). This has had a significant effect on Worcestershire households. The level of fuel poverty in the Worcestershire in 2010 was 45,000 households, with 1 in 5 households being in fuel poverty. Fuel poverty is commonly defined as households that need to spend 10% or more of their income on fuel to achieve a reasonable standard of warmth for good health. It results from a number of factors, including high energy prices and under occupation, but the main reasons are low income and inefficient housing. As fuel prices increase, the level of fuel poverty in the County is likely to increase.

Table 3. Levels of fuel poverty in Worcestershire 2010³¹

	% of fuel poor households
Bromsgrove	17.7%
Malvern Hills	23.7%
Redditch	16.5%
Worcester	18.1%
Wychavon	19.3%
Wyre Forest	19.9%
Worcestershire	19.1%

The number of excess winter deaths in Worcestershire is higher than the UK average. If only one tenth were caused by fuel poverty that would be 2,700 deaths, higher than deaths from road traffic accidents. The annual cost to the NHS of treating winter-related disease due to cold and damp housing in the UK is over £850 million. This does not include additional spending by social services, or economic losses through missed work.

Compounding the above are the following factors: Worcestershire has an estimated 30,000 properties off main gas and 50,000 solid wall properties. These properties are both expensive to heat and expensive to make more energy efficient.

While there has been concerted action to improve the energy efficiency of homes in the county, with 17,000 cavity walls and 21,000 lofts insulated between March 2008 and September 2011, it is estimated there are still 30,000 cavity walls to be filled and 70,000 lofts needing improved insulation.

Two working groups have been set up to address these issues. The first, the Warmer Worcestershire Network, involves partners across the county developing insulation schemes, delivering training to front line health and social care workers and a dedicated referral mechanism to support the most vulnerable households. The second working group has been formed to assist in the delivery of new government policy at a local level, in particular the Green Deal and Energy Company Obligation, which may have substantial economic benefits alongside environmental and health benefits. At the end of 2012 it is expected that all grant funding for cavity wall and loft insulation will cease and be replaced with the Green Deal & ECO.

The **Green Deal** will enable home owners, public organisations and businesses to improve the thermal comfort of their properties at no upfront cost. It is based on the principle that the energy saving₇ (reduction in energy bill)₇ made after energy efficiency measures have been installed in the home or business premises, is used to pay back the cost of installing the energy efficiency measures. This will be done via a charge on the electricity bill. The core principle of the Green Deal is the 'Golden Rule' that the charge should not exceed the expected savings, and the length of the payment period should not exceed the expected lifetime of the measures. Repayments can be spread up to 25 years, depending on the lifetime of the measure. This will enable residents to improve the energy efficiency of their home at no upfront cost. Improving the energy efficiency of a home can not only bring added health benefits of improved thermal comfort but also reduce household bills in the long run.

Alongside the Green Deal, the Government is introducing a new **Energy Company Obligation₇** (ECO), to supplement Green Deal finance. ECO will replace the existing grant subsidy programmes for loft and cavity wall insulation, (CERT and CESP), which will both expire in 2012. The ECO consists of three elements.

³⁰ data from Sutherland tables May 2006 and April 2012

³¹ Full data set available via [DECC](#)

The first will be focused on the uptake of solid wall insulation, which will not be fully covered by the Green Deal. The second is the 'affordable warmth' element, which will provide support to the most vulnerable households and will cover multiple measures including heating. The third is linked to geographical areas considered to be in the top 15% of the most deprived areas of the community, and some rural areas. £1.3billion per year is planned to be made available under ECO, but the benefits of this subsidy will not happen evenly across the country as there are no regional or local targets. Worcestershire councils will therefore need to ensure that as districts and a county they are able to offer the fuel utilities, who will be delivering this scheme, details of the households that could benefit from measures such as solid wall insulation, energy efficient new heating systems etc. There could be huge potential for ECO in Worcestershire due to the numbers of solid wall properties which are unlikely to meet the 'golden rule' for the Green Deal.

What are we aiming to achieve?

- ***Stop the growth of fuel poverty and reduce excess winter mortality.***
- ***Help maximise the take up of Green Deal and ECO by Worcestershire residents***
- ***Reduce CO₂ emissions from homes by 32% from 2009 by 2020.***

How will we achieve this?

- Improving levels of insulation and ensuring that loft and cavity wall insulation has been installed in all Worcestershire homes (where reasonably practicable) by 2020.
- Starting to shift focus of action towards solid wall insulation in addition to lofts and cavities and persuading reluctant households to receive insulation.
- Maximising household incomes (carrying out benefits checks etc.)
- Ensuring the Green Deal and ECO are available to support residents in the installation of energy efficiency measures, including a focus on solid wall insulation
- Raising awareness amongst householders and communities through campaigns such as Warmer Worcestershire
- Raising awareness and commitment with front line staff on addressing issues around housing and health and ensure a dedicated referral mechanism is in place and utilised.
- Investigating the potential of renewable energy solutions for properties off gas
- Seeking to expand the gas mains network further.

We will track our progress on this objective through the following measures;

- **Levels of Fuel Poverty**
- **Household energy efficiency measures installed**
- **Level of up take of Green Deal and ECO**

Monitoring

We will endeavour to monitor the work undertaken through the Home Energy Conservation Act (HECA), which is the statutory instrument for monitoring energy efficiency. HECA is currently being reviewed by DECC but is likely to include monitoring of Green Deal, ECO, and Fuel poverty. In addition the action plan to be appended to this document will show the status of delivery.

6.2 Improving Health & Wellbeing Through Resilience to Climate Change

We have already seen the impacts severe weather events can have on the health of local people, from increased mortality during the 2003 heatwave to the mental health implications of flooding of properties. As the climate continues to change, there will be a greater need to support vulnerable members of the community to adapt to more extreme conditions. Improving the resilience of our critical infrastructure, such as energy and water supply, will also support the health and well-being of local people through the provision of services. This will help to maintain a decent quality of life for residents. Ensuring the transport network is resilient to climate and incidents of extremes will support other services such as home care and other health services visiting residents in the home. The provision of Green Infrastructure in developments will further benefit the health and well being of local residents through offering green space for exercise and the ability of the environment to have a cooling impact on the surrounding area. The provision of SUD's to support flood alleviation will also benefit the overall health and wellbeing of residents through reducing the anxiety associated with flood risk. While making the most of outdoor space is to be encouraged for the general health and wellbeing of the local community, there are clear risks from a changing climate, such as increased sun exposure having the potential for a negative impact on health, which need to be clearly communicated. Using more sustainable modes of transport, such as walking and cycling, can not only offer opportunities for exercise but can also allow individuals to move around more easily if roads can-not be used due to extreme weather.

What is the current situation?

In Worcestershire, more than a quarter of residents are 60 years or older and of this group, 19% are aged 80 years or above. This proportion is set to increase over the next decade. Older residents, the very young and people with existing health conditions are more vulnerable to weather extremes as they are less able to adapt quickly to different conditions. This is illustrated by a sharp increase in mortality across all ages in Worcestershire when temperatures go above 26°C³².

In Worcestershire, there are 17 Areas of 'Highest Need'. It is likely people in these areas will need more support during weather related emergencies. They are areas that tend to have poorer health and so greater vulnerability to the impacts climate change can have on health. There are other impacts on health associated with warmer weather including food poisoning and decline in general air quality which can negatively impact respiratory conditions. There are 10 Air Quality Management Areas across the county.³³ Hotter summer weather leads to further decreases in air quality. In the UK, cases of food poisoning linked to warmer weather have been increasing rapidly³⁴.

During 2007, flooding across the UK had short and long term psychological and social implications with more health complaints related to anxiety, stress and depression. In Worcestershire over 3,300 residential properties were flooded.

What are we aiming to achieve?

A better understanding of the impact that the natural environment has on health either positively or negatively e.g. implications for exposure to the sun, balanced with the benefits of more opportunities to exercise outdoors, mental wellbeing implications of flooded properties

Support members of the community, particularly the vulnerable, to cope with the impacts of a changing climate to achieve an improved quality of life by:

- Increasing the resilience of key infrastructure to ensure continued access to services.
- Encouraging the use of local green space for improving health and for providing cooler spaces in urban environments during hotter weather.
- Improved air quality

How will we achieve this?

- Continue the work on assessing the climate risks to new infrastructure in Worcestershire and incorporate this into the infrastructure planning process (*link to buildings and infrastructure section*)

³² Temperature and mortality in Worcestershire research

³³ Defra AQMAs <http://aqma.defra.gov.uk/list.php>

³⁴ Department of Health 'health effects of climate change in the UK'

http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4108061.pdf

- Increased resilience of existing infrastructure in Worcestershire to reduce the impacts severe weather events have on services.
- Work with Green Infrastructure Partnership in supporting the aims of this strategy
- Effective communication and joint working between partners on issues associated with impacts of natural environment on health.
- Tree planting to support improvements in air quality
- Improvements to public transport and walking and cycling routes to support air pollution reduction.
- Support local food growing (beneficial for mental and physical health and wellbeing)

DRAFT

7. Infrastructure

7.1 Infrastructure for a Low Carbon County

If we are to achieve an 80% reduction in CO₂ emissions by 2050, much of our infrastructure will need to change, including the design of towns and other settlements, the way we build and heat our homes and businesses, the way we travel, how we use and generate energy, and how we deal with our waste. Such major infrastructure change takes a long time and we need to start planning now to achieve the cuts in emissions required by 2050.

What is the current situation?

The national policy landscape is improving to support action, e.g. the Green Deal & ECO, grants to support procurement of electric vehicles, financial incentives to support renewable electricity and heat generation, and permitted development for some renewable energy measures.

New Development

Local planning processes have a crucial role to play in facilitating low-carbon development and patterns of growth. Local Development Plans guide the type, size and location of new development in ways which take account of the need to mitigate climate change. This includes planning for locations that allow for sustainable travel patterns. Development Plans also help shape the local environment through policy and guidance on a whole host of interconnected issues, including sustainable construction, and renewable energy. One of Worcestershire's districts has a completed Core Strategy; the remaining 5 districts are basing planning decisions on their older documents, which will contain fewer details regarding sustainable development. There is opportunity for all districts to embed sustainable development into their policies. The Waste Core Strategy covers the whole of the county, and was adopted in November 2012.

Through building regulations there are increasing requirements for energy efficiency improvements year on year, with the ultimate aim of moving to zero carbon homes in 2016 and commercial and public buildings in 2018. Building energy certification requirements³⁵ (DECs & EPCs) are having the impact of increasing the focus on energy efficiency in existing buildings in the public and private sector in domestic and commercial properties.

Existing Buildings

Approximately 60% of Worcestershire's CO₂ emissions come from heating and powering processes that take place in buildings. 80% of buildings which exist now will still exist in 2050³⁵, so retrofitting existing buildings will be key to achieving the reduction needed. The forthcoming Green Deal & ECO schemes, and our participation in them, will be critical to achieving our reduction ambitions.

The county hosts a number of high profile buildings built to strong sustainability standards, from Wyre Forest District Council Offices – which are heated by ground source heat, the Hive in Worcester (the Library and History Centre) which opened in July 2012 and has been awarded BREEAM outstanding, to the first vicarages in the country built to passivhaus standard Code for Sustainable Homes (CSH) level 6. As of the end of March 2012, there were 104 buildings achieving BREEAM standards in the county. 79 of these were domestic properties. 469 CSH certificates have been registered in Worcestershire to date³⁶ The requirement for all buildings that are rented to have an Energy Performance Certificate of E or better by 2018 will have significant impact.

Transport

38% of county CO₂ emissions are from transport¹⁸ (motorways account for approx 16% of county emissions). Although we have less direct influence over transport emissions, WP organisations have a significant level of responsibility for transport infrastructure. We also have the ability to influence the way in which we all move around the county; with transport fuel prices being at record highs, this is a good time to support and encourage residents and businesses to adopt more low-carbon means of transport, which can also result in increased health benefits for residents through an increased opportunity for exercise and better air quality.

³⁵ Figure from the [Sustainable Development Commission](#)

³⁶ [Code for Sustainable Homes Latest Official Statistics](#), figure quoted is post construction certificates only

The impact of the successful smarter travel choices programme in Worcester City has continued; Vehicle kilometres across the whole city reduced by 4.5% in 2008 and further to 5.8% in 2010 compared to the 2004 base year. There is currently a trend across the county of less use of motorised transport and increase in cycling and walking. For example Worcester City has seen a modal shift of 4% towards cycling since the Choose How You Move Project ran. This has contributed to a fall in county emissions from transport of 6%.

Supporting the development of broadband and ICT can reduce the need to travel. Creating the opportunity to work from home can limit the need to commute and with advancements such as teleconferences and videoconferences there is now less need to travel, for example to attend meetings.

Energy

It is estimated that around 5% of the Gross Value Added (GVA)³⁷ for Worcestershire is spent on powering and heating buildings. Much of this goes to companies outside the county, which is money leaving our local economy.

Worcestershire is currently almost completely reliant on electricity imported from outside the county. This is also potentially an issue for energy security. There has, however, been an increase in renewable energy generation from wind, hydro and solar in the County. There is now 9.7MW large scale renewable energy generation capacity (still predominantly landfill gas) (Worcestershire County Council estimates, November 2012) and 5.36MW microgeneration capacity (predominantly solar pv) (Ofgem, 2012). This, however, makes up a very small proportion of total energy used in county (approx 0.2%).

In some areas there is public opposition to wind power, making increasing the renewable energy capacity of the county a significant challenge. There have however been a number of innovative energy projects e.g. Redditch Council district heating scheme (linking heat from the crematorium to the adjacent Sports Centre) and Malvern Hills Science Park Ground Source Heat scheme.

The Renewable Heat Incentive (RHI) has the potential to favour Worcestershire, which has a significant number of properties off the gas mains and some woodfuel resource. There are now a significant number of public buildings heated by woodfuel.

There is potential to support the development of localised low carbon energy networks; decentralised energy, for example combined heat & power systems (CHP) and district heating, could offer communities a more secure supply not reliant on energy sources outside of the UK. To date there are few examples of CHP and district heating in the county.

Waste

Nationally, an estimated 3% of greenhouse gas emissions are related to waste management³⁸. In Worcestershire, waste accounts for about half of the greenhouse gas emissions of the waste disposal authority (Worcestershire County Council). The Herefordshire and Worcestershire Joint Municipal Waste Management Strategy and Worcestershire Waste Core Strategy are seeking to reduce CO₂ emissions through their policies.

The policies in the Waste Core Strategy encourage the management of waste as a resource, promoting the re-use, recycling or recovery of value from waste and discouraging the disposal of waste. The long-term aim of the strategy is for 'zero-waste' to be landfilled or disposed of. Reducing the disposal of waste to landfill will have a significant impact on greenhouse gas emissions from waste management as most of these emissions are from the landfill of biodegradable waste³⁹. The management of waste contributes to the Worcestershire economy. There are 60 waste businesses operating in the county contributing about £62 million to the local economy (GVA)⁴⁰. Increasing re-use and recycling will also have the benefits of reducing the use and processing of virgin materials, which is usually more energy intensive than using recycled material, and contributing towards a local low-carbon economy. The Waste Core Strategy also

³⁷ GVA is a measure of the value of goods and services in an area, industry or sector. The calculation has been made using the [average business energy spend](#) multiplied by the number of businesses in Worcestershire about 26,000. Used the average domestic energy bill multiplied by the number of homes in Worcestershire. This used the most recent figure for GVA of Worcestershire is £8.928 billion in 2007, Worcestershire Economic Assessment.

³⁸ DECC- [Waste GHG inventory summary factsheet](#)

³⁹ [Environment Agency](#)

⁴⁰ The Worcestershire GVA from this sector grew between 2007 and 2008, whilst that the GVA for Worcestershire as a whole declined a little over that period.

supports the recovery of energy or other resources from waste which cannot be recycled. Plans for an energy from waste plant in Hartlebury were approved in July 2012. This project is estimated to generate 15.5MW of energy of which 13.5MW will be exported back to the grid thus contributing to the energy supply network. Around 120,000 tonnes of biodegradable material each year, which would have been landfilled and would have generated methane gas, will now be used as fuel.

In order to minimise greenhouse gas emissions from new waste management facilities and improve their resilience to climate change impacts, the Waste Core Strategy includes policies to address their sustainable design, construction and operation. This includes the consideration of transport and encouraging facilities that treat waste at, or close to, their source or where they will be processed into new products.

What are we aiming to achieve?

- **Utilise land use and spatial planning processes to enable transition to a low carbon economy**
 - **Develop smarter travel choices programmes (including smarter use of ICT to help residents avoid travel), and facilitate use of electric vehicles**
 - **Help to realise the county's potential to harness the power of renewable energy, recognising the importance of public perception**
-
- **Encourage waste reduction and forms of waste management that minimise greenhouse gas emissions**
 - **Meet the following targets:**
 - All Local Development Frameworks with policies enabling carbon reduction
 - 10% reduction of road transport related CO₂ from 2009 levels by 2020
 - Treble the amount of energy generated in the county from renewables including energy from waste by 2020 (from 2012 levels).
 - By 2020, reuse, recycling and 'other recovery' of:
 - 78% of Municipal Solid Waste (with a minimum of 50% reuse and recycling)
 - 75% of commercial, industrial and hazardous waste (with a minimum of 55% reuse and recycling)
 - 75% of construction and demolition waste

How will we achieve this?

Infrastructure Planning

The Worcestershire Infrastructure Strategy is under development. Conventional ways of delivering infrastructure services are being assessed against new approaches to allow a more local approach to services, which could increase self sufficiency. Most people are not used to seeing the infrastructure they rely on for services, such as electricity generation, therefore a move to bring these services into the community would need to be carefully managed to gauge public perceptions. For example, there are currently no large power generation plants in Worcestershire, so the majority of the energy is produced outside of the county where we do not see the chimney stacks, nuclear power stations, wind farms, etc. Localising energy production would bring the generation closer to home, for example a district heating scheme powered by a wood fuel boiler for a street or a solar PV array on the roof tops of homes.

Buildings

- We will promote highly efficient new build projects but accept the real savings are to be made on existing buildings. There will be a move towards achieving zero carbon homes by 2016 for all new builds.
- We will build our knowledge of the energy efficiency of our current building stock by creating a county database of commercial, domestic and public sector stock including making use of modelling techniques, we need to understand this to better determine our levels of ambition for emissions reductions.
- Depending on the final shape of the Green Deal and ECO, this is likely to be a key method by which we can achieve our vision. This is an exciting time to promote the benefits of retrofit, in particular to local businesses, who historically have received limited support for energy efficiency projects. There is also the opportunity for the Green Deal to provide opportunities for expanding the jobs market and lead to skills development.

Transport

We accept that as a semi rural county, many people have to use cars and for some it is a lifeline, however, we want to explore ways to reduce the overall impact of single use trips, for example through increasing park and ride options. We will undertake to increase choice for residents and workers in our areas, for example by improving train stations, and running 'smarter choices' transport schemes.

- Full use should be made of WCC transport related policies to influence future planning decisions on the requirements for new developments to ensure that these developments are designed from the outset of the planning process to maximise use of sustainable transport modes.
- The Choose How You Move scheme in Redditch will be the main focus for transport related CO₂ savings in the early part of this decade and will be supported by infrastructure schemes as outlined in the Local Transport Plan 3 (LTP3). Subject to funding, this should be followed by a further roll out of this measure to cover a wider proportion of the county's population.
- Support the roll out of broadband and home working practices enabling ICT to reduce need to travel by enabling home working, virtual meetings etc.
- Further support for electric vehicle technology will be required if this is to be a key contribution to emissions reduction beyond 2020. This will require further significant national government support in addition to the current 'Plugged in Places' funding. Supporting the expansion of electric vehicle technology market needs to be considered at the local level to encourage organisations to want to locate charge points on their sites. Consideration needs to be given to the impact an expansion in electric vehicle demand would have on electricity networks.
- Further packages of measures are already proposed, in the LTP3 and Core Strategy/Local Plan Infrastructure Delivery Plans, to improve infrastructure and services. The Community Infrastructure Levy will provide a source of funding for some of these measures alongside various other mechanisms that can be utilised including the New Homes Bonus and Government funding streams, e.g. the sustainable transport fund.

Energy

- The Worcestershire Renewable Energy Strategy will aim to help address some of the current issues that have thus far created confusion and mistrust over proposals for large scale developments in renewable energy in the county. The Strategy will explain the benefits of renewables and the advantages of community engagement. The strategy and its key messages should be publicised widely to encourage communities to understand and embrace the need for change so that the county can become more self sufficient in energy generation. The impact of renewable energy on the grid system will need to be assessed.
- Further research is needed to identify concentrations of high heat demand in Worcestershire's urban centres where district heating systems could be implemented. DECC's National Heat Map⁴¹ will be a useful tool for identifying potential heat loads and locations for interventions.
- Local development orders for solar PV on commercial and industrial buildings will simplify the need for planning permission for solar panels on certain commercial properties as in certain parts of Wychavon and Wyre Forest districts.

Waste

Encourage waste reduction and forms of waste management that minimise greenhouse gas emissions via the county's Joint Municipal Waste Management Strategy and Waste Core Strategy.

Encourage development of industrial and commercial waste management services in the county in line with the Waste Core Strategy.

We will track progress by measures of:

- CSH & BREEAM registrations
- Traffic levels
- Renewable energy installations
- Levels of municipal waste produced and managed

⁴¹ The National Heat map shows heat demand density for the UK <http://ceo.decc.gov.uk/nationalheatmap/>

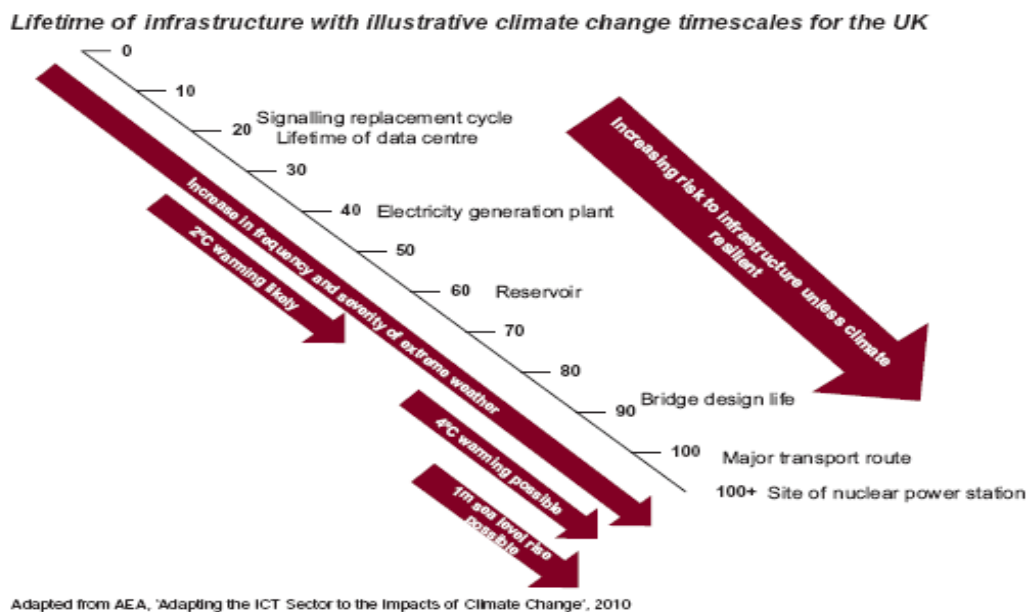
7.2 Infrastructure for a Climate Resilient County

Aim: Increase resilience of buildings and infrastructure

Our buildings and infrastructure are essential for the everyday running of society⁴². Most infrastructure and buildings have a long lifespan, meaning they will be subject to changes in climate over that period, and both new and existing infrastructure must be adapted. If our buildings and infrastructure do not adapt to climate change, this could have significant impacts on the Worcestershire economy and residents. A failure in infrastructure due to severe weather will have implications for the local economy, delivery of services and the well being of local residents.

The diagram below is taken from the Climate Resilient Infrastructure command paper produced by Defra. This illustrates the lifetime of certain key infrastructure compared with headline messages about expected changes in climate over time to show the conditions infrastructure being constructed now should be prepared for.

Fig 6.



What is the current situation?

In recent years we have seen the impacts of severe weather events on our local infrastructure. Flooding in 2007 had impacts on key infrastructure, such as the closure of nearly 90 roads, flooding of electricity sub stations and restricted access to a local community hospital.

Development Plans guide the type, amount and location of new development in ways which take account of the need to adapt to climate change. The Waste Core strategy will contribute to Development Plans and will also consider the potential impacts climate change may have and how this could influence the design of waste treatment. There are a number of public buildings in the county which have been constructed to incorporate sustainable features and be more resilient to a change in climate. Examples of these include The Hive in Worcester which utilises natural ventilation to cool the building and large storage ponds to hold flood water.

Across Worcestershire there are over 9,000 properties at risk of flooding from a 1 in 1,000 year flood (over 4,500 are vulnerable during a 1 in 100 year flood), and over 18,000 properties are at risk of surface water flooding. There are 10 new flood alleviation schemes in Worcestershire which are either completed, under construction or in the planning stages. Examples include upstream water storage in Wribbenhall, Bewdley which will protect around 50 properties and the raising of defences at Kempsey to protect around 70 properties. To ensure that we are able to factor in adaptation measures to design and construction of our buildings and infrastructure it is vital that a workforce with the correct skills for such projects is available. Worcestershire County Council has produced a County Strategic Alert map (figure 1) showing flooding, subsidence risk and outdoor fire risk for Worcestershire, along with risk profiles outlining the key impacts of

⁴² Infrastructure is defined as: Grey infrastructure- water, energy, sewage, transport and telecommunications systems. (Wider 'infrastructure' outlook also covers schools, emergency services and hospitals, workplaces, waste facilities etc.) Green infrastructure (which can be part of the solution) - network of open spaces and environmental features.

a hazard on a range of infrastructure⁴³. This project can support the county Infrastructure strategy to ensure new infrastructure is more resilient to future changes in climate. The full report can be found via [Sustainability West Midlands](#).

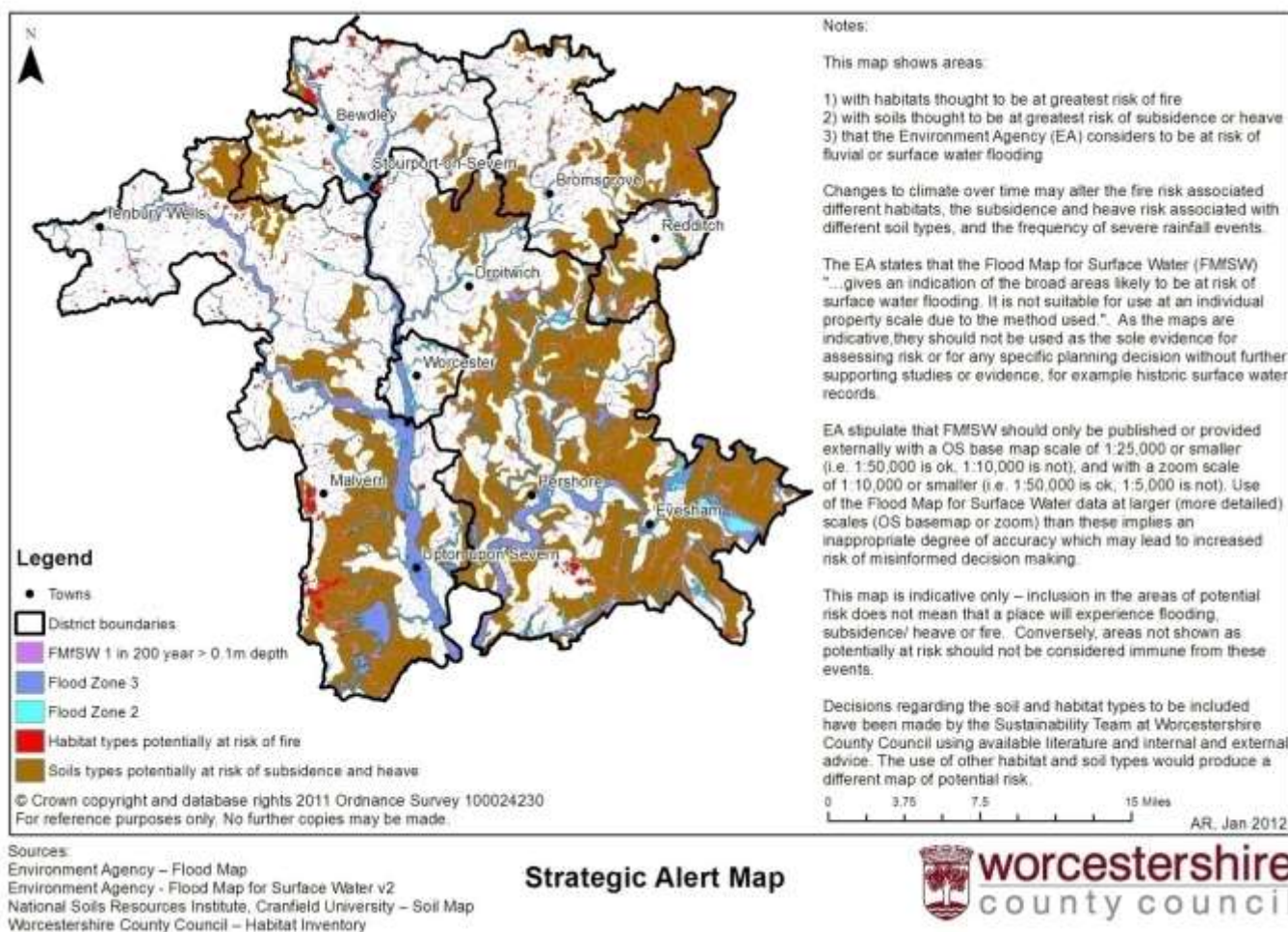


Fig 7: Strategic alert map highlighting areas potentially vulnerable to subsidence and heave, fire and fluvial or surface water flooding

What are we aiming to achieve

- **Infrastructure and buildings highly resilient to emergencies and longer term climate change**
- Awareness of the interdependencies between infrastructure sectors
- Communities that are resilient to impacts of severe weather and climate change

How will we achieve this?

- Make use of the West Midlands and [UK Climate Change Risk Assessment](#) findings and apply this to the local area.
- Use the lessons learnt in the development of sustainable local buildings
- Improve working links with utility companies and infrastructure providers to improve the sharing of information and data and to reduce dependency on one source of power/water.
- Engage and communicate with the wider business sector to highlight the risks to infrastructure and the impacts on them, including actions that can be taken for business continuity planning.
- Extend the infrastructure and climate risks research (conducted by Worcestershire County Council) to cover community infrastructure buildings (such as schools and hospitals), and water supplies
- Use the completed risk profiles from the above work to develop more detailed action plans
- Support and enable local community action schemes to increase local resilience to climate change

⁴³ Infrastructure covered (for North and South Worcestershire separately): Emergency Services, Electricity Network, Gas Network, Telecommunications, Transport and Water

- Engage with officers in Worcestershire planning authorities to ensure new infrastructure is located away from areas of risk, or takes measures to mitigate those risks
- Provide Green Infrastructure solutions, such as the installation of green roofs on buildings.
- Work more closely with the other relevant strategies and plans such as the Green Infrastructure Strategy and local flood risk management strategy, which can assist with solutions to risks
- Assess utilisation of the requirements for SUDs in the [Flood and Water Management Act 2010](#).
- Set up a partnership between the Environment Agency and Worcestershire County Council to increase sustainable building skills, particularly around Sustainable Urban Drainage Systems.

DRAFT

8. Economy

8.1 Building our Low Carbon Economy

The Worcestershire Local Enterprise Partnership (LEP) recognises the benefits of moving to a low carbon economy and the growth potential of environmental technologies. The LEP has identified enabling a low carbon economy as one of its aims and the LEP Business Plan includes supporting Worcestershire's Environmental Technology sector as a priority.

Reducing CO₂ emissions in the business sector is a challenging task. The Worcestershire Partnership and the LEP must balance economic interests against environmental sustainability, however, good energy management makes good economic, as well as environmental sense. For businesses, reducing energy bills by 20% can add the same amount to profits as a 5% increase in sales⁴⁴.

Improving the resource efficiency of Worcestershire businesses will contribute to local economic growth and stimulate job creation. The efficient use of raw materials, including energy and water, enhances competitiveness. From an energy security and financial viewpoint, investing in energy efficiency will make businesses more resilient to future increases in the cost of energy and less vulnerable to market forces. Increasing regulation, for example, the Carbon Reduction Commitment (CRC) is also serving to accelerate the need to improve energy efficiency, particularly for large energy users.

By supporting businesses to reduce their waste being sent to landfill we can not only improve business efficiency but also reduce carbon emissions from waste. Currently commercial and industrial waste accounts for 37% of the Worcestershire total waste. The reduction and effective management of waste can both reduce business costs and enable resources, which are currently landfilled, to be saved and reused.

The drive for carbon reduction and energy and waste efficiency offers Worcestershire companies new business opportunities in developing low carbon products, technologies and services, (the global low carbon market is projected to reach £4 trillion by 2015⁴⁵). The potential market for energy efficient retrofit of homes in Worcestershire alone has been estimated at £25million a year and of SMEs £15 – £30million by 2020. With these new opportunities can come new 'green' jobs for people who have the necessary skills, as well as less skilled jobs. There is also the potential for the development of apprenticeships to support those school leavers who do not wish to continue in education but would like to develop skills in a specific sector.

What is the Current Situation?

It is estimated that Worcestershire's 26,000 businesses were responsible for the emission of nearly 1.2 million tonnes of CO₂ in 2010¹⁸. This is approximately 27% of the county's total carbon emissions. This sector is also responsible for a large proportion of emissions from transport. Taking transport into account it is estimated that business activities account for about half of all greenhouse gas emissions.⁴⁶

There was a 15% fall in emissions from the commercial and industrial sectors in the county from 2005 – 2010¹⁸, see *table 5 appendix 1* which can be attributed to the recession, increased energy efficiency, and the shift away from heavy industry, as well as changes in the national energy mix.

Increasing fuel prices have led to increasing business interest in energy efficiency. Seminars for businesses organised by WP members to teach the fundamentals of carbon management and share good practice have been well attended. Many major energy users in the county have already introduced energy efficiency measures as part of the overall process of controlling costs, e.g. Morgan Ceramics in Stourport. The county does not, however, currently have a properly resourced environmental business network to enable good practice sharing on resource efficiency among the business community.

A number of new opportunities for Worcestershire businesses to improve their resource efficiency are emerging, for example the ERDF-funded Worcestershire resource and efficiency programme for SMEs being developed by WCC and the Chamber of Commerce. This is due to start in early 2013. The Green Deal will go live in 2013 and will offer businesses a way to invest in energy efficiency with no up front cost, as well as business opportunities to deliver the improvements to residents and other businesses.

⁴⁴ [Carbon Trust](#)

⁴⁵ [DECC carbon plan](#)

⁴⁶ CBI 'Climate Change is everyone's business' 2007

Research is being carried out by a number of businesses in the county to develop new technology and products that help to reduce environmental impact or energy use. The Marches Environmental Technology network (MetNet) promotes the development of environmental technology in the county. Free training has been available for local businesses on micro generation technologies, their installation and application. The introduction of Feed-In Tariffs (FITs) led to a rapid increase in micro generation installation businesses in the County, employing a significant number of people. Recent changes in FITs have impacted on some of these businesses severely, however many have adapted their business model and continue to operate.

There remains, however, a need for greater understanding of the size and potential of Worcestershire's low carbon economy.

What are we aiming to achieve?

- Worcestershire's businesses operating with high levels of energy efficiency and minimum reliance on energy generated from fossil fuels
- Businesses able to develop new 'environmental' products, technologies and services.
- Jobs created and safeguarded
- A skilled workforce to support a 'green' economy.
- A decoupling of the link between economic activity and carbon emissions
- Worcestershire recognised nationally for its 'green' economy
- Emissions from businesses reduced by 19% from 2009 by 2020

How will we achieve this?

- Work with the Worcestershire LEP to develop Worcestershire's low carbon economy - focusing on resource efficiency, skills development, business opportunities, green jobs and best practice sharing
- Through a recent successful ERDF funding bid - provide resource efficiency advice, surveys and grants towards energy efficiency measures for SMEs. This will provide valuable insight into potential savings across SME sector.
- Work with the Chamber of Commerce and WCC to administer and promote a Worcestershire Green Business Club to share good practice on resource efficiency, especially for small and medium enterprises
- Explore with regulatory services (i.e. Trading Standards, Environmental Health, the Environment Agency) the potential to raise with businesses issues of carbon reduction, and signpost help and information as part of their regulatory activity.
- Explore the potential for Worcestershire Councils to set up a Green Deal process for the county that provides opportunities for local suppliers and installers and offers Green Deals to SMEs as well as householders
- Promote the procurement of local products and services via the Find it in Worcestershire (FIIW) website
- Work with MetNet to develop Worcestershire's environmental technologies and services cluster
- Provide skills development in many areas, such as energy efficiency, renewable energy, carbon accounting and sustainable procurement, for example through contributing to the regional ESF funded 'skills for climate change' scheme.
- Pursue the development of the NUS Green Impact programme to SMEs in Worcester City
- Ensure all economic strategies and plans address carbon reduction

We will track our progress on this objective through two indicators:

- **a correlated measure of carbon emissions and economic activity**
 - **a measure of the growth in low carbon jobs and the scale of the low carbon and environmental technology and services sector**
-

8.2 Building our Climate Resilient Economy

The [UK Climate Change Risk Assessment](#) highlights business as a priority sector for action. Climate change will affect all businesses in all sectors. The impact will vary depending on the nature of the business and the relationships they have with their customers and supply chain. It is estimated that the summer floods of 2007 had an overall estimated cost of £150 million for Worcestershire. Businesses affected by the floods took, on average, 26 weeks to recover⁴⁷. Conversely in April 2012, following a series of dry winters, the announcement was made that Worcestershire was in drought. In summer 2011 water abstraction restrictions in the county meant particular impact on water availability for agriculture and other business requirements.⁴⁸ Across the UK the impact of restrictions on water abstraction are projected to reach £200-£300 million in lost turnover by the 2050s⁴⁹. By planning for such events, (which will become increasingly likely), businesses can limit disruption to supply chains, production processes and customers, reduce costs, and remain open for business. Business opportunities may also arise.

What is the Current Situation?

Worcestershire County Council offers support to local businesses around business continuity planning which factors in consideration of severe weather. Sustainability West Midlands have produced 'Weathering the Storm', guidance to help businesses plan to limit the disruption caused by severe weather and a changing climate. Large scale actions to protect areas have also been taken, such as flood protection measures to protect the town centres of Bewdley, Upton on Severn and Worcester. Currently, Central Government have an agreement with the Association of British Insurers that affordable flood insurance cover will be available for properties built before 2009 at risk of flooding. This agreement is due to come to an end in 2013. Currently, no replacement agreement has been announced.

What are we aiming to achieve?

Remain Open for Business

- Worcestershire businesses resilient to severe weather, making the most of opportunities climate change brings, and empowered to take action themselves.
- Ensure every Worcestershire business has plans to deal with extreme weather events and their longer term plans factor in long term climate change where appropriate

How will we achieve this?

- Encourage business continuity planning for severe weather in the local business community
- Explore with regulatory services (i.e. Trading Standards, Environmental Health, the Environment Agency) the potential to raise with businesses the need to make severe weather business continuity plans and signpost help and information as part of their regulatory activity.
- Training - ensure businesses have capability to adapt to climate change and enhance resilience, e.g. risk management, business continuity planning. Explore the potential to include climate change as an issue in established business training courses
- Identify businesses in Worcestershire most sensitive to the impacts of climate change and work with them to help them take adaptive action
- Encourage businesses to exploit the opportunities of climate change, e.g. new markets or products
- Better broadband and home working practices may help enable business continuity during some severe weather events
- Develop guidance to assist businesses on sustainable methods of water storage
- Ensure businesses use energy and water efficiently and also reduce waste.
- Ensure critical infrastructure is resilient (see Buildings & Infrastructure section)
- Work with strategic planners to ensure that, where possible, employment land is located away from floodplains (see Buildings & Infrastructure section)
- Encourage commercial buildings that meet the 2018 target for sustainable non-domestic premises (see Buildings & Infrastructure section).

⁴⁷ Weathering the Storm and Saving Money in a Changing Climate; A Practical Guide for Small Businesses in the West Midlands

⁴⁸ Data provided by the Environment Agency

⁴⁹ UK Climate Change Risk Assessment

9. Public Sector

9.1 Public Sector - Leading the way on Carbon Reduction

While this sector is responsible for a relatively small amount of Worcestershire's total emissions, reducing emissions from public sector buildings and operations is important because partner organisations have direct control over them, and so can achieve real, measurable reductions in emissions locally. By doing this, they can demonstrate leadership to residents, other public bodies and local businesses that there is a strong business case to invest in making buildings and transport more energy and water efficient. Investing in energy efficiency now also makes public sector organisations more resilient to future increases in the cost of energy and less vulnerable to market forces, protecting vital public services.

What is the current situation?

The sector emits approx 4% of the county's CO₂ emissions¹⁸. There was an estimated 8.6% reduction in these emissions from 2005 - 2010. See table 5 appendix 1

The public sector and NGO sectors in Worcestershire boast some exciting examples of carbon reduction projects, including biomass boilers, river water cooling, and the use of excess heat from a crematorium to heat a sports centre.

Worcestershire District and County Councils report their greenhouse gas emissions to central government and operate carbon management plans. West Mercia Police, Worcester University, NHS Mental Health Trust and PCT and Environment Agency also have plans to reduce their emissions. The plans aim for from 2- 5% reduction a year up to 2015/16 as shown in the table below

Table 4. Quantified public sector emissions and targets for reduction

Partner organisation	Target reduction
Worcestershire County Council (includes schools, street lighting & contracted services)	30% by 2016 from 09/10 (5% annually)
Bromsgrove District Council	2% annually
Malvern Hills District Council	30% by march 2017 compared to 2010/11
Redditch District Council	2% annually
Worcester City Council	5% annually
Wychavon District Council	To be set as part of Intelligently Green Plan
Wyre Forest District Council	30% by 2017
Worcestershire Health and Care NHS Trust	20% reduction by 2015 over 2010/11 baseline
West Mercia Police	5% per annum against a 2008/9 baseline
Worcester University	5% annually to 2015

Many other public and NGO organisations are also working to reduce their emissions, for example Worcester Diocese is working to deliver an environmental strategy, which includes improving the energy efficiency of its properties as well as constructing new highly energy efficient ones. South Worcestershire College has also put many carbon reduction measures in place.

For large energy users, such as Worcestershire's hospitals, the County Council, and West Mercia Police, the carbon reduction commitment (CRC) means a significant extra cost and added incentive to reduce emissions.

Community First operate a Community Building Advisory Programme which includes advice on improving the energy efficiency of community buildings such as village halls in rural areas.

The public sector offers particular potential for developing highly efficient heating systems such as combined heat and power (CHP). An estimate of the potential savings to be achieved from CHP plant was published in a study for Advantage West Midlands⁵⁰. This states that, in their high scenario, installations in Worcestershire's hospitals, education, public administration buildings and sports arenas could bring about a carbon saving of 2.2 kt CO₂ per year.

What are we aiming to achieve?

15% reduction in CO₂ emissions from this sector by 2020 from 2009 levels.

How will we achieve this?

- Work together to implement our existing carbon management plans and encourage other WP organisations to take action through partnership working, joint procurement, etc.
- Develop joint staff behavioural change programmes to gain increased synergy, and increased local skills
- Explore the potential of CHP and district heating schemes for public sector buildings
- Explore the potential of joint procurement and service sharing e.g. Energy Management

We will track progress by reporting on public sector organisations' emissions annually

⁵⁰ Heat mapping and decentralised energy study, 2008 Phase 2 report, p63 Prioritised action list for Worcestershire
http://www.wmro.org/displayResource.aspx/6681/Heat_mapping_and_decentralised_energy_study.html

9.2 Public Sector - Ensuring Climate Resilience

The public sector has a key role to play in responding to severe weather to support the local community, maintain service delivery and protect assets. The local community look to the public sector for leadership during periods of severe weather. A resilient public sector can maintain service delivery which will support other sectors including local businesses. Severe weather has had an impact on the public sector in recent years. In the summer of 2007, flooding closed schools, damaged roads and affected services for local residents such as home care. The total cost to local authorities in the county is thought to have been around £12 million. While other severe weather, such as high temperatures, may not have such an immediate impact as flooding, these events increase the workload for public services, such as the fire service (responding to secondary fires) and the health services⁵¹.

Apart from responding to emergencies, public services have the potential to address a wide range of climate change impacts through functions such as health, transport, planning and building control, community care, waste, housing, environmental health and trading standards services. Public services have a particular responsibility to more vulnerable communities in terms of addressing climate change impact – all communities are at risk, but some more so than others.

The Higher Education sector is recognised as a major contributor to society's efforts to achieve climate resilience - through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations.

What is the current situation?

The Severe Weather Group for Worcestershire manages the emergency response to extreme weather events and a County Drainage group is working to solve drainage problems across the county. The NHS and Public Health operate plans to deal with extremes of temperature (the Heat wave Plan and the Cold Weather Plan) both of which are a response to previous extreme events.

Future Climate Change has been factored in to the design of a number of new public buildings including The Hive, Worcester and some of the county's schools.

The Flood and Water Management Act 2010 has placed a number of requirements on the public sector to assess and respond to flood risk. Worcestershire County Council is now the lead Local Flood Authority for the county, which includes a requirement to develop a surface water flood plan and adopt and maintain new SUDs, (all residential developments larger than one property are now required have a Sustainable Urban Drainage system (SUDs)). The Environment Agency now provide climate change adaptation advice and guidance for both public and private sector.

What do we need to achieve?

- A resilient public sector which can maintain service delivery and support the community and businesses during severe weather.
- Increased awareness of how the public sector can support a more resilient Worcestershire.
- A public sector leading by example on building resilience to a changing climate.

How will we do this?

- Assess the current and future risks to all public services from severe weather and climate (using a risk management approach)
- Support vulnerable members of the community through maintained service delivery and support to adapt to a changing climate
- Planning authorities can support delivery of code for sustainable homes (CSH) targets related to water use.
- Promote the use of SUDs for use on commercial developments
- Increase the resilience of public sector supply chains through the procurement process. – Request supply chains plans for responding to severe weather. Can suppliers still meet demand in severe weather?
- Information sharing between public sector organisations relating to current activity to increase resilience and further support needed

We will track progress by reporting on the number and quality of public sector resilience plans and adaptation strategies

⁵¹ Worcestershire LCLIP

10 Natural Environment

10.1 The role of the Natural Environment in Carbon Reduction

The natural environment and biological processes can be used to both reduce the total amount of carbon produced in Worcestershire and act as carbon sinks. The way that land is managed has an impact on the amount of carbon emitted into the environment or alternatively captured by soil or vegetation. Combined with improvements in energy efficiency and new technologies, the natural environment can be seen as an effective and sustainable way of reducing CO₂ levels in the county. The Worcestershire Partnership Environment Group has been formally recognised as a Local Nature Partnership which will involve working to manage the natural environment to produce multiple benefits for people, the economy and the environment.

What is the current situation?

This sector is currently responsible for a tiny proportion of the county's CO₂ emissions (1%). See *table 5 appendix 1*. However, nationally agriculture accounts for approx 7% of Greenhouse gas emissions (GHG). It is the source of 30% of all methane emissions and 71% of nitrous oxide. Worcestershire is a predominantly agricultural landscape with small pockets of semi natural habitat. There are relatively few examples of the natural environment being used specifically to reduce carbon production across the county. Of those examples that do exist, they are small in scale. There is currently no county-wide strategic vision of how the Natural Environment could be used to reduce carbon production.

What are we aiming to achieve?

Manage the natural environment to act as both a carbon sink and source of low carbon resources

How will we achieve this?

- Promotion of carbon reduction with all agencies, and public bodies working on the natural environment across the county.
- Encouraging farmers to reduce emissions (& save money) by improved crop nutrient management and breeding and feeding practices
- Promote reforestation or creation of semi natural habitat, e.g. grassland in appropriate locations. This will increase carbon uptake.
- Green Infrastructure and concept statements for key development sites should have carbon reduction as one of their key drivers. There are a number of ways through which Green Infrastructure can contribute to carbon reduction. These include:
 - material substitution - using low carbon materials in preference to concrete and steel
 - provision of low carbon fuels such as bio-energy, wind and hydro
 - provision of increased vegetation
 - reducing the need to travel by car through provision of an integrated network of routes for walking and cycling
- Promotion of sustainable biomass production and woodland management in appropriate locations across the county.
- Promotion of biological methods of waste treatment to reduce waste to landfill and for possible energy production. The end products from these processes (digestate) can often have a role to play in crop nutrient management.
- Encourage residents to take up locally grown foods that have been grown using low carbon methods and promote the benefits in terms of cost and environmental impact.
- Explore the potential for the emerging Minerals Local Plan to promote carbon reduction through the re-use of construction and demolition waste, reducing the use of virgin materials and the restoration of mineral workings. This might include consideration of appropriate planting on site and the use of low carbon materials for engineering of schemes and related infrastructure.

We will track progress via measures of afforestation and creation of semi natural habitats

10.2 The role of the Natural Environment in Climate Resilience

The natural environment will change as the climate changes; we should not try to prevent change but to support the environment to best respond to the different conditions. This can be achieved through the use of green infrastructure to support species movement through connectivity between green spaces and reducing the impact on fragile habitats by providing alternative spaces.

Worcestershire is highly valued for its landscape and its ecology. What makes it so special is its natural environment: its geodiversity, landscape, flora and fauna. The flora and fauna are very vulnerable to even small changes to climate such as increases in temperature or reduction in rainfall. The economy of the county is boosted by the high quality of the environment attracting tourists to the area as well as providing significant quantities of potable water from both surface and groundwater abstractions. The quality of the natural environment is an important factor in attracting and retaining skilled workers wishing to live outside of the large urban centres. The standard of the environment is also important to the quality of health in local areas.

What is the current situation?

Landscape connectivity is fragmented across the county. This makes it more difficult for species to migrate between different areas and increases the possibility of populations becoming isolated as climate change progresses.

30% of designated local wildlife sites are under positive management, however, the additional pressure of climate change could result in these and other sites being in failing condition (for example, sites such as wet meadows will become vulnerable to drying out as rainfall patterns change).

Out of 81 water bodies in Worcestershire only 10 are at 'good' status for water quality, with 56 at 'moderate', 11 at 'poor' and 5 at 'bad' status (status as defined by the Water Framework Directive).

Although not all the reasons for less than moderate status are due to climate change issues, any underlying pollution issues will be exacerbated by potential reductions in rainfall.

As part of the work towards a Green Infrastructure Strategy a Green Infrastructure Framework has now been established; this is a policy framework for the protection, creation, enhancement and accessibility of green infrastructure. A number of Green Infrastructure concept plans are under development. Concept plans provide advice for the development of master plans for areas of strategic growth. They identify the green infrastructure assets, and spatial patterns that give rise to opportunities for a connected and multifunctional green infrastructure network including positive solutions to mitigation and adaptation of climate change, such as SUDs or tree planting.

Worcestershire ecosystem services, including those linked with climate change, have been identified in the Local Economic Development and the Environment (LEDE) Toolkit. The impact of these ecosystem services on economy, and economy on these services, has been assessed.

Water attenuation schemes have been developed, e.g. a scheme was developed in Kidderminster to store around 700,000m³ of water in Puxton Marsh and release it slowly into the environment when surrounding water levels drop. This protects around 180 homes from flooding. The use of SUD's can support the recharge of groundwater and improve water quality.

A number of technical research papers have been published for the county that help address the impact of climate change on the natural environment including Planning for Soils, Planning for Climate Change, and Planning for Water. These are intended to be used in the creation of local development frameworks.

What are we aiming to achieve?

- ***Greater understanding of the economic value to the county of the natural environment.***
- ***Greater protection and connectivity between ecosystems.***
- ***The utilisation of Green Infrastructure to deliver multifunctional landscapes and reduce the impacts of climate change on the natural environment, human wellbeing and the local economy. E.g., providing green space within urban environments for evaporative cooling and shading during warmer weather.***
- ***Good quality water resources and resilience to water shortage and flood***

How will we achieve this?

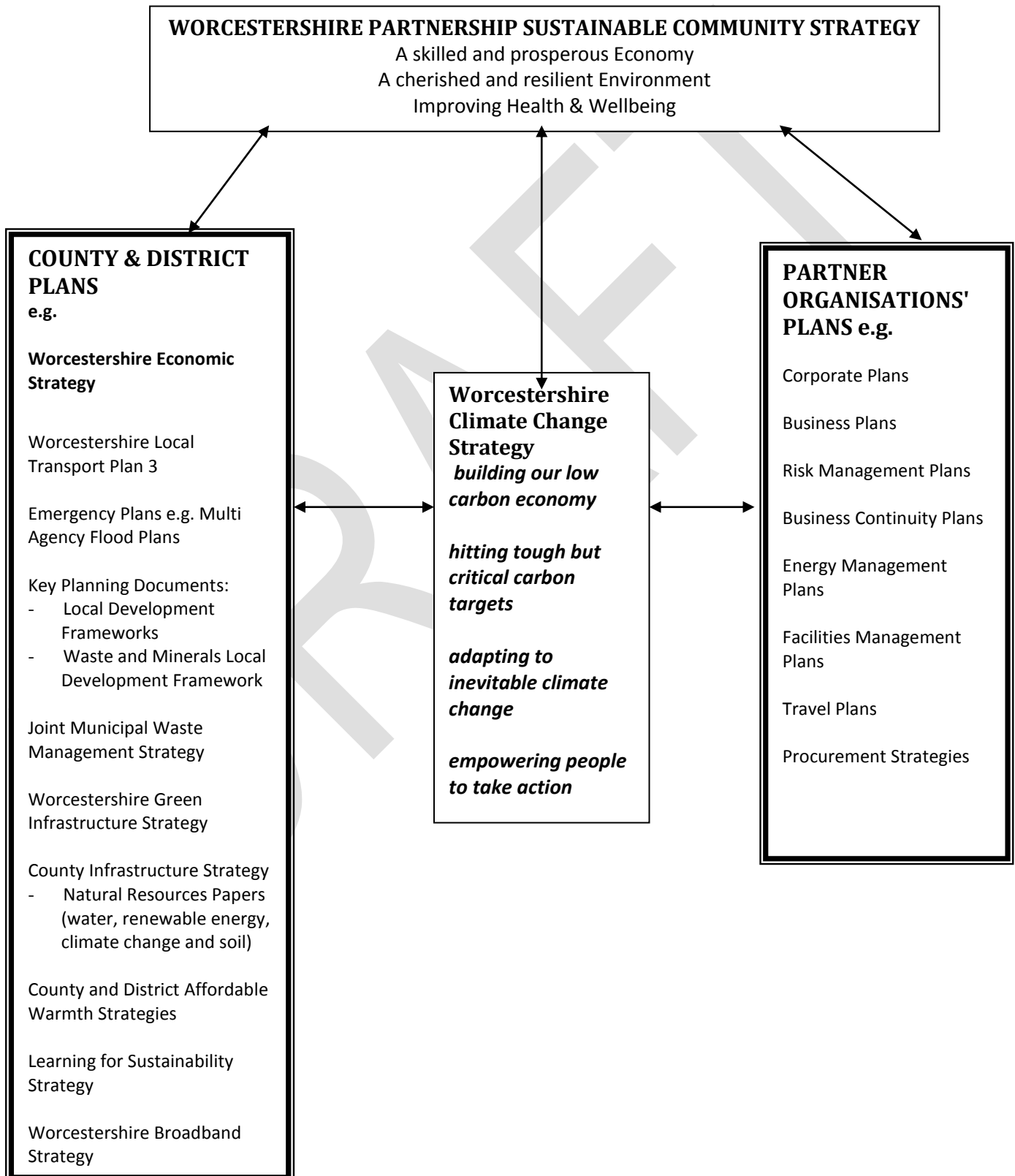
- a. Produce a Green Infrastructure Strategy by the end of 2012
- b. Coordinate Green Infrastructure delivery between partners and land owners.
- c. Engage with local councils and developers on delivery of Green Infrastructure Concept Plans

- d. Promote sustainable use of water and its storage, particularly in the farming community, to enable both flood protection and crop irrigation. Explore the potential for the emerging Minerals Local Plan to contribute to water storage and flood alleviation
- e. Produce a land use vulnerability plan for the county (including vulnerable soil types)
- f. Calculate as best we can the economic value of the natural environment in the county and the potential reduction in value through climate change impacts.
- g. Encourage reforestation of land or creation of semi natural habitats, where appropriate, to help reduce water run off and land erosion
- h. Promote a debate on the future landscapes in the county to address pressures of climate change amongst the community and stakeholders.
- i. Continue to engage with the business community on the environmental threats and opportunities to the Worcestershire's economy such as extreme temperatures, flood risk or droughts.
- j. Work with the Lead Local Flood Authority/SUDs Approval Body (Worcestershire County Council) to support flood alleviation schemes in Worcestershire.
- l. Explore the potential for the emerging Minerals Local Plan to restore landscape character and contribute towards the enhancement of networks of Green Infrastructure and improve linkages.

11. Delivery and Monitoring

The Worcestershire Partnership Climate Group will monitor and oversee delivery of the strategy. Group members will take part in other groups and work programmes to ensure delivery of the strategy.

The strategy will in part be delivered via other strategies and plans – such as the Local Transport Plan 3 and Green Infrastructure Strategy. Partners will work towards a multifunctional and active approach to adaptation and mitigation, with increased and improved connectivity between related strategies and actions across the whole county, ensuring all key strategies and plans address carbon reduction and climate resilience.



Action Plan

An Action Plan will be drawn up to give more detail of how the objectives of the strategy will be delivered. The plan will be updated every 6 months.

Monitoring

Progress will be monitored via the action plan and also by a series of local indicators making use of data from sources such as the Energy Savings Trust (EST) HEED data base, HECA requirements, Ofgem, DECC, EcoRegion - County CO₂ Database, Worcestershire Viewpoint Surveys.

Indicators will include:

- annual direct CO₂ emissions/emissions per capita
- public attitudes and behaviour related to climate change
- household energy efficiency measures installed
- level of uptake of Green Deal and ECO
- energy generated by renewables
- a correlated measure of carbon emissions and economic activity
- a measure of the growth in low carbon jobs and the scale of the low carbon and environmental technology and services sector
- the number and quality of resilience plans and adaptation strategies
- the extent, quality and productivity of green spaces and tree cover

Reporting

Action plan progress will be reported to Worcestershire Partnership Environment Group every six months with exceptions every quarter. Progress on the strategy will be reported to the Worcestershire Partnership annually via the Sustainable Community Strategy indicator set. Progress will also be reported annually via the Worcestershire State of the Environment report.

Review

The strategy will be reviewed every four years and as required.

Glossary, Abbreviations and Further Information

Act on Energy Worcestershire, Warwickshire and Coventry's Energy Advice Charity

CERT Carbon Emissions Reduction Target

An obligation on energy suppliers to achieve targets for promoting reductions in carbon emissions in the household sector. www.decc.gov.uk/en/content/cms/funding/funding_ops/cert/cert.aspx

CHP Combined Heat and Power

CRC Carbon Reduction Commitment

A mandatory CO₂ emissions charging scheme, targeting emissions currently not included in the EU ETS or Climate Change Agreements from the service sector, public sector and other less energy-intensive industries. www.decc.gov.uk/en/content/cms/emissions/crc_efficiency/crc_efficiency.aspx

CO₂ Carbon Dioxide

CSH Code for Sustainable Homes

Measures the sustainability of a new home against nine categories of sustainable design.

www.communities.gov.uk/planningandbuilding/sustainability/codesustainablehomes

DECC Department for Energy and Climate Change www.decc.gov.uk

DEFRA Department for Environment Food and Rural Affairs www.defra.gov.uk

DfT Department for Transport www.dft.gov.uk

EPBD Energy Performance of Buildings Directive

An EU directive requiring the production of A-G rated energy performance certificates (EPCs) for all buildings when they are bought, sold, built or rented and displayed in all large public buildings

www.communities.gov.uk/planningandbuilding/theenvironment/energyperformance/

EST Energy Saving Trust www.energysavingtrust.org.uk

EU ETS The EU Emissions Trading Scheme (EU ETS) is a Europe wide scheme which puts a price on carbon that businesses use and creates a market for carbon. It has been in place since

2005 and is the first scheme of its kind in the world. Large industrial users are covered by the scheme

www.decc.gov.uk/en/content/cms/emissions/eu_ets/eu_ets.aspx

Energy Act 2011

Provides for a step change in the provision of energy efficiency measures to homes and businesses, and makes changes to enable and secure low-carbon energy supplies and fair competition in the energy markets. www.decc.gov.uk/en/content/cms/legislation/energy_act2011/energy_act2011.aspx

Fuel Poverty A household is said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime (usually 21 degrees for the main living area, and 18 degrees for other occupied rooms). http://www.decc.gov.uk/en/content/cms/funding/fuel_poverty/fuel_poverty.aspx

GHG Greenhouse Gas

Some of the energy from the sun is trapped inside our atmosphere as it is reflected back from the earth towards space. This natural process is called the greenhouse effect. The gases which make this happen are known as greenhouse gases. The most important greenhouse gases are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. These are the gases that are covered by the Kyoto Protocol.

Green Infrastructure "Green Infrastructure is ... the network of green spaces and natural elements that intersperse and connect our cities, towns and villages. It is the open spaces, waterways, gardens, woodlands, green corridors, wildlife habitats, street trees and open countryside. Green Infrastructure provides multiple benefits for the economy, the environment and people" Definition taken from the West Midlands Green Infrastructure Planning Prospectus (West Midlands Environment Partnership) www.worcestershire.gov.uk/

KtCO₂/Yr Kilotonnes of carbon dioxide per year 1 Kilotonne = 1000 tonnes

Kyoto Protocol The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997. The international agreement sets binding targets for 37 industrialised countries and the European community for reducing greenhouse gas (GHG) emissions

LDF Local Development Framework

LEP Local Enterprise Partnership - Worcestershire's LEP is an independent collaboration between local councils, local business, trade organisations and the voluntary sector. Its role is to help develop a business environment which will encourage inward investment, stimulate the local economy and to identify and promote appropriate projects for funding. www.worcestershirelep.org/

LSP Local Strategic Partnership

LTP Local Transport Plan - Worcestershire LTP3 www.worcestershire.gov.uk/cms/local-transport-plan/the-local-transport-plan.aspx

LULUCF land use, land use change and forestry

Microgeneration A diverse set of technologies that have the potential to supply low carbon energy at the point of demand.

MtCO₂/Yr Million tonnes of carbon dioxide per year

PV Photo Voltaic cells generate electricity directly from sunlight

RTFO Renewable Fuel Transport Obligation Requires suppliers to ensure that a percentage of their transport fuel sales in the UK were from a renewable source

Renewables Obligation Requires licensed electricity suppliers to source a specific and annually increasing percentage of the electricity they supply from renewable sources.

Solar Water Heating Solar water heating panels use sunlight to heat water, unlike PV which generates electricity

UKCP09 UK Climate Projections 2009 Package of climate change scenarios for the UK, UKCP09 for short.

UKCIP UK Climate Impacts Programme www.ukcip.org.uk

UNFCCC United Nations Framework Convention on Climate Change - The Convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. <http://unfccc.int/2860.php>

Warmer Worcestershire partnership between public and voluntary sector aimed at improving home energy efficiency and reducing fuel poverty in Worcestershire. www.warmerworcestershire.com

Worcestershire Economic Strategy Provides a context and framework within which the future development and strengthening of all aspects of the economy of Worcestershire will sit.

www.worcestershire.gov.uk/.../Refreshed%20Worcestershire%20Economic%20Strategy%202010%20

Herefordshire and Worcestershire Waste Strategy The Municipal Waste Management Strategy for Herefordshire and Worcestershire www.worcestershire.gov.uk/cms/recycling-and-waste/waste-strategy1.aspx

Worcestershire Waste Core Strategy— This guides developers as to what type of development will be acceptable where and will encourage and stimulate businesses involved in recycling and re-use of resources www.worcestershire.gov.uk/cms/minerals-and-waste-policy/waste-core-strategy.aspx

Worcestershire Infrastructure Strategy— www.worcestershire.gov.uk/cms/strategic-planning/infrastructure-planning.aspx

Worcestershire Learning for Sustainability Strategy www.worcestershire.gov.uk/cms/sustainability/learning-for-sustainability.aspx

Appendix 1 Worcestershire carbon emissions reduction data and projected targets

Table 5 Worcestershire's total CO₂ emissions and reductions 2005 – 2010

Sector	2005 CO ₂ emissions 000s tonnes	2010 CO ₂ emissions 000s tonnes	CO ₂ reduction 2005 – 2010 000s tonnes	% CO ₂ reduction 2005 – 2010
Residential	1423	1346	77	5.4%
Transport (incl motorways)	1771	1660	111	6.3%
Business*	1401	1193	209	14.9%
Public	194	177	17	8.6%
Natural Environment	49.2	48.6	0.6	1.1%
Total	4837	4424	414	9%

* Figures include commercial, industrial, agriculture and rail sectors

source: DECC Local Authority Area total CO₂ emissions and 'Carbon Baseline and Scenario Modelling for Worcestershire' – Aether

Table 6 Worcestershire projected total CO₂ emission reduction targets by sector by 2020 (from 2009 baseline)

	Percentage reductions by 2020	Absolute emission reductions (kt CO ₂)
Residential	32%	397
Transport (Road)	10%	175
Transport (Rail)	9%	2
Commercial	39%	120
Industry	10%	69
Agriculture	6%	4
Public	15%	24
LULUCF	60%	33
Total	19%	824

NB DECC changed way of measuring LULUCF/Natural Environment in 2010

22% of Worcestershire's projected carbon reduction can be influenced at the local level.

source: 'Carbon Baseline and Scenario Modelling for Worcestershire' – Aether

Table 7 Worcestershire estimated 2020 CO₂ savings by sector that are related to local action (from 2009 levels)

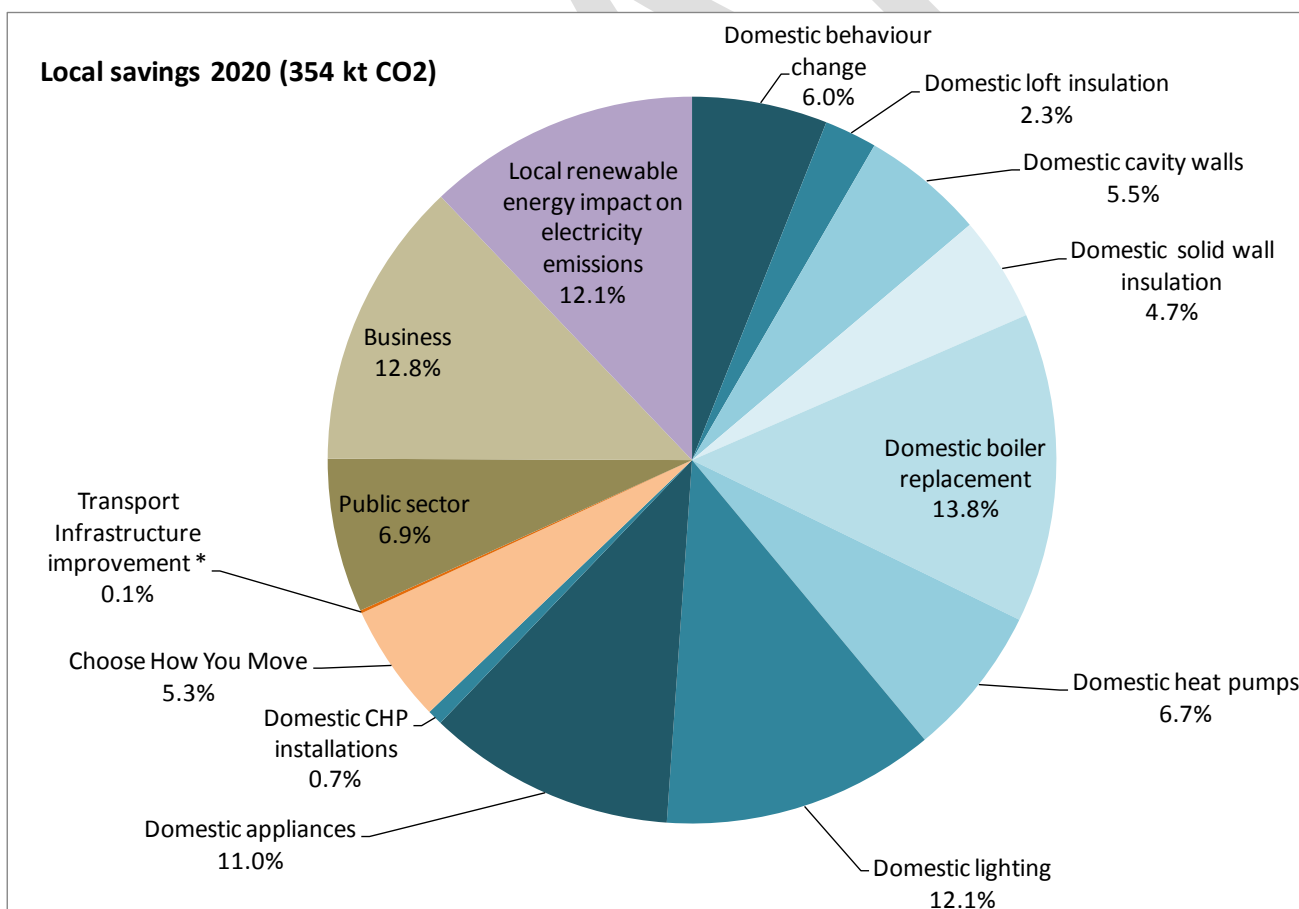
Sector	2020 CO ₂ Savings from 2009 levels (kt CO ₂)
Domestic total	223
Behaviour change	21
Loft insulation	8

Cavity walls	19
Solid wall insulation	17
Boiler replacement	49
Heat pumps	24
Lighting	43
Appliances	39
CHP installations	2
Transport total	19.5
Smarter choices	19
Infrastructure improvement schemes*	0.5
Public sector	24
Business	46
Local renewable energy impact on electricity emissions	43
Total	354

* NB Not all locally influenced transport related savings are included because these savings are not quantifiable at this stage.

Source: 'Carbon Baseline and Scenario Modelling for Worcestershire' – Aether

Figure 8 Estimated Savings from local measures in 2020 (from 2009 levels)



* NB Not all locally influenced transport related savings are included because these savings are not quantifiable at this stage.

Source: 'Carbon Baseline and Scenario Modelling for Worcestershire' – Aether

Appendix 2 – About the Worcestershire Partnership

Formed in 1998, the Worcestershire Partnership is the Local Strategic Partnership for the county.

The Worcestershire Partnership brings together local government, public services such as health, learning providers, police and probation, voluntary and community organisations and local businesses within Worcestershire. The work of the partnership is based on a shared common purpose and good will.

Together, the partners have developed a vision for Worcestershire based on what Worcestershire residents said was important to them in making our county a great place to visit, work or live in:

Their vision for Worcestershire is "a county with safe, cohesive, healthy and inclusive communities, a strong and diverse economy and a valued and cherished environment."

The Partnership is responsible for producing a Sustainable Community Strategy that sets out the detail of how they will achieve this vision.

The Worcestershire Partnership has agreed the following values. These values apply to all partners in their work for the Worcestershire Partnership. The values underpin everything they do. In order to join the partnership, individuals and groups must agree to subscribe to the values below.

In all our work and planning we will:

- Provide for the needs of all groups in society
- Treat people with equality and value diversity
- Build strong, cohesive communities and promote good community relations
- Remove barriers that prevent individuals from reaching their full potential
- Intervene early to prevent problems from becoming entrenched
- Take account of the needs of future generations
- Actively seek ways in which to improve people's health and well-being
- Work in partnership with others
- Provide high quality and value for money services
- Involve and listen to local people and local communities – these could be geographical communities or communities of interest
- Promote Worcestershire on the regional, national, European and international stage and maximise the opportunities available to the county

For further information about the Worcestershire Partnership please visit www.worcestershirepartnership.org.uk.

Appendix 3 – Members of The Worcestershire Partnership Climate Change Group

Independent Chair - Professor John Bryson (University of Birmingham)
Worcestershire County Council
Bromsgrove District Council
Malvern Hills District Council
Redditch Borough Council
Worcester City Council
Wychavon District Council
Wyre Forest District Council
Hereford and Worcestershire Chamber of Commerce
The Environment Agency
University of Worcester
Worcester Alliance
Hereford and Worcestershire Fire Service
West Mercia Police
Act on Energy
The Duckworth Trust
Friends of the Earth
Worcestershire NHS

DRAFT

Appendix 4 Contributing to the Climate Change Strategy Action Plan

One of the purposes of this consultation period is to give **YOU** an opportunity to contribute to the Climate Change Strategy. We are particularly looking for specific agreed actions that can contribute to the detailed Action Plan that we will be producing. Please use the template provided overleaf to record actions, this will ensure we end up with a clear, robust plan. When developing actions, make sure they:

- **address one or more of the sections** of this Strategy
- are **genuine partnership actions**– no single agency actions or rebranding of things that would happen anyway
- **SMART** (specific, measurable, ambitious but achievable, realistic, time related) – no vague aspirations!
- achievable during the lifetime of the plan, which will run from now until 2020

Please use the **BLANK TEMPLATE OVERLEAF** to develop and record actions. – **To guide you, we’ve included some explanatory notes, shown in *italic blue type below*, about the sort of information to include in each part of the template.**

You may wish to contribute a case study illustrating the work of your organisation or a specific project with which your organisation is involved. Please use the proforma in Appendix 5 for this.

Climate Change Strategy Section:	<i>Choose one of the Climate Change Strategy areas where your action will make the most significant contribution</i>	
Action:	<i>Use one or two short sentences to clearly set out the action you are proposing. Make sure the action is specific, measurable, ambitious but achievable and realistic.</i>	
Timescale:	<i>Start date:</i>	<i>End date:</i>
Lead agency & named contact:	<i>Key milestones: The Climate Change Strategy runs up until the end of 2020.– Make sure your action is fully, or partly, achievable within this timescale.– As well as start and end dates, if possible include key milestones – i.e. dates along the way which are important or where progress can be measured</i>	
Other key partners:	<i>Whilst a range of partners will be involved in every action, it is essential that you can identify one partner/partnership to act as a lead.– Give the name of a person from that partnership or organisation who will be responsible for making sure the action is driven forward and who can be a contact point for progress updates.</i>	
Resources:	<i>Agreed/secured</i>	<i>Sought/required</i>
Current status of action:	<i>Notes: Use this part of the template to note down resource implications.</i>	
Risks & other notes:	<i>State whether an action: has been agreed by the partners involved; is under discussion and when a decision is expected; or if neither, when you will you be approaching partners for agreement. We will need to understand that actions have been agreed before they can be included in the Action Plan.</i>	
Risks & other notes:	<i>Use this part of the template to briefly highlight any risk factors and other key issues not already covered.</i>	

CLIMATE CHANGE ACTION PLAN TEMPLATE

– SUBMIT YOUR ACTION AND CONTRIBUTE TO THE CLIMATE CHANGE STRATEGY

Climate Change Strategy Section:		
Action:		
Timescale:	<i>Start date:</i>	<i>End date:</i>
	<i>Key milestones:</i>	
Lead agency & named contact:	<i>Don't forget to include your full contact details HERE!</i>	
Other key partners:		
Resources:	<i>Agreed/secured</i>	<i>Sought/required</i>
	<i>Notes:</i>	
Current status of action:		
Risks & other notes:		

Please return this template to: sustainability@worcestershire.gov.uk

Appendix 5 Case Study Proforma

You may wish to contribute a case study illustrating the work of your organisation or a specific project with which your organisation is involved. Please use the proforma below for this and include a photograph of the project where possible.

<u>Name of project:</u>
<u>Significant dates (e.g. dates for completion, length of time the project took to complete):</u>
<u>Lead organisation:</u>
<u>Other organisations involved:</u>
<u>Funding requirements:</u>
<u>Description of the project (max 500 words):</u>
<u>Description of accompanying picture:</u>

Please return this template to sustainability@worcestershire.gov.uk