

Climate Change Strategy

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1. Foreword

Climate change is not just an environmental problem; it also has economic, social and health consequences. The generation and use of energy, transport, waste and the nature of our landscapes are all implicated.

This Strategy has been produced by the West Berkshire Partnership's Greener Sub-partnership. It shapes a plan with our partners and local communities to address the causes and impacts of climate change. This strategy takes a lead from the West Berkshire Partnership's Sustainable Communities Strategy, "*A Breath of Fresh Air*". Furthermore, national government is rolling out a series of programmes to be the 'greenest government ever', with the Climate Change Act (CCA) 2008 and subsequent Carbon Plans at its heart, this document needs to reflect our national ambitions.

This revised strategy embraces the many changes in policy and scientific thinking since the first attempt. It re-focuses the desire to tackle climate change, as demonstrated by the individual efforts of people, local communities, schools, businesses and organisations within West Berkshire, and puts in place a strategy that can affect change at a district level.

The challenge ahead is not a small one. In the 2011 Department of Energy and Climate Change (DECC) statistics, West Berkshire as a district was responsible for emitting 1,111,290 tonnes of carbon dioxide. On an end-user basis, with a population estimated at 154,100 people (2011), this works out at 7.2 tonnes of carbon dioxide per person per annum. Revised figures for the years 2005 to 2011 indicate there has been an 18% reduction in West Berkshire's carbon dioxide emissions per capita since 2005, despite an increase in overall population. This may be indicative of the improved efficiency of housing stock, vehicles and domestic appliances; and behaviour change over this period due to the economic recession and people becoming more energy-aware.

This Strategy sets out our vision of how West Berkshire as a district can improve its performance and play an exemplary role in the national effort to tackle climate change, and how the West Berkshire Partnership and its individual partner organisations can support this. Furthermore, this document will provide a structure for setting a context for the Green Deal and 'Big Society' proposed by national government.

Our approach towards tackling climate change will undoubtedly alter in the years to come as new information, resources and methods become available. This strategy nevertheless fulfils an important step in establishing a framework for action.

It is therefore important that the strategy addresses the right issues, identifies all the opportunities available, is realistic in its expectations, and is supported by you, your organisation and community.

Cllr Graham Pask
Chairman
West Berkshire Partnership

Cllr Dominic Boeck
Chairman
Greener Sub-Partnership

1. Introduction

1.1. Purpose

1.2. The purpose of the West Berkshire Climate Change Strategy (WBCCS) is to establish a framework for action in West Berkshire which will allow the West Berkshire Partnership (WBP) to tackle the causes and consequences of climate change. See Appendix A1 for details of why West Berkshire needs to take action and Appendix A2 for details on the possible impacts on West Berkshire.

1.3. Background

1.4. In 2008 the WBP published the West Berkshire Sustainable Community Strategy 'A Breath of Fresh Air'.¹ Through regular scrutiny and update 'A Breath of Fresh Air' remains the Partnership's vision and statement of its aims for the West Berkshire environment through to 2026.

1.5. In 2009, the first Climate Change Strategy (CCS) was published to deliver the 'greener' aims in 'A Breath of Fresh Air'. Due to changes in Government policy and its approach to partnership working, a number of the targets in the first CCS are in need of review.

1.6. There was a general consensus that the original document was too complex, detailed and lengthy, with a need to simplify the strategy. This 'refresh' radically overhauls the original strategy and changes the focus to much broader aspirations.

1.7. The WBCCS is a non-statutory document and therefore does not itself have specific powers.

2. Vision

2.1. To reduce the carbon emissions of the district, by at least 17% by 2020 on 2005 levels*[#], to mitigate against future climate change, whilst maintaining a strong economy by building in resilience (adaptation) to climate change.

2.2. To see the latest figures for West Berkshire, see Appendix A3.

3. Priorities

3.1. The CCS has been structured to compliment the related priority outcomes of the aforementioned Sustainable Community Strategy. Namely:

- To increase awareness of 'green' issues and how communities can contribute;
- To increase the use of renewable energy within the district;
- To become more efficient with the water we use;
- To reduce the level of commercial and municipal waste that is produced and increase the level of recycling in West Berkshire;

¹ West Berkshire Partnership, 2011: *Sustainable Community Strategy – A Breath of Fresh Air*
<http://www.westberkshirepartnership.org/index.aspx?articleid=15225>

* Emissions are deemed as the district's per capita emissions, as outlined in DECCs annual release of Emissions within the Scope of influence of Local Authorities¹¹

[#] This target is effectively the same percentage decrease as the UK national target of a reduction of 34% on 1990 levels by 2020. A baseline of 2005 is used because DECC regional data is corrected with each release as far back as 2005, making data from previous years incomparable.

- To increase the proportion of food that is consumed from local sources;
- To conserve and enhance the environmental and historical characteristics of the area;
- To increase the use of sustainable transport.

4. Actions

- 4.1. To set the framework within which the WBP can achieve its collective and individual partner aims and objectives.
- 4.2. It is therefore intended to influence a very broad range of activity, including how the statutory functions of West Berkshire Council (WBC) are designed and delivered in the future and compliment WBC strategies and policies.
- 4.3. New strategies and policies will need to be written to address specific priorities, for example the need for a Renewable Energy Strategy for West Berkshire (RESWB), which is currently being undertaken.
- 4.4. The delivery of measures will be undertaken by the West Berkshire Partnership's Greener Sub-partnership (WBP-GSP) through goal setting and action planning.
- 4.5. The WBP Strategy aims to focus on 10 key themes, these are:
 1. Influencing Behaviour
 2. Energy Efficiency
 3. Renewable Energy
 4. Water
 5. Planning
 6. Waste
 7. Transport
 8. Sustainable Procurement
 9. Local Food
 10. Natural Environment
- 4.6. The key themes directly affect the district's ability to mitigate and adapt to climate change. They cover both the residential and commercial sectors; WBP has influence on these sectors through links with its partners in the public, voluntary and private sectors. Appendix A3.13 outlines these key themes and their connection with climate change, as well as some of the actions West Berkshire have or are planning to take in order to mitigate and adapt.
- 4.7. Each theme has a number of targets attached to it; See the accompanying Action Plan for details of these targets. Targets will be regularly reviewed and adapted if necessary.
- 4.8. To describe the present situation, rationale, future intentions and actions for the WBP to take in order to achieve its objectives. For Case Studies outlining just some of the efforts of West Berkshire residents and businesses, refer to Appendix A5.

5. Implementation

5.1. *Performance monitoring*

5.2. Progress must be regularly tracked against the priorities and objectives, and opportunities for improvement should be identified and implemented as agreed. The LSP Greener Partnership will take on this responsibility with regular updates as part of its meeting cycle. Targets should be few and sufficiently high-level to allow representatives to determine and implement a solution to meet aims and objectives. The representative of the WBP GSP will meet with the individual leads to agree on individual targets derived from the actions within the accompanying Action Plan.

5.3. *Project Planning*

5.4. Initial actions, in support of the adoption and subsequent roll-out of this strategy, requires the Partnership to identify the most critical actions and to produce a high-level plan to assist implementation. The specific actions can be found in the accompanying Action Plan.

6. Summary

6.1. WBP and its partner organisations have and will continue to take action in order to reduce our CO₂ emissions, and improve our resilience to the affects of future climate change. In order to achieve this we will have clear targets, as set out in our accompanying Action Plan, and will work with our partners and members of the community towards achieving these.

6.2. To find out more about why we need to take action, the risks for West Berkshire, and what we are doing about it, as well as our plans for the future, how you can help and what others are doing, please refer to the attached Appendices and accompanying Action Plan.

Appendices

A1. Appendix 1: Why take Action?

A1.1 In 2013, the Fifth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC), involving scientists from around the world; concluded that global temperatures have increased by 0.85°C during period 1880 -2012.² According to the IPCC, 1983-2012 is likely to have been the warmest 30 year period for the last 1400 years in the Northern Hemisphere. “It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th Century.”

A1.2 We can expect to see global temperatures continue to rise for the next few decades regardless of what we do. This is because the climate takes about 30-40 years to react to the gases we emit today, meaning that current climate change is the result of our past emissions.

A1.3 Trapping more heat in our atmosphere is likely to have a number of effects on our climate. Predicting what these effects will be becomes harder as you focus on smaller geographical areas. The UK Climate Impacts Programme (UKCIP) has recently produced scenarios of future climate changes for the UK. Table 1 summarises these predictions for the UK in the 2080s, which can provide an indication of how we may expect the climate of West Berkshire to change over the coming decades.

Table 1: Predicted climate changes for the South East by the 2080s³

| Climate Variable | Summary of Changes | | |
|---------------------------------------|---|---|--|
| | Low Emissions Scenario | Medium Emissions Scenario | High Emissions Scenario |
| Winter mean temperature | Central estimate is an increase of 2.6°C. It is very unlikely to be less than 1.4°C and very unlikely to be more than 4.0°C. | Central estimate is an increase of 3.0°C. It is very unlikely to be less than 1.6°C and very unlikely to be more than 4.7°C. | Central estimate is an increase of 3.7°C. It is very unlikely to be less than 2.0°C and very unlikely to be more than 5.7°C. |
| Summer mean temperature | Central estimate is an increase of 3.0°C. It is very unlikely to be less than 1.4°C and very unlikely to be more than 5.1°C. | Central estimate is an increase of 3.9°C. It is very unlikely to be less than 2.0°C and very unlikely to be more than 6.5°C. | Central estimate is an increase of 4.9°C. It is very unlikely to be less than 2.6°C and very unlikely to be more than 8.1°C. |
| Summer mean daily maximum temperature | Central estimate is an increase of 4.1°C. It is very unlikely to be less than 1.4°C and very unlikely to be more than 7.4°C. | Central estimate is an increase of 5.3°C. It is very unlikely to be less than 2.3°C and very unlikely to be more than 9.2°C. | Central estimate is an increase of 6.7°C. It is very unlikely to be less than 3.0°C and very unlikely to be more than 11.5°C. |

² IPCC, 2013: Climate Change 2013: The Physical Science Basis: Synthesis Report - Summary for Policy Makers, <http://www.ipcc.ch>

³ Jenkins, G.J., Murphy, J.M., Sexton, D.S., Lowe, J.A., Jones, P. and Kilsby, C.G., 2009: *UK Climate Projections: Briefing Report*. Met Office Hadley Centre, Exeter UK

A1.4 According to Defra (2009)⁸ central predicted increases in average summer temperature for the South East are 1.6°C during the 2020s, 2.3°C by the 2040s and 3.9°C by the 2080s. We are already committed to an average rise in global temperatures of 0.6°C, temperature changes lag behind greenhouse gas emissions so we will need to adapt for this rise regardless of any reduction in emissions we can achieve now. However, reductions in emissions now will reduce the severity of impacts of climate change in the last half of the century, reducing the effects for future generations.

A1.5 The UK Government is bound to the terms within the CCA⁴ and is determined to be the 'greenest' government ever. The UK is currently working to an ambitious Carbon Plan⁵, which sets out an action list and timetable for carbon reduction and energy efficiency initiatives. These actions are wide-ranging, from the reformation of the electricity grid, with the introduction of the Feed In Tariff (FiTs) and Renewable Heat Incentive (RHI), through to renovating the existing housing stock (Green Deal), commercial carbon reduction (Green Investment Bank), and reducing emissions in both agriculture and waste disposal. Large organisations (who are not already engaged with the EU Energy Trading Scheme) that consume significant amounts of electricity have been charged with submitting a Carbon Reduction Commitment (CRC) report, which levies a charge on each tonne of CO₂ that it emits, thereby incentivising energy efficiencies to be made.⁶

A1.6 In the past, Local Authorities (LAs) "reported their performance against 198 indicators reflecting national priorities and negotiated targets with the Government on 35 National Indicators (NIs) through Local Area Agreements (LAAs)."⁷ The indicators which related to climate change were:

- NI185- CO₂ reduction from LA operations
- NI186- per capita CO₂ emissions in the LA area, including emissions arising from buildings, industry and surface transport
- NI188- adapting to climate change

A1.7 In an Audit Commission review (2009), they found that NI186 "had resulted in action in many areas. However...that stronger levers may be required to encourage more comprehensive action and more ambitious targets."⁷ The coalition Government has since abolished LAAs and the NIs. There is now no formal requirement for LAs to set emissions targets.

A1.8 "To avoid dangerous levels of climate change, global greenhouse gases must start to fall within the next decade and then be at least 50% below 1990 levels by 2050. The sooner we take action to achieve this, the greater the chance we will have of succeeding and the cheaper it will be."⁸ As mentioned in Appendix A2.2 the cost of reducing greenhouse gases is estimated to be around 1% of world wealth but inaction will cost the economy many more times this.

A1.9 Under the 2008 CCA, the UK is committed to an 80% reduction by 2050 of emissions (on 1990 levels). In order to help achieve this targets are split into 4

⁴ UK Government: *Climate Change Act 2008*, <http://www.legislation.gov.uk/ukpga/2008/27/contents>

⁵ DECC, 2011: *Carbon Plan: Delivering our Low Carbon Future*
http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx

⁶ DECC, 2011: *CRC Energy Efficiency Scheme*,
http://www.decc.gov.uk/en/content/cms/emissions/crc_efficiency/crc_efficiency.aspx

⁷ CCC, 2012: *How local authorities can reduce risk and manage climate risks*
<http://www.theccc.org.uk/publication/how-local-authorities-can-reduce-emissions-and-manage-climate-risks/>

⁸ Defra, 2009, *Adapting to climate change UK Climate Projections*,
<http://www.defra.gov.uk/publications/files/pb13274-uk-climate-projections-090617.pdf>

Carbon Budgets. The UK is in the second Carbon Budget period, to meet the fourth; emissions are required to be reduced by 50% on 1990 levels in 2025.

A1.10 The updated projections suggest that the UK is likely to comfortably meet its first three carbon budgets. Projected emissions are lower for traded and territorial emissions in the second, third and fourth carbon budget periods than the October 2011 projections. However projected non-traded emissions are slightly higher in carbon budgets 1, 3 and 4. Therefore the margin by which the UK is projected to overachieve against the first three carbon budgets is smaller. There are a large number of factors contributing to the change in projected emissions including changes to savings estimates, updates to data and assumptions and changes to modelling methodology.⁹

A1.11 The Committee on Climate Change report, How LAs can reduce emissions and manage climate risk⁷ suggests that whilst LAs should include emissions reductions in line with these Carbon Budget levels, they should focus on drivers of emissions where they have influence. For example these may be to insulate 1000 homes by 2020, install 100 electric vehicle charging points or set additional requirements for planning permission, such as having to install cost-effective energy efficiency measures into the whole house when building extensions (a requirement by Uttlesford District Council in Essex).

⁹ DECC, 2012, Updated Energy and Emissions Projections 2012, <https://www.gov.uk/government/publications/2012-energy-and-emissions-projections>

A2. Appendix 2: Impacts of Climate Change on West Berkshire

A2.1 Table 1 shows how the climate for the South East is predicted to change by the 2080s. The risks associated with these changes to our climate are a function of their potential impacts coupled with the probability of their occurrence. The potential impacts, in turn, could affect four broad areas of West Berkshire life, termed 'receptors': namely the Districts' people, property, economy and environment.

A2.2 *What is the risk to West Berkshire and what are we doing about it?*

A2.3 The implications of predicted climate change pose a significant risk to the safety, prosperity and environment of West Berkshire and beyond. We must take action to manage the climate change risks we cannot avoid (adaptation) whilst at the same time reducing our carbon dioxide emissions (mitigation) to avert even more dangerous climate changes in the decades beyond. The WBP believes this to be the right approach for the following reasons:

1. Cost-effectiveness – The Stern Review on the economics of climate change illustrated how costs to the global economy rise with increasing degrees of climate change, and that early action to limit the extent of climate change is ultimately cheaper than waiting to manage the impacts of climate change when they become more severe. It concluded that while dealing with climate change by cutting emissions of greenhouse gases will cost a lot of money – about 1% of the world's wealth – doing nothing about it will cost the world an awful lot more, anything from 5 to 20 times more.¹⁰

2. Quality of life – In addition to avoiding potentially very serious risks associated with future climate change, strong action to cut our greenhouse gas emissions can also improve other areas of our lives. For example, improving the energy efficiency of our homes can make them more comfortable and reduce our energy bills; improving our ability to walk, cycle or take public transport to move around West Berkshire could reduce car congestion and improve air quality and our health.

3. A sustainable economy – The future costs of doing 'business as usual' can be expected to increase, for example, due to increasing costs of energy and those associated with more frequent climate change impacts (e.g. insurance, clean-up and repair). A more sustainable, energy and resource efficient, and climate-resilient form of business must therefore be developed to ensure our economy remains strong and competitive.

4. National / Global fairness – 2011 DECC figures for per capita CO₂ emissions, indicate that people in West Berkshire currently produce 7.2 tonnes of CO₂ per person per year.¹¹ This is several times greater than the average person in India and China. Climate change requires co-ordinated action around the world, with leadership shown by those countries which have benefited most from using fossil fuels, including the UK. It should also be noted that the UK has exported some of its carbon footprint by the increase in manufacturing of our goods in other countries such as China and Taiwan, if we were to include these emissions, the UK's per capita CO₂ emissions would increase significantly. West Berkshire

¹⁰ Stern Review on the Economics of Climate Change, 2006, http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

¹¹ DECC, 2011: Emissions within the Scope of influence of Local Authorities for 2005-11 <https://www.gov.uk/government/publications/local-authority-emissions-estimates>

therefore needs to deliver its fair contribution towards the international effort to tackle climate change.

5. Impact on Ecology and Farming – West Berkshire supports a great diversity of land use types and habitats, ranging from urban landscapes through arable and agricultural grasslands to a mosaic of wetland habitats. The local ecology not only supports the local agricultural economy but provides the residents of West Berkshire with excellent opportunities for quiet recreation, relaxation, walking and enjoyment of wildlife.

6. Fuel Security and Fuel Poverty – Though not directly linked to climate change, the UK is very vulnerable to global changes in energy stocks and must become more self-sufficient in its energy supply. Furthermore, as energy costs continue to rise, more will become fuel poor, placing extra pressure on our health and social care systems. Again, this exemplifies the need to find alternative, accessible and ‘cheaper’ forms of energy, which by virtue, should reduce carbon emissions.

A2.4 This strategy makes an initial assessment of five broad risk categories associated with future climate change in West Berkshire, identifying the associated impacts and probabilities of each where possible. These relate to flooding, water shortages, heat, higher wind speeds and subsidence.

A2.5 Table 2 provides an overview of how these risks may affect the aforementioned receptors in West Berkshire, which are further explained and exemplified in the following sections.

Table 2: Potential Impacts of Climate Change Risks in West Berkshire

| Risks | Receptors | | | |
|------------------------|---|---|--|--|
| | People | Property | Economy | Environment |
| Flooding | <ul style="list-style-type: none"> Public health & safety risks Long term physical & mental health impacts | <ul style="list-style-type: none"> Building damage Infrastructure damage | <ul style="list-style-type: none"> Lost work days Disruption to transport & supplies Insurance & repair costs Agricultural crop damage | <ul style="list-style-type: none"> Habitat changes/loss Restoration costs |
| Water Shortages | <ul style="list-style-type: none"> Need for water rationing | <ul style="list-style-type: none"> Hosepipe bans Requirement for water efficient fixtures & fittings | <ul style="list-style-type: none"> Disruption to water reliant processes Closure of water reliant recreational activities | <ul style="list-style-type: none"> Species & habitat stress & destruction Deterioration of river & wetland ecology Reduced water quality standards |
| Heat | <ul style="list-style-type: none"> Increased risk of vector borne diseases Increased heat stroke & other hot weather illnesses Increased incidence of food poisoning | <ul style="list-style-type: none"> Increased energy consumption from cooling & refrigeration Infrastructure damage (tarmac melt, rail buckling) Increased need for vegetation management | <ul style="list-style-type: none"> Changes in demand for weather related goods & services Additional staff health & safety risks Heat stress to utilities & building services | <ul style="list-style-type: none"> Species & habitat migration Longer growing season Increased frequency of toxic algal blooms Increased fire risk |
| High Winds | <ul style="list-style-type: none"> Public health & safety risks | <ul style="list-style-type: none"> Damage to building structure & fittings Loss of power & water supply | <ul style="list-style-type: none"> Insurance & repair costs Disruption to transport & supplies | <ul style="list-style-type: none"> Tree damage |
| Subsidence | <ul style="list-style-type: none"> Public health & safety risks | <ul style="list-style-type: none"> Damage to building structures & fittings Deterioration of sports grounds, courses & parks | <ul style="list-style-type: none"> Insurance & repair costs | <ul style="list-style-type: none"> Deterioration of public parks Damage to tree roots |

A2.6 These impacts may have knock-on effects which may accumulate to generate impacts at a much larger scale, such as population migration, price inflation or economic recession, as suggested by the Stern review into the economics of climate change.¹²

A2.7 Over time, our understanding of climate change and the local impacts will increase and it is expected that this initial assessment will have to be reviewed accordingly.

A2.8 Caution must be taken not to confuse sporadic extreme weather events with a general shift in climatic conditions. Readers will note that 'cold' is omitted from Table 2. Nonetheless, extreme cold has massive implications on health, transport and the economy. This is especially important with regards to fuel

¹² Stern Review on the Economics of Climate Change, 2006, http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview_index.htm

poverty and general domestic energy efficiency (i.e. insulation and thermal comfort).

A2.9 **Flooding**

A2.10 The changes to the climate of the South East contained in Table 1 indicate that, depending on the emission scenario, winter rainfall may increase by between 18 – 30% by the 2080s.

A2.11 A review of the major flooding West Berkshire experienced in 2007 has indicated that the incidents fell into one, or a combination, of three categories:

1. **Flash flooding** – the bulk of the flooding in West Berkshire, this is the result of intense rainfall generating rapid run off causing water levels to quickly rise. These incidents were typically found to be mainly due to the water exceeding the infiltration capacity of the ground or the capacity of the local drainage network. This type of flooding can be expected to increase as the level and intensity of rainfall increases.
2. **River flooding** – caused by rising water levels within a river such that the river overflows its natural banks.
3. **Groundwater flooding** – the result of groundwater levels rising through continued rainfall to a point where the ground is saturated and subsequent rainfall causes the groundwater to rise to the point of flooding.

A2.12 Understanding and adapting to the potential impact of flooding is of particular importance as climate change predictions indicate that the frequency of extreme weather conditions resulting in flooding, such as those seen in July 2007 are likely to increase, i.e. the 1 in 100 year storm is now likely to be 1 in 10 years.

A2.13 During the July 2007 flooding a number of residential properties were flooded in West Berkshire, including 1107 in Thatcham, 151 in Newbury and 123 in Pangbourne. It was later determined that many of the cases of flooding were caused or contributed to by blocked culverts and poorly maintained watercourses. WBC has since become an active member of the Association of Drainage Authorities, adopting a land drainage policy based on the Land Drainage Act 1991, working closely with land owners to ensure periodic maintenance and improvement work to locations known to be a flood risk.

A2.14 “The Flood Risk Regulations 2009 implement the requirements of the European Floods Directive 2007, which aims to provide a consistent approach to managing flood risks across Europe.”¹³ These regulations cover four stages within a six year flood risk management cycle, the first two of which are covered by the Preliminary Flood Risk Assessment.

A2.15 Under the Flood and Water Management Act 2010, WBC undertakes the role of Lead Local Flood Authority. There are a number of key responsibilities, which include the development, application and monitoring of a Local Strategy for Flood Risk Management, maintaining an asset register of features considered to have an effect on flood risk and being a designated SuDS (sustainable drainage system) Approval Body (SAB).

¹³ [West Berkshre Council, Preliminary Flood Risk Assesment: Final Report June 2011](http://www.westberks.gov.uk/CHttpHandler.ashx?id=28234)
<http://www.westberks.gov.uk/CHttpHandler.ashx?id=28234>

A2.16 Work began in late 2012 on the Environment Agency's Kennet Flood Risk Management Strategy. The scheme is funded by a number of organisations including WBC, Newbury Town Council, Greenham Common Trust, Sovereign Housing and local businesses. For further information on the Flood Alleviation Scheme refer to Appendix A5.

A2.17 WBC has an overarching major incident plan outlining generic responses and preparations for an emergency. There are also specific event plans, one of which is an adverse weather plan (currently under review) and a drought plan which is currently being undertaken. As we have previously mentioned, extreme weather events are likely to become more frequent and we must be prepared for these as far as possible.

A2.18 Water Shortages

A2.19 Paradoxical to the comments on flooding (extreme weather events), the climate predictions forecast an overall drier climate with potential depletion of aquifers and reservoirs.

A2.20 The Environment Agency (EA) is the organisation with primary responsibility for managing water resources and is represented on WBPGSP.

A2.21 Our water supply is determined by the level of rainfall which feeds our rivers and recharges groundwater levels. The predicted changes to the climate within the South East contained in Table 1 indicate that summer rainfall could decrease by 15 – 29% by the 2080's. Coupled with higher summer temperatures which increase evaporation rates and overall water demand, the level of water resources could decrease even further.

A2.22 The risk of water shortages and droughts can therefore be reasonably expected to increase as the climate changes. This would have varying degrees of impact upon water users, including West Berkshire residents, businesses, schools and other organisations, as well as the natural environment. To compound the problems, a larger population will have a larger water demand. If the climate becomes drier, agriculture will need more irrigation. This exemplifies the need to be much more water efficient and able to adapt accordingly to a drier climate.

A2.23 WBC is currently in the process of preparing a drought plan prompted by water shortages in recent years and the 2012 hose pipe ban. A number of years of below average rainfall contributed heavily to the drought but whilst some areas of the UK were in drought, others experienced heavy flooding. In fact, almost as soon as the ban came into force in the Thames Valley, periods of higher than average rainfall allowed the ban to be lifted. Climate change is likely to lead to variations in both the pattern and variation of droughts so we are acting now to adapt for the future.

A2.24 Heat

A2.25 Table 1 indicates that in the South East the number of hot days (above 25°C) will increase to more than 50 days per year by the 2080s as a result of climate change, with average summer temperatures rising by between 3 – 4.9°C.

A2.26 The impacts of such heat waves can be devastating and affect people, the economy and the environment. WBC has a local Heat Wave Plan that is enacted if the temperature meets the criteria of hotter than 31°C during the day and 16°C at night for more than two consecutive days. The Department of Health's Heat Wave Plan for England (2013) outlines some of the effects of excessive heat on

people,¹⁴ with the elderly and young, chronically ill and those with outdoor occupations or unsuitable living or working environments most at risk. It is also underpinned by heat wave alerts from the Met Office and a Heat health Watch Alert System (June to September). The Centre for Economics and Business Research estimated that the July 2006 heat wave cost the UK economy £211 million a day.¹⁵

A2.27 The natural environment is affected not only by heat waves but also changes to average temperatures which influence the habitat ranges of plants, insects and animals. Species which are already at the limit of their habitat ranges could face extinction. New species may also arrive that are better adapted to dealing with the higher temperatures, including insects that carry new diseases for which we are unprepared.

A2.28 Higher wind speeds

A2.29 The impacts of higher wind speeds include breakage or removal of roof tiles and slates on buildings or, in exceptional circumstances, the removal of an entire roof. High wind speeds can also disrupt transportation and power supplies, damage trees and in extreme cases threaten the health and safety of people.

A2.30 Whilst extreme winds such as storms and hurricanes are usually destructive, an increase in normal wind levels could be beneficial. For example wind turbines could become a more viable option in areas where the wind speed was previously felt too low, generating free green energy and reducing carbon emissions.

A2.31 Subsidence

A2.32 Subsidence is the condition whereby ground movement occurs without additional load being applied. It can occur due to a number of reasons, including where certain soils, such as clay, dry out and shrink, and is generally a consequence of the aforementioned directly weather related impacts. Re-hydration of soils over the winter months can cause them to swell, or 'heave', causing additional ground movement.

A2.33 Ground movement due to subsidence and heave can manifest itself as cracking in buildings, but damage can also occur to buried pipes, particularly when they cross foundations. In severe cases of ground movement underpinning of walls may be required.

A2.34 Assessing and managing the risk of subsidence and heave needs to be done on a site by site basis.

A2.35 West Berkshire's Strengths, Weaknesses, Opportunities and Threats in relation to Climate Change

A2.36 Whilst we do not wish to detract from the message that climate change is negative, it should be noted that there are also potential opportunities in a changing climate. Table 3 gives a current appraisal of the Strengths, Weaknesses, Opportunities and Threats (SWOT analysis) West Berkshire faces in terms of climate change. This brief and generic analysis shows the opportunities that may

¹⁴ Department of Health, 2013: *Heat wave plan for England 2013*, <https://www.gov.uk/government/publications/heatwave-plan-for-england-2013> .

¹⁵ The Telegraph, *Heatwave costs a cool £211m a day*, 20th July 2006, <http://www.telegraph.co.uk/finance/2943770/Heatwave-costs-a-cool-211m-a-day.html>

be presented, but also highlights what aspects need to be ‘shored up’ in order to address the changes effectively.

A2.37 According to Defra (2012) “some changes projected for the UK as a result of climate change could provide opportunities for agriculture and other businesses, although not outweighing the threats.”¹⁶ If water is not limiting, higher temperatures may lead to a rise in crop yields, 40-140% in wheat and 20-70% in sugar beat is a possibility according to Defra (2012).¹⁶ Warmer temperatures could allow less common crops like blueberries to thrive, presenting additional commercial opportunities.

Table 3: SWOT Analysis of effects of Climate Change in West Berkshire

| Strengths | Weaknesses |
|--|---|
| <ul style="list-style-type: none"> • Extended growing season • Solar power becomes more effective • Wind power becomes more effective | <ul style="list-style-type: none"> • Non-adaptable infrastructure (power supply, fuel security, agricultural practices etc) • Existing housing stock not very energy efficient or adaptable to high temperatures • Apathy to adapt lifestyle (energy efficiency, waste, water usage, travel etc) |
| Opportunities | Threats |
| <ul style="list-style-type: none"> • New crops – viticulture, olives, sunflowers • Construction – more efficient buildings and refurbishments = jobs • Growing renewable energy market = jobs | <ul style="list-style-type: none"> • Drought • Flooding • Storms • Mass migration • Alien plant and animal species becoming naturalised • Habitat destruction |

¹⁶ Defra, 2012, Summary of the Key Findings from the UK Climate Change Risk Assessment 2012, http://randd.defra.gov.uk/Document.aspx?Document=Summary_of_Key_Findings.pdf

A3. Appendix 3: West Berkshire's 'Carbon Footprint'

A3.1 Central government is driving the 'Big Society' agenda and recognises that local action is necessary to achieve many of the stretching national aspirations. Until recently, a number of now obsolete NIs specifically addressed CO₂ reduction within a locality. NI186 was the indicator that affected the whole of the district of West Berkshire.

A3.2 With the abolition of LAA's the WBP no longer has the binding targets of NI186 to achieve. However, WBP is voluntarily continuing work to reduce the CO₂ emissions throughout the district.

A3.3 These 'obsolete' CO₂ indicators are essentially about leading behaviour change. LAs and Partnerships are uniquely placed to provide vision and leadership to local communities, raise awareness and help change behaviours.

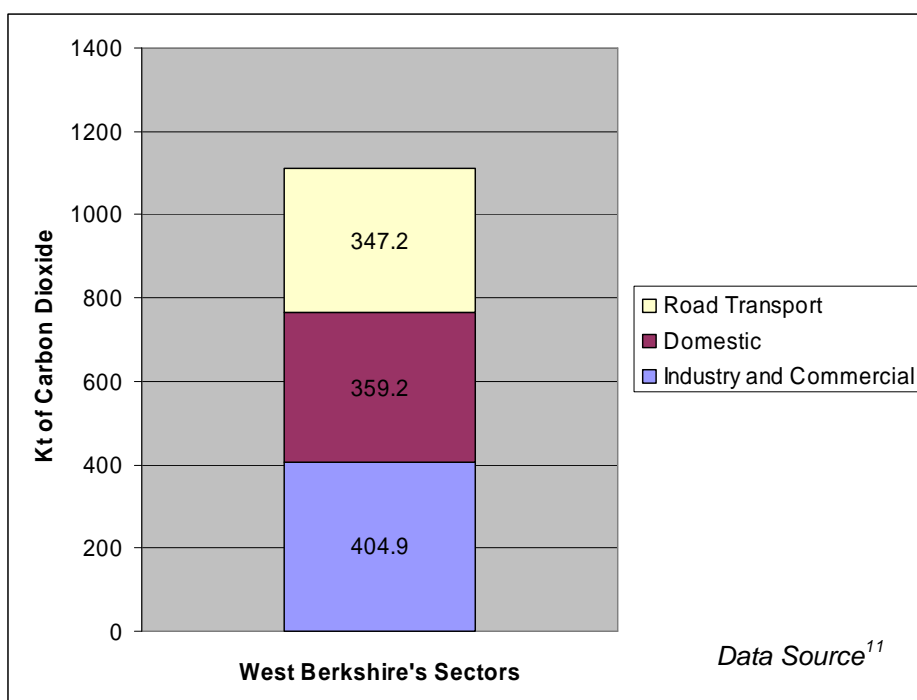
A3.4 In addition, legislation such as the CRC Efficiency Scheme has been brought in to tackle large emitters of CO₂. Organisations qualify for the CRC dependent upon the level of consumption through their half hourly meters. Once qualified then the organisation has to account for all their carbon emissions and a charge is levied on each tonne of carbon dioxide emitted. The idea is that large organisations will want to avoid paying these charges, making their operations/processes more energy efficient.

A3.5 District 'Carbon Footprint'

A3.6 Measuring the emission of greenhouse gases for West Berkshire is a complicated process, dependent on many factors including the availability of greenhouse gas emissions data and being able to reliably attribute this to activity within the district.

A3.7 Using the data from DECC¹¹, Figure 1 below presents the 'carbon footprint' for West Berkshire in 2011.

Figure 1: West Berkshire District's 'Carbon Footprint' 2011



A3.8 West Berkshire's per capita emissions have decreased from 8.1 tonnes CO₂ per person in 2010 to 7.2 tonnes CO₂ per person in 2011. Data is available for the years back to and including 2005 and is adjusted to take account of changes in the way the most recent data set has been calculated. Any significant changes are outlined in DECC's Methodology Summary.¹⁷

A3.9 There are a number of aspects to the data presented in Figure 1 which have important implications for the calculation and future monitoring of West Berkshire's 'carbon footprint'.

A3.10 Firstly, CO₂ emissions are allocated to the point at which energy or fuel is used, rather than the location of the power station where the energy was produced, i.e. on an 'end user' basis.

A3.11 Secondly, in order to compare West Berkshire with other areas in the UK it is useful to divide the total figure of 1,111,290 tonnes of CO₂ by the area's population. With a mid-year population estimate in 2011 of 154,100, this works out at 7.2 tonnes CO₂ per person. This figure does not correspond to the calculation of a personal 'carbon footprint' for a resident in West Berkshire. It is a measure of the districts 'carbon footprint' divided by its population which enables performance of the district to be related to other areas.

Table 4: Local Authority carbon footprint

| Local Authority | Carbon footprint (tonnes CO ₂ per person) |
|-------------------------|--|
| Aylesbury Vale | 5.3 |
| East Hampshire | 6.6 |
| South Oxfordshire | 6.6 |
| Test Valley | 6.9 |
| Vale of the White Horse | 7.8 |
| West Berkshire | 7.2 |
| West Oxfordshire | 6.7 |
| Wiltshire | 6.5 |

Data Source¹¹

A3.12 Using the same process of calculation, the average South-East resident's carbon footprint comes out at 5.5 tonnes CO₂ per person. See Table 4 above to compare figures more locally. Striving to reduce the figure year on year is perhaps of the most importance rather than the figure itself, particularly as the changes to the methodology can result in significant changes to the emissions each data release. Geographical differences, industries and businesses, as well as population, make direct comparison between authorities difficult.

A3.13 Thirdly, the methodology used by DECC¹⁸ to calculate West Berkshire's 'carbon footprint' excludes emissions of greenhouse gases other than CO₂. It also excludes emissions which are judged by DECC to be largely beyond the ability of local District measures to influence, including aviation and motorway traffic.

¹⁷ DECC, 2013: Local Authority CO₂ emissions estimates 2011: Methodology Summary, <https://www.gov.uk/government/publications/local-authority-carbon-dioxide-emissions-methodology-notes>

¹⁸ DECC, 2013: Local and regional CO₂ emissions estimates for 2005-2011 for the UK: Technical Report <https://www.gov.uk/government/publications/local-authority-carbon-dioxide-emissions-methodology-notes>

A4. Appendix 4: How can we reduce the impact of climate change in West Berkshire

A4.1 The first Climate Change Strategy was structured on a number of actions that were being addressed nationally and locally. There was consensus within the Partnership that these 'original' targets were too numerous, not under the control of the WBP or too difficult to measure. Therefore, in this version of the refresh, the targets and outputs have been simplified.

A4.2 An appraisal was given to 'key themes' that directly affect the district's ability to mitigate and adapt to climate change. The themes are cross-cutting, with the LA undertaking certain statutory obligations (such as planning control) which cannot be omitted from the document. However, the key themes cover actions to be undertaken throughout the residential and commercial sectors in West Berkshire. The WBP has influence on each of these sectors through its links with its partners in the public, voluntary and private sectors.

A4.3 *There are ten key themes:*

1. Influencing Behaviour
2. Energy Efficiency
3. Renewable Energy
4. Water
5. Planning
6. Waste
7. Transport
8. Sustainable Procurement
9. Local Food
10. Natural Environment

A4.4 Each target will be delivered through the existing mechanisms that the WBP/GSP has at its disposal. The accompanying Action Plan set out the activities we plan to work towards to help achieve our aims for each individual area.

A4.5 *Key theme 1: Influencing Behaviour*

A4.6 A significant proportion of energy and resource wastage can be attributed to behavioural traits of individuals. Energy use, by its nature is a very difficult thing for the human mind to quantify or rationalise. We have been used to 'flicking a switch', or 'turning a tap' for many years and this disassociation from the energy source can leave us taking electricity, gas, oil and water for granted. Ultimately leaving us vulnerable to the over-use or wasting of energy.

A4.7 It is vitally important to educate all sectors of the community on how to mitigate and adapt to climate change. This includes broadcasting information on fuel security, climate change and sustainable development. Developing an energy efficient and sustainable culture is key for these generations to adapt to and mitigate climate change. WBC strives to lead by example with integrated policies within all areas of the Council, it is vital that WBC shares its achievements with the wider community. To help, encourage and inspire others to take action. Reducing energy waste and fuel use can save a huge amount of money, a rural West Berkshire resident by changing behaviour, has implemented a number of energy saving measures and has saved in the region of £9000 per annum (p.a.) by reducing such costs, see Appendix A5.1 to see how.

A4.8 Key theme 2: Energy Efficiency

A4.9 Being more energy efficient is a key element of mitigating against the effects of peak oil, becoming more energy secure and above all, tackling the root cause of man-made climate change. There are also financial benefits for being more energy efficient, which as energy prices rise will have more weighting in individual behaviour.

A4.10 The Council has trialled a number of different energy efficiency lighting measures within its own buildings. Such trials allow important factors like light levels and human comfort to be considered in-situ before rolling out measures on a large scale. This allows the best fitting measure to be chosen with a greater degree of accuracy and knowledge of any advantages and disadvantages that may be experienced.

A4.11 Within the local community, St George's Church has undertaken and are part way through a retrofit project. Electricity is now mainly produced by PV panels and heat will eventually be predominately provided through a ground source heat pump, see Appendix A5.2.

A4.12 Key theme 3: Renewable Energy

A4.13 West Berkshire is a landlocked, mainly rural constituency, and has considerable potential for renewable energy production and use based on deployment of technologies generating power from the wind, sun, waste and plants (primarily trees).

A4.14 The UK's national objective is a target of 15% of energy use from renewables by 2020. The proposed WBP RESWB sets out to illustrate what immediate potential exists to harness local renewable energy sources in West Berkshire by undertaking a desktop survey of the district utilising current knowledge and data in applying known constraints.

A4.15 Within West Berkshire, we have a number of limiting factors on renewable energy production, e.g. the Area of Outstanding Natural Beauty (AONB) which covers most of the district and Sites of Special Scientific Interest (SSSIs). The proposed RESWB deals with this issue in greater detail and rather than repeat the information here, the reader is referred to this document. Whilst these areas may limit our scope for renewables, they do not completely rule out development.

A4.16 . According to the afore mentioned RESWB there is still the potential of supplying more than half the districts heat and power needs by renewable energy sources. An example of what could be achieved is the Facombe Estate in the AONB, where a small wind turbine was granted permission; see Appendix A5.3.

A4.17 Key theme 4: Water

A4.18 As explained in A2.21, climate change is likely to result in decreased rainfall in West Berkshire of 15-29% by the 2080's, leading to general drought conditions, decreases in aquifer recharge (when rain tops up groundwater) and an increased likelihood of extreme weather events, such as flash flooding. The latest district profile indicates that West Berkshire's population continues to rise, putting evermore pressure on the water-stressed South East of England.

A4.19 Additionally, drinking water and sewage treatment account for 1% of the UK Greenhouse Gas emissions.¹⁹ Large electric motors are used for pumping mains water and treating sewage. The heating of water in homes (central heating, washing, cooking etc) account for one third or more of the average home's energy usage²⁰ or 5% of the UK's Greenhouse Gas emissions.¹⁹ Being more water efficient, at work or at home, will play an important role in pre-empting any further depletion of the aquifers. Furthermore, the less water that is pumped or heated, the less greenhouse gases are emitted.

A4.20 Sustainable Drainage Systems (SuDS) can be installed or retrofitted to buildings/developments to minimise their mains water usage. SuDS either use 'grey water' (rain water that is filtered and collected) to flush toilets or other applications that do not require potable water; or divert rain water away from drains/sewers through natural drainage systems, such as ponds, drain ditches and permeable pavements. An example of a rainwater harvesting system can be seen at Thatcham Nature Discovery Centre, see Appendix A5.4. SuDS are an important climate change adaptation tool for reducing flooding and increasing ground water recharge in the West Berkshire area.

A4.21 As mentioned in Appendix A2.15 WBC is designated as Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010. The Act requires all new developments to incorporate SuDs which must be approved by the LLFA before works can commence. The Act will require the LLFA to establish a SuDS Approval Board (SAB) to assess and approve the drainage proposals as a separate but parallel part of the planning approval process. This part of the Act is expected to be enacted in spring 2013 by which time the LLFA will be required to produce a SuDS policy, which will give guidance to developers.

A4.22 Key theme 5: Planning

A4.23 Planning has an important role to play in helping to deliver CO₂ emission reductions across West Berkshire. To achieve sustainable development this will need to be done in combination with, not only environmental factors, but also economic and social factors as well. Of course, using planning policy and development management, reducing CO₂ emissions can achieve all of these in unison by seeking new residential and non-residential development to include: renewable, zero and low carbon energy technologies; offering advice regarding listed buildings and conservation areas; renewable development installation within the AONB; community renewable energy projects and the potential for developing heat networks. An example of this can be seen at Flint Cottage, see Appendix A5.5, a 17th Century cottage destroyed by fire was replaced by an eco cottage on re-building, taking advantage of renewable energy and other low carbon measures. It is important to encourage sustainable choices where the opportunity arises.

A4.24 WBC's Planning Policy team are responsible for West Berkshire's LDF Core Strategy,²¹ part of which, CS15, relates to sustainable construction and energy efficiency. It states that proposed residential developments should reach Code for Sustainable Homes Level 4 rating. From 2016, all residential development should reach Level 6 rating.

¹⁹ DEFRA, 2008: *Future Water: The Government's Water Strategy for England*,

<http://archive.defra.gov.uk/environment/quality/water/strategy/pdf/future-water.pdf>

²⁰ Energy Savings Trust (EST) 2011: *Water Energy Calculator*, <http://www.energysavingtrust.org.uk/In-your-home/Water/Water-Energy-Calculator>

²¹ WBC, 2012, West Berkshire Core Strategy DPD: <http://www.westberks.gov.uk/index.aspx?articleid=4021>

A4.25 For non-residential developments a BREEAM pre-assessment must show the likely rating achieved will be 'Excellent'. Major developments are also required to achieve reductions in CO₂ emissions from renewable energy or low/zero carbon energy generation on site or in the locality of the development locally.²¹

A4.26 The forth-coming Zero Carbon Regulations will require investment opportunities and developer contributions. Climate Berkshire, which is made up of the 6 Berkshire Councils along with other key partners across Berkshire, has commissioned an assessment into how the Local Planning authorities can implement the regulations successfully. The Assessment makes recommendations on local opportunities from developer contributions, outlines investment opportunities for low carbon energy and retro fitting; and provides a policy framework with a roadmap for renewable energy and retrofit options to 2020.

A4.27 Key theme 6: Waste

A4.28 The management of waste is one of the most visible environmental services provided within local communities. Encouraging the "Three 'R's": Reduce, Reuse, Recycle is vitally important for resource efficiency. Producing less waste initially, reusing waste products and finally recycling them has multiple energy efficiency gains (less energy used in the production of products, less transportation etc). The community Furniture Project (CFP) is a particularly good example of reuse, see Appendix A5.6. In 2010, the charity diverted an estimated 588 tonnes of waste from landfill for reuse.

A4.29 Municipal waste is managed by the LA and there are significant targets to reduce the amount of waste that is sent to landfill and increase levels of recycling. The management of commercial waste is separate to municipal waste and is regulated by the Environment Agency, though as yet, there is no legislation demanding commercial waste recycling rates. However, landfill tax is becoming evermore expensive, so there are good economic reasons not to landfill commercial waste.

A4.30 In 2002 WBC adopted its 20 year plan for waste management titled "A Municipal Waste Management Strategy for West Berkshire", which set the Council's waste vision of maximising recycling and composting and reducing waste sent to landfill. This strategy was followed by an application to the Government's Private Finance Initiative (PFI) to seek capital funding for the implementation of the strategy. It was recognised early on that the Council's waste services and local facilities needed significant changes and investment. In June 2003, the Council was awarded £56 million over a 25 year period to assist with the funding of implementing this strategy.

A4.31 Utilising this funding, a 25 year Integrated Waste Management Contract was awarded to Veolia Environmental Services in March 2008 to work with the Council in making improvements happen and invest in services and local facilities.

A4.32 Between June and October 2011, significant improvements were made under the Integrated Waste Management Contract to the existing Kerbside Recycling Collection Service, which saw additional materials being added to the service. Residents now have a seven stream kerbside recycling service which includes the collection of glass, cans, plastics bottles, textiles, paper, cardboard, green and food waste; significantly reducing the amount of waste sent to landfill. Between 2008 and 2011 recycling levels have increased from 22% to over 46%. In 2012/13, recycling levels increased again to 50% (un-audited data).

A4.33 *Key theme 7: Transport*

A4.34 Carbon emissions from domestic transport currently represent 21% of the UK's domestic emissions.²² Out of all transport in the UK, domestic road transport is by far the biggest emitter at around 92%. In terms of West Berkshire, 31% of CO₂ can be attributed to road transport (see Figure 1) which is a large source of carbon in the district. Per capita, this figure is likely to be proportionately higher for residents in the rural areas of the district because of the increased use of vehicles.

A4.35 WBC's Transport Policy Team are responsible for the Local Transport Plan for West Berkshire²³. The Local Transport Plan (LTP) sets out a framework for the delivery of transport in West Berkshire, within this there are a number of policies and supporting plans. These include: Walking, cycling, travel planning and car sharing.

A4.36 The LA, residents and businesses have little control over the emissions from road transport generated from the M4 and A34, as these are arterial national routes. However, encouraging people to use cars less, public transport more and cycling and walking whenever possible are the key messages to reduce carbon emissions across the district. To encourage walking and cycling to school, many schools are signed up to the Go Kinetic scheme, see Appendix A5.7, which encourages walking or cycling to qualify for stamps which can then be exchanged for rewards.

A4.37 *Key theme 8: Sustainable Procurement*

A4.38 Sustainable procurement is 'a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis or cradle to grave in terms of generating benefits to society and the economy, whilst minimising damage to the environment.'²⁴ WBC uses a Sustainable Procurement Risk Assessment Methodology (SPRAM) to highlight risks and mitigate against them on contracts over £50,000, refer to Appendix A5.8 for further details.

A4.39 How a person, business or Council buys, or procures, goods and services can influence the local and global environment – how much is bought, whether recycled products are bought, where goods are supplied from, e.g. in the UK or from abroad. Procurement can also affect the quality of life of West Berkshire's residents.

A4.40 There are a number of Environmental Management Systems (EMS) in place that organisations can ascribe to, such as ISO14000 series and the Eco-Management and Audit Scheme (EMAS). Preferentially using businesses that have attained these standards means that they have appraised their own environmental processes, resulting in a lower-carbon product or service. In a competitive market, this may encourage other businesses to use an EMS to improve their overall efficiency and could be used as a unique selling point.

²² DfT, July 2009, Carbon Reduction Strategy for Transport
<http://webarchive.nationalarchives.gov.uk/20090725194518/http://www.dft.gov.uk/pgr/sustainable/carbonreduction/low-carbon.pdf>

²³ WBC, 2011: Local Transport Plan for West Berkshire 2011-2026
<http://www.westberks.gov.uk/index.aspx?articleid=18646>

²⁴ Defra, 2006: Procuring the Future
<http://www.defra.gov.uk/publications/2011/03/28/pb11710-procuring-the-future/>

A4.41 **Key theme 9: Local Food**

A4.42 “The supply of food to UK consumers produces about 160 mega tonnes of CO₂ equivalents (MtCO₂e), or 19% of the UK’s total greenhouse-gas emissions.”²⁵
A key part of reducing emissions associated with food production is promoting the growth and consumption of local food as the food will have significantly less “food miles.”²⁶

A4.43 Food miles relates to the distance that food is transported. “Food accounts for 25% of the distance travelled by lorries in the UK, and 12 billion miles driven a year by consumers. The social and environmental costs of food transport - including significant green house gas emissions - are £9 billion a year.”²⁷

A4.44 There are many local food groups and food growing initiatives in the West Berkshire area that contribute to an increase in local food production and consumption, thereby reducing food miles. Continued support and promotion of these groups should entail an upward trend in the consumption of local and seasonal produce and a subsequent downward trend in the emissions of greenhouse gases. See Appendix A5.9 for a local example.

A4.45 **Key theme 10: Natural Environment**

A4.46 Ecosystems are incredibly complex interactions between living organisms and their environment. Biodiversity is essential for a healthy ecosystem and disruptions to or destruction of a habitat can dramatically affect the biodiversity to the detriment of the ecosystem. Healthy ecosystems and habitats rich in biodiversity are estimated to be “worth at least £30bn a year in health and welfare benefits to the general public”, according to the UK National Ecosystems Assessment.²⁸

A4.47 The natural environment is important to consider in relation to climate change in two ways. Firstly, natural habitats such as woodlands act as important carbon sinks (areas of land and/or process that remove carbon dioxide from the atmosphere) and, secondly, climate change is likely to affect the biodiversity (type, number and variety of species) that live in West Berkshire.

A4.48 At present there are a number of locally, regionally and nationally important conservation and nature reserves within West Berkshire. How these sites and the surrounding land are managed will determine the biodiversity now and in the future.

²⁵ Friel et al, 2009: *Public health benefits of strategies to reduce greenhouse-gas emissions: food and agriculture*; The Lancet Vol. 374, Issue. 9706 pp.2016-2025

²⁶ Friends of the Earth, 2007: *Briefing: Food and Climate Change*
http://www.foe.co.uk/resource/briefings/food_climate_change.pdf

²⁷ Food Ethics Council, undated: *Food Miles*

<http://www.foodethicscouncil.org/topic/Food%20miles>

²⁸ UK NEA, 2011: *UK National Ecosystem Assessment*, <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

A5. Appendix 5 Case Studies

A5.1 *Influencing Behaviour*

A5.1.1 CASE STUDY: HOW TO CUT YOUR CARBON FOOTPRINT DRAMATICALLY & SAVE MONEY, RURAL WEST BERKSHIRE RESIDENT

Electricity

- Fitted low energy lighting throughout the house
- Fitted solar panels on the side roof of the house, not visible to the public
- Replaced aging 6 kW cooker with a 2 kW version doing the same job
- Put up drying rails obviating the need to use a tumble dryer
- Keep fridge on 2/3 setting
- Only boiling enough hot water when making hot drinks
- Drying hair naturally rather than using a hair dryer

Result - Electricity consumption is half the typical UK bill, for a much larger than average house, and just 10% of that of the previous occupants.

Saving - £1000 p.a.

Heating

- Replaced 20+ year old boiler with a new condensing boiler - halving oil bill
- Installed a wood fuel burner due to oil prices increasing +90% since 2007
- Grade II listed building - installed secondary glazing and persuaded the Council to allow double glazing in new extension
- 300mm of loft insulation
- Heavy curtains and draft excluder on the front door
- Putting on another layer when chilly

Result - Only consume 1500l of oil p.a; typical house consumes 5000l p.a.

Saving - £2000 p.a.

Reducing fuel use

- On changing job, chose to work from home having previously drove 40,000 miles p.a.
- Bought small car for local journeys, kept Executive car for business use, eventually replacing both with one low energy diesel car
- Sought advice about fuel efficient driving techniques and now get 60 mpg
- Cycle and walk for local journeys
- Combine activities - visit Newbury for the day, doing all the jobs in one go

Result - Fuel use reduced from 5000l to 600l p.a.

Saving - £6000 p.a.

A5.2.1 CASE STUDY: ST GEORGE'S CHURCH, WASH COMMON



St George's was a large church with an inefficient and expensive to run heating system. The building was cold and unattractive to community groups, and used for less than 15% of the available time. A project to improve the buildings efficiency is currently underway and it is hoped that the building will be more attractive for community use as the project progresses. The three phases of the project are being carried out once the funding is available. As well as fund raising by the church congregation and local community, a number of grants have been received by various local and national organisations and charities.

The project consists of three phases:

Phase 1:

- Strengthening main roof to accept the weight of solar panels and a new ceiling.
- Installation of 129 solar roof panels with associated control systems
- Installation of electronic public display panels, illustrating energy generated by the solar panels.
- Connection to the National Grid for the export of electricity.
- Re-forming and insulation of the main ceiling.
- Secondary glazing of high windows.
- Fitting of new rain water guttering and pipes to cure damp problem.

Phase 2:

- Glazed external thermal lobby at the main entrance
- Two pairs of automatic double doors enabling independent disabled lobby access
- Re-forming part of a car park to provide gently sloping access to the lobby.
- Insulation of remaining ceilings.
- Secondary glazing of a large window.

Phase 3:

- 130 metre deep boreholes.
- Ground Source Heat Pump
- Zoned under floor heating.
- Glazed off meeting room/internal thermal lobby at the minor entrance.

Phase 1 of the project was completed in March 2011, on time and to budget. Phase 2 began in June 2011 and was completed in November 2012, the final phase launched in January 2013. The solar panels produce just under 25 kW peak output, meaning not only will the church generate enough electricity for its own needs but also a surplus to be sold to the grid.²⁹ The panels are estimated to be earning around £6000 p.a. which is being fed back into the fund towards Phase 3 of the project. Latest figures indicate 24,000 kWh is being produced annually from the panels.

²⁹ George Goes Green, 2011, <http://georgegoesgreen.org>

A5.3.1 CASE STUDY: FACCOMBE ESTATE WIND TURBINE



Planning permission was granted for a small wind turbine on the Faccombe Estate, to the south of Newbury, in 1993. The estate is located 260m above sea level and in an Area of Outstanding Natural Beauty (AONB).

A new turbine, a Vestas V39 with a 39m rotor and 35m tower, was commissioned in January 2012 and is expected to deliver 800MWh of electricity a year. The electricity produced is used on the estate and any surplus goes back to the grid and is consumed by houses within the village.³⁰

A5.4 Water

A5.4.1 CASE STUDY: NEWBURY FLOOD ALLEVIATION SCHEME, EA

“Newbury is vulnerable to river flooding. The banks and water levels of both its river and canal are up to 2.5 metres higher than the floodplain in this built-up area.

Major flooding in Newbury occurred during 1947 due to melting snow, and again in 1960. Newbury town centre was affected as well as residential areas to the south. More recently, in 2000 and 2003 flooding occurred on a smaller scale, highlighting Newbury’s continuing vulnerability.

Surface and groundwater flooding are also problems, and were experienced in summer 2007. The scheme does not address these sources of flooding, which are being investigated separately.

Newbury Flood Alleviation Scheme will reduce the risk of river flooding to 1 in 100 – or a 1 per cent chance of flooding in any one year.

The scheme will benefit:

- more than 380 residential and almost 70 commercial properties
- the A339 and A4 London Road
- 5 listed buildings and 2 Scheduled Monuments
- 2 nursery schools
- 2 residential homes for the elderly

By investing £1.6 million now; we estimate that we will avoid damages of £33.7 million over the lifetime of the flood defence.”³¹

Work began in late 2012 and is supported by contributions from West Berkshire Council, Newbury Town Council, Greenham Common Trust, Sovereign Housing and several Newbury businesses.

³⁰ Distribution Generation, 2012, Faccombe Estate, <http://distgen.co.uk/projects/faccombe>

³¹ Environment Agency, 2012, Newbury Flood Alleviation Scheme, <http://www.environment-agency.co.uk/homeandleisure/floods/125115.aspx>

A5.5.1 CASE STUDY: FLINT COTTAGE, WEST BERKSHIRE.2 CASE STUDY: FLINT COTTAGE, WEST BERKSHIRE



Following the loss by fire of a 17th Century thatched cottage in December 2007, the owner decided to construct a modern, sustainable home in its place. The location, inside the North Wessex Downs AONB limited the design and meant keeping a traditional external appearance.

The building incorporated considerable insulation, far greater than the minimum requirements by Buildings Regulations, low energy lighting where possible as well as a number of solar passive features to make the best use of its south facing position.

Eighteen solar PV panels were installed to produce electricity, three flat plate panels to provide hot water and a multifuel burner providing space heating and hot water.³²

A5.6 Waste

A5.6.1 CASE STUDY: COMMUNITY FURNITURE PROJECT



The Community Furniture Project is a charity which specialises in the reuse of furniture, electrical goods, bikes and bric-a-brac. It has three branches, two of which are in Newbury. The donated items are collected from homes in the district or donated directly to the branches and the collection point at the Household Waste Recycling Centre on Newtown Road (A339). Items are sorted, mended, tested and resold to the general public. Concessionary rates are available to those on certain benefits.

In the year ending March 2013, the reuse of donated items diverted an estimated 588 tonnes of waste from landfill (based on the Furniture Reuse Network (FRN) tonnage figures agreed by DEFRA). This saves on CO₂ emissions, however, the CO₂ equivalents in Case Study Table 1 only account for the Greenhouse Gas (GHG) emissions saved by the items not being sent to landfill, and not those saved by not having to manufacture a new item.

³² TV Energy, 2011, Case Study: Achieving a Zero Carbon Family Home
<http://www.tvenergy.org/content/files/case-studies/achieving-a-zero-carbon-sustainable-family-home-1315405095.pdf>

Case Study Table 1

| Type of Reused Item | Number of tonnes of CO ₂ e saved by reusing one tonne of a donated item |
|---------------------|--|
| Small Appliance | 7.4 |
| Large Appliance | 7.4 |
| Furniture | 2.7 |
| Textiles | 19.5 |
| Paints | 2.6 |

The sale of the donated items also supports the Community Furniture Project's training activities and allows it to give meaningful volunteering opportunities to a wide range of people in West Berkshire.

A5.7 Transport

A5.7.1 CASE STUDY: GO KINETIC – WEST BERKSHIRE COUNCIL'S WALK TO SCHOOL REWARD SCHEME

Go Kinetic is a walk to school reward scheme designed to encourage more children to regularly walk or cycle to school. It has been running successfully in over 20 schools across West Berkshire since 2005. It can be started at any time in the school year, and has been shown to decrease the proportion of children being driven to school by an average of 9%. In some schools, the proportion of children walking after starting Go Kinetic can be 15 to 20% higher than prior to running the scheme. Of the children walking to school, 23% say that they are walking because of Go Kinetic.

Go Kinetic is designed as a framework, with schools choosing which aspects they would like to run. Each pupil is given a Go Kinetic 'Passport' where walking journeys are recorded by means of a stamp. Children have to walk a minimum distance of 400 metres to qualify for their stamp. Rewards are given out at 15, 25, 50 stamps and include hi-vis pencils, zip tags and free swimming sessions.

Following the success of Go Kinetic, a simpler version was developed alongside the Nursery Schools focused on promoting walking, cycling and scooting for the under 5s. Steposaurus, a dinosaur themed scheme, is run in the same way as Go Kinetic. Pupils who walk, cycle or scoot to nursery are awarded a sticker to stick on their Steposaurus card. Rewards are given at 5, 10 and 15 walks and are available both for the child (snap wraps, zip tags and stickers) and parents (free activity session at a local leisure centre).³³

³³ WBC, 2012, Go Kinetic
<http://www.westberks.gov.uk/index.aspx?articleid=6582>

A5.8 Sustainable Procurement

A5.8.1 CASE STUDY: WEST BERKSHIRE COUNCIL'S SUSTAINABLE IMPACT ASSESSMENT (SPIA)

The Sustainable Procurement Impact Assessment (SPIA) was designed to help identify the main sustainability risks associated with all WBC contracts in excess of £50,000. For contracts in excess of 3 years, SPIA should be undertaken annually to ensure that new policies and targets in relation to sustainable development are taken into account.

SPIA is a spreadsheet based assessment, in which sustainability questions (that can be applied to all contracts) are answered. Where there is a risk, a mitigation score is required. Once completed, risks and mitigations are clearly highlighted and can be kept in check.

A5.9 Local Food

A5.9.1 CASE STUDY: GROWING 2GETHER



Growing 2gether welcomes people from all walks of life and gives the chance to learn about horticulture and market gardening, and offers a space for therapeutic gardening. It is a partnership operation between the Community Furniture Project and West Berkshire Mencap.

Growing 2gether offers volunteering and training opportunities at a 1.5 hectare site, for local groups and individuals. Alongside the training aspect, local food economies and awareness are strongly promoted, through selling and marketing the food grown. Furthermore, promotion of the work is conducted through regular open days and events across the district.

A5.10 *Natural Environment*

A5.10.1 CASE STUDY: THE THATCHAM NATURE DISCOVERY CENTRE



The Thatcham Nature Discovery Centre attracts around 150,000 people annually and is sited next to old gravel pits (last worked in the early 1980's) and an expanse of natural wetland reed bed habitat.

The Thatcham Nature Discovery Centre is open throughout the year allowing the public access to these rare habitats. A number of regionally and nationally scarce animal, plant and fungal species can be found in the area. The Centre itself is an education facility, providing opportunities to learn about the natural environment, animal and plant life and sustainable development.

The building was refurbished in 2007 to improve its energy/water efficiency. Sustainable building design and materials were used, and systems such as a biomass boiler, solar thermal panels and rainwater harvesting were installed.³⁴ The environmental credentials of the building's fabric and functioning are core to the ethos of the Centre and are promoted in conjunction with its other activities.

³⁴ West Berkshire Council, 2011: <http://www.westberks.gov.uk/index.aspx?articleid=5427>

Other relevant documentation

Further Reading

UKCIP, What is Climate Change, 2012

<http://www.ukcip.org.uk/essentials/what-is-climate-change>

Related Policies and Strategies

A Breath of Fresh Air: *West Berkshire's Sustainable Community Strategy 2011/12*

<http://www.westberkshirepartnership.org/index.aspx?articleid=15225>

Climate Change Act 2008

<http://www.legislation.gov.uk/ukpga/2008/27/contents>

Energy Act 2011

<http://www.legislation.gov.uk/ukpga/2011/16/contents/enacted/data.htm>

The Fourth Carbon Budget

http://downloads.theccc.org.uk.s3.amazonaws.com/4th%20Budget/CCC-4th-Budget-Book_with-hypers.pdf

West Berkshire Council: West Berkshire Core Strategy DPD

<http://www.westberks.gov.uk/index.aspx?articleid=4021>

West Berkshire Council: *Local Transport Plan*

<http://www.westberks.gov.uk/index.aspx?articleid=18646>