

**Northamptonshire
Climate Change Strategy
2017 – 2020**

Contents

Executive Summary	4
1. Introduction.....	5
1.1. The 2014-2017 Strategy and 2017-2020 update.....	5
1.2. Changes in the local and national context since 2014	5
1.3. Developments in the understanding of the impacts of climate change since 2014	6
2. The national context	8
2.1. Central government policy	8
2.2. Greenhouse gas emission targets.....	8
2.3. The National Adaptation Programme.....	8
2.4. National initiatives	9
3. The local context.....	10
3.1. Changes to local strategies and commitments.....	10
3.2. Report on what has been achieved since 2014	11
3.3. East Midlands Regional Climate Change Partnership	12
3.4. Local climate change impact	13
4. The impacts of climate change	14
4.1. Flooding and coastal change risks to communities, businesses and infrastructure.....	14
4.2. Risks to health, well-being and productivity from high temperatures.....	15
4.3. Risk of shortages in the public water supply, and for agriculture, energy supply and industry	16
4.4. Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity.....	16
4.5. Risks to domestic and international food production and trade	17
4.6. New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.	18
5. Aims and objectives for future action	19
5.1. Raise awareness of the issues of climate change	19
5.2. Reduce emissions of greenhouse gases	19
5.3. Plan and adapt to the impacts of climate change.....	20
6. Raise awareness of the issues of climate change.....	21
7. Reduce emissions of greenhouse gases	22

7.1.	Trends in emissions data	22
7.2.	Other local achievements in climate change mitigation	26
7.3.	Implications of national emissions targets over 2017 – 2020.....	27
8.	Plan and adapt to the impacts of climate change	29
8.1.	Built Environment and Infrastructure.....	29
8.2.	Healthy and Resilient Communities	29
8.3.	Natural Environment, Agriculture and Forestry	30
8.4.	Business, Industry and Commerce	31
8.5.	Local Government and Public Services	31
9.	Implementation of the Climate Change Strategy.....	32
	Appendices	33
	Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) Membership	34
	Appendix 2 – Summary of emissions by Local Authority area (within scope of Local Authority influence).....	35

Executive Summary

The first Northamptonshire Climate Change Strategy covered the period 2010-2014 and was refreshed in 2014 for a further three years (2014-2017). This current Northamptonshire Climate Change Strategy has again been refreshed and updated and covers the period 2017-2020. This Strategy provides a review of what has been achieved over the past three years, and is intended to be a working document that can stand-alone but also references the preceding 2014-2017 strategy document as necessary rather than replicating or replacing it.

This Strategy will be shared with the Northamptonshire Local Nature Partnership, Joint Planning Units and district and borough councils for formal endorsement, whilst the implementation of the strategy will again be overseen by the Northamptonshire Climate Change Officers Group (NCCOG).

The intention is to continue the Strategy for a further three years in much the same way as before, as the previous iterations of the Strategy have provided an effective framework for the co-ordination of activities in the County. In particular, the annually updated Climate Change Strategy Action Plans have played a critical role in the co-ordination of activities delivered by partners over the last seven years, and are demonstrative of the success of the Strategy's implementation, with over 90% of actions within each year's Action Plans successfully implemented as intended.

There has also been clear progress in the reduction of carbon dioxide emissions in the County, with a 23.5% reduction in total emissions recorded between 2005 and 2015 and an approximate 30.8% reduction in per capita emissions.

The 2014-2017 iteration of the Strategy proposed a target of a reduction in emissions per capita of 1.5% per year (or 4.5% over the three years of the strategy) to match and support national targets for reducing emissions. Although no emissions data has yet been released at the local authority level to evidence progress made towards achieving this target, the latest emissions data made available by government has included new data for the year 2015, which was not examined in the previous Climate Change Strategy. Examination of this data has found that, in Northamptonshire, a reduction in per capita emissions of 3.9% was achieved between 2014 and 2015, significantly greater than the annual reduction targets prescribed by the previous Climate Change Strategy.

Progress on adaptation to climate change is less clear, due to the difficulties in placing a figure or value on this. However, there is no doubt that there is now much more awareness of the need for adaptation, which has been helped by a number of county-wide projects such as those considered in [section 3.2](#) of this document.

1. Introduction

1.1. The 2014-2017 Strategy and 2017-2020 update

The refreshed Northamptonshire Climate Change Strategy for 2014-2017 sought to develop and build upon the success of the first partnership Northamptonshire Climate Change Strategy (2010-2014). These Strategies were developed through the auspices of the Northamptonshire Climate Change Officer Group (NCCOG), with this partnership approach providing a mechanism through which local and national climate change policy could be reviewed and assessed in the context of Northamptonshire. The Strategies also highlighted the activities which had taken place to support climate change mitigation and the provisions in place to adapt to future climate change.

In order to implement the Strategies, annual Action Plans detailing the various activities to be undertaken by partners over each forthcoming year were developed. The actions, which follow the headings used in the Strategy, are all funded/resourced and highlight the 'lead organisation' for each activity. These annual Action Plans provide the framework for monitoring and capturing the various activities being undertaken to tackle the causes and effects of climate change. They are actively monitored on a quarterly basis via NCCOG with progress on actions assessed using a RAG rating.

The second Northamptonshire Climate Change Strategy for 2014-2017 was adopted in 2014 and has again been successful in supporting the implementation of a range of actions in the county over the past three years. In this regard, it was agreed that this Strategy should be updated and refreshed so that it can continue for a further three years from 2017 – 2020.

The overall objectives of the Strategy, as detailed in [chapter 5](#) of this document and in line with previous editions, are to:

1. Raise awareness of the issues of climate change;
2. Reduce emissions of greenhouse gases; and
3. Plan and adapt to the impacts of climate change.

This document provides a review of what has been achieved over the past three years and updates the Strategy to reflect the changes in the national and local context and the developments in the understanding of the impacts of climate change that have occurred since 2014.

1.2. Changes in the local and national context since 2014

Reporting on the Climate Change Strategy now takes place through the Northamptonshire Local Nature Partnership (LNP), who will need to endorse this strategy update. The LNP brings together the work of NCCOG with elements of the Local Flood Risk Operational Group, the Biodiversity Partnership and other associated activities. More information on the LNP can be found on the [Greener Northants website](#).

Local authorities are required to report on data to central government via a 'Single Data List'¹. The Single Data List includes:

- Emissions from local authority own estate and operations;
- Local nature conservation/biodiversity;
- Flood and coastal erosion risk management and sustainable drainage systems;
- The government is also still issuing per capita CO₂ emission data so this can be used for monitoring progress of the Strategy.

It is intended to use national targets as the basis of the Climate Change Strategy, with consideration given to the implications if the national targets are adopted locally rather than setting any specific local targets.

1.3. Developments in the understanding of the impacts of climate change since 2014

Evidence of exceptional weather patterns in the UK over the last three years, including periods of unusually cold, dry and wet weather, has led to an increased perception that we are already experiencing aspects of climate change in this country. This in turn has led to more of a focus on the need to adapt to climate change as well as to mitigate its impacts through the reduction of greenhouse gas emissions.

One hundred potential impacts of climate change in the UK were identified in a Climate Change Risk Assessment carried out in 2012². The government agreed to update this assessment every five years and therefore a new version was released in 2017, which identified the top six areas of inter-related climate change risks for the UK³:

- Flooding and coastal change risks to communities, businesses and infrastructure;
- Risks to health, well-being and productivity from high temperatures;
- Risk of shortages in the public water supply, and for agriculture, energy supply and industry;
- Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
- Risks to domestic and international food production and trade; and
- New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.

Each area of climate change risk presents unique and far-reaching impacts that have the potential to affect all aspects of life. As such, government is due to adopt a new National Adaptation Programme (NAP), establishing what government, businesses and society can do to become more climate ready, in response to the latest Climate Change Risk Assessment. The new NAP will be published in 2018.

¹ The Single Data List is a list of all the data that local authorities are required to submit to central government departments in a given year - <https://www.gov.uk/government/publications/single-data-list>

² Climate Change Risk Assessment Evidence Report 2012 - http://randd.defra.gov.uk/Document.aspx?Document=10067_CCRAEvidenceReport16July2012.pdf

³ Climate Change Risk Assessment 2017 - <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/introduction-to-the-ccra/>

The initial NAP, which was published in 2013, established a strategy for adapting to the potential impacts of climate change highlighted in the Climate Change Risk assessment 2012. Progress on the implementation of this NAP was reported by the Adaptation Sub-Committee (ASC) in 2015⁴. They concluded that almost all of the 371 actions (identified from the NAP) were either complete or considered by those responsible to be on-track. However the ASC did note that *'the first NAP did not contain any significant new proposals nor lead to any resources being reprioritised'*. Therefore *'a lack of specifics made assessing progress against the objectives, and the impact of the actions being taken, difficult'*. Also that *'many of the remaining actions do not have a fixed timescale for delivery'*.

As such the ASC put forward a number of recommendations that the next iteration of the National Adaptation Programme should:

- **Set clear priorities for adaptation:** to make sure the most important and urgent issues are being addressed;
- **Ensure objectives are specific, outcome-focused, and measurable:** objectives should describe priority outcomes rather than centre on processes and activities;
- **Focus on the core set of policies and actions that will have the biggest impact:** each with specific goals, responsibilities and timing;
- **Build on the breadth of local community and business engagement in the first NAP:** to reflect regional differences in climate change impacts, and so that local organisations and interests continue to play a role in delivery; and
- **Introduce effective monitoring and evaluation:** to allow progress to be measured and effort increased if need be to ensure objectives are being achieved.

Once the updated NAP report has been published in 2018, its content will help to inform the implementation of the Climate Change Strategy Action Plans.

⁴ Progress in preparing for climate change. 2015 Report to Parliament. Committee on Climate Change, June 2015 - https://www.theccc.org.uk/wp-content/uploads/2015/06/6.736_CCC_ASC_Adaptation-Progress-Report_2015_FINAL_WEB_250615_RFS.pdf

2. The national context

2.1. Central government policy

Central government policy on climate change remains clear, with respect to both the need to significantly reduce carbon dioxide emissions and the need to adapt to the consequences of climate change.

2.2. Greenhouse gas emission targets

The national target for the UK's greenhouse gas emissions is an 80% reduction compared to the 1990 baseline to be achieved by 2050. This is a legally binding target established by the 2008 Climate Change Act. Intermediate targets have been set as a 34% reduction to be achieved by 2020 and a 50% reduction by 2027.

Current initiatives to support progress towards these targets include:

- Participation in the EU Emissions Trading Scheme, which covers energy-intensive industrial installations and the aviation industry.
- Supporting the increasing use of renewable energy generation at all scales, through monetary incentives such as Feed in Tariffs (FITs) and the Renewable Heat Incentive (RHI).
- Limits placed upon the maximum allowable emissions from new buildings through changes to Part L of the Building Regulations.
- The installation of 'smart meters' to facilitate the monitoring of energy consumption.
- The CRC Energy Efficiency Scheme and Climate Change Agreements.
- Salix finance for energy efficiency improvements by public sector organisations.
- Supporting the increasing use of biofuels for transport and electric vehicles.
- Action to reduce greenhouse gas emissions from agriculture, which are primarily nitrous oxide (from fertiliser use) and methane.

The Committee on Climate Change provides independent advice to government on the implementation of the Climate Change Act 2008 and their website is a useful source of accessible data on UK emissions broken down by sector⁵.

2.3. The National Adaptation Programme

Following the completion of the updated UK Climate Change Risk Assessment 2017 report, which identifies the top six areas of inter-related climate change risks for the United Kingdom as noted in [section 1.3](#) of this document, the government is set to update the NAP in 2018. The NAP will set out what government and others are doing to become more 'climate ready' and will identify the potential benefits of climate change as well as the costs and other adverse implications.

⁵ The Committee on Climate Change - www.theccc.org.uk

The current iteration of the National Adaptation Programme⁶, published in 2013, has 7 key headings:

- Built Environment;
- Infrastructure;
- Healthy and Resilient Communities;
- Agriculture and Forestry;
- Natural Environment;
- Business; and
- Local Government.

The Northamptonshire Climate Change Strategy 2014-2017 recognised that the 'Adaptation' section of the Strategy required restructuring in order to more closely reflect the seven key headings in the NAP. In order to ensure consistency, this updated Strategy maintains the headings for the 'Adaptation' section and the Action Plan and thus closely matches those in the NAP.

2.4. National initiatives

There are two national initiatives that partners in the county are participating in – Climate UK and Climate Local.

Climate UK⁷ co-ordinates and promotes local climate action across the UK, offering support to local authorities, businesses and communities to respond effectively to the challenges posed by climate change. It is a network constituting of all of the climate change partnerships across the UK through which Northamptonshire County Council (NCC) and other partners in the county contribute. Previously Climate UK was further split into regional arrangements, with Climate East Midlands covering Northamptonshire. Whilst local authorities throughout the East Midlands still meet to discuss progress on regional climate action, the Climate East Midlands body (and other regional bodies) no longer exist separately and instead are all bannered as Climate UK.

Climate Local⁸ is an initiative promoted by the Local Government Association to support local authorities' efforts to reduce greenhouse gas emissions and to adapt to climate change. It builds upon the Nottingham Declaration on Climate Change that many local authorities, including all of the Northamptonshire Local Authorities, have signed up to. Daventry District Council has been a signatory to Climate Local since December 2012 with Corby Borough Council becoming a signatory in June 2014.

⁶ Full details of the NAP can be found at <https://www.gov.uk/government/publications/adapting-to-climate-change-national-adaptation-programme>

⁷ For more information on Climate UK, visit their website - <http://www.climate-em.org.uk/about/climate-uk/>

⁸ For more details on Climate Local, see the Local Government Association website - <https://www.local.gov.uk/climate-local>

3. The local context

3.1. Changes to local strategies and commitments

The Northamptonshire Local Nature Partnership (LNP) was established to rationalise the number of existing 'environment' based groupings operating in the county and provide a coherent framework to ensure that the remaining groups can work effectively together. This has brought together the work of NCCOG, elements of the Local Flood Risk Operational Group, the Biodiversity Partnership and Local Wildlife Sites group.

The LNP aims to help the local area to manage the natural environment as a system and to embed its value in local decisions for the benefit of nature, people and the economy. It is a strategic partnership of a broad range of local organisations, businesses and people with the credibility to work with and influence other local strategic decision makers.

The Northamptonshire Climate Change Strategy continues to facilitate an increasing focus on planning for adaptation to climate change in the county. Planning officials in Northamptonshire (NCC, districts and boroughs and the Joint Planning Units (JPUs)) are aware of and are planning for the threats posed by climate change through inclusion of salient outcomes and policies in Local Plans. For example, the North Northamptonshire Joint Core Strategy's (adopted July 2016) identifies 'Adaptability to future climate change' as one of ten desired outcomes to be achieved across the area by 2031 and sets out ten linked policies devised to achieve this⁹.

Since April 2015, Local Planning Authorities have been required to consult Northamptonshire County Council as Lead Local Flood Authority (LLFA) on all major planning applications, with the LLFA reviewing the applications in relation to surface water drainage only. The LLFA is also required to provide technical advice on surface water drainage strategies, and on any designs put forward for new major developments.

The Northamptonshire Transportation Plan¹⁰ establishes transport-related policies, objectives and aims pertaining to transport in the county, outlining the plans which are in place and how they are to be implemented. The Plan consists of a broad range of strategies covering a number of distinct policy areas, and includes the Northamptonshire Highway Air Quality Strategy¹¹. The Plan recognises that the demand for travel within Northamptonshire is accelerating, in conjunction with significant population growth and major co-ordinated development of urban centres. This could mean that it takes 25% longer to make some journeys by 2021, for example between Daventry and Northampton, or between Kettering and Corby. Greater volumes of vehicles on the road, and its resulting elevated levels of congestion, can have a restrictive impact on economic development and prosperity by

⁹ North Northamptonshire Joint Core Strategy 2011-2031 - <http://www.nnjpu.org.uk/docs/Joint%20Core%20Strategy%202011-2031%20High%20Res%20version%20for%20website.pdf>

¹⁰ The Northamptonshire Transportation Plan - <http://www3.northamptonshire.gov.uk/councilservices/northamptonshire-highways/transport-plans-and-policies/Pages/local-transport-plan.aspx>

¹¹ The Northamptonshire Highway Air Quality Strategy - <http://www3.northamptonshire.gov.uk/councilservices/northamptonshire-highways/transport-plans-and-policies/Documents/Northamptonshire%20Highway%20Air%20Quality%20Strategy.pdf>

impinging upon the competitiveness of local businesses. The Plan therefore provides a reminder of the significant opportunities associated with climate change mitigation activities, such as reducing the number of vehicles on the road.

The Northampton Low Emissions Strategy, which was taken to the Northampton Borough Council Cabinet on the 8th June 2017 for full endorsement, aims to influence policies and activities which support the reduction of emissions in the borough of Northampton, with a focus on improving air quality and reducing vehicle emissions. It is recognised that poor air quality can have significant implications for human health, as well as for biodiversity, habitats and ecosystems. As such, it is critical that stringent measures are taken to improve air quality within the borough, and one such action is the formalisation of Air Quality Management Areas (AQMAs). Seven AQMAs have been identified within Northampton¹², due to the high levels of nitrogen oxide associated with each. In each case, the most significant contributing factor is emissions from road traffic.

3.2. Report on what has been achieved since 2014

The following is a summary of the high level achievements:

- **The Climate Change Strategy Action Plan has been successfully delivered** each year over the past three years, with over 90% of actions within each year's Action Plans implemented as intended.
- Work on Environment has been **acknowledged by the Northamptonshire Local Nature Partnership**.
- **Former Local Area Agreement (LAA) targets for reduction in CO₂ emissions for the county have been exceeded.** The per capita emissions in Northamptonshire (former NI186) have decreased by 30.8% over the ten year period from 2005 to 2015, and by 3.9% from 2014 to 2015. (Analysis of the latest available emissions data is included in [chapter 7](#) of this document).
- Further improvements in the Biodiversity indicator have been achieved by working in partnership with the Wildlife Trust, with **43% of local wildlife sites in active management** in 2016/17 (from a baseline of 22% in 2008-9).
- Delivery of a **£700k Defra funded project in the Nene Valley Nature Improvement Area**, which created and restored 115 hectares of wildflower meadows, enhanced 4km of river through improvement to water quality and river habitats, and improved public access to the site which attracts 2.4 million visitors a year.
- An update to the **Northamptonshire Local Flood Risk Management Strategy (LFRMS)** has been finalised and endorsed and approved by the NCC Place Commissioning Scrutiny Committee on

¹² Northampton Low Emissions Strategy - http://www.northampton.gov.uk/downloads/file/3802/air_quality_management_areas_aqma_s_in_northampton

the 9th March 2016 and by the NCC Cabinet on the 8th November 2016.

- The **DEFRA Community Resilience Pathfinder Scheme**¹³ was completed in March 2015 and provided support for 15 communities to improve their surface water flood resilience. A key output of the project was the development and delivery of the **Northamptonshire County Council Flood Toolkit**¹⁴, a comprehensive and award winning online source of flood-related information.
- The **Pathfinder II Project**¹⁵, funded by the Anglian Northern Regional Flood and Coastal Committee, seeks to facilitate community-led improvements in resilience and preparedness amongst 30 communities who are at risk of surface water flooding in Northamptonshire. The project is underway and will run until early 2019.
- NCC's Energy Management System, certified with the **ISO 50001:2011 Energy Management standard**, was independently audited in November 2016 and found to be compliant with the requirements of the standard, with no minor or major non-conformities observed.
- Northamptonshire County Council's participation in **INTERREG IVB Project ZECOS** was completed in 2015, and resulted in the installation of biomass boilers within four schools in the county.
- National Energy Action, a national fuel poverty charity, have worked with organisations and local authorities through the Northants Warm Homes Partnership to develop a **Northants Community Directory**¹⁶ which provides details of all agencies offering energy efficiency, fuel debt and other related support for vulnerable householders.

3.3. East Midlands Regional Climate Change Partnership

NCC and other local authorities in the East Midlands previously met under the auspices of the publicly funded 'Climate East Midlands', however this body no longer exists as it was and is now part of Climate UK. Nevertheless, the partners of this group still meet occasionally and actively participate in a regional climate change partnership to deliver action and share best practice.

¹³ Defra Community Resilience Pathfinder Scheme - <https://www.gov.uk/government/publications/flood-resilience-community-pathfinder-scheme-prospectus>

¹⁴ Northamptonshire Flood Toolkit - <https://www.floodtoolkit.com/>

¹⁵ Pathfinder II Project - <https://www.floodtoolkit.com/pathfinder2/>

¹⁶ Northants Warm Homes Partnership, Community Directory - <http://www.northantswarmhomes.com/files/2012/09/Copy-of-Northants-Community-Directory-WEB.xlsx>

3.4. Local climate change impact

The UK Climate Impact Programme, UKCIP, continues to disseminate information on the impacts of climate change based on the predicted changes in the climatic system in UKCP 09, which is still the latest available source of climate predictions.

The Local Climate Impacts Profile (LCLIP) for Northamptonshire that is referred to in the 2010-2014 and 2014-2017 Northamptonshire Climate Change Strategies is also still applicable and has not been updated.

4. The impacts of climate change

For many of the years which have followed the era of extensive industrialisation within the UK, significant efforts have been made to quantify the likely impacts of human-induced climate change, at first within the scientific community only, but now across a number of disciplines. In 2012 the UK government undertook a Climate Change Risk Assessment which identified one hundred potential impacts of climate change. A second iteration of the Climate Change Risk Assessment, published in 2017, identified the six most significant inter-related climate change risks or the UK, as detailed in [section 1.3](#) of this document.

As the Northamptonshire Climate Change Strategy and its annual Action Plans are informed by the NAP, which is in turn informed by the Climate Change Risk Assessment, it is pertinent to consider each of these risks and the potential impacts they carry for the county.

4.1. Flooding and coastal change risks to communities, businesses and infrastructure

Flooding already poses a severe threat to people, communities and buildings, and climate change is expected to increase the frequency, severity and extent of flooding.

A temperature increase of 2°C, which is now considered to be a modest climate change projection, could result in as much as a 40% increase in the number of residential properties exposed to frequent flooding (1 in 75 years average) by the 2080s, with a rise of 4°C potentially resulting in as much as a 93% increase in the number of residential properties exposed to frequent flooding¹⁷.

In Northamptonshire, large swathes of agricultural land and heavily urbanised town centres provide the ideal conditions for surface water flooding. Indeed, surface water flooding is the greatest source of flood risk posed to Northamptonshire's residents, with almost 57,000 residential properties already predicted to be at risk without taking into account future climate change¹⁸. With a rapid speed of onset, surface water flooding can be difficult to respond to, particularly if pre-emptive measures have not been taken to mitigate its risk¹⁹.

The economic damages associated with flooding can be severe, impacting upon built infrastructure, business competitiveness and agricultural productivity. Equally, there is evidence to suggest that, for individuals, the stress of experiencing flooding can continue for a long time after the flood water has receded²⁰. From a mental health perspective, this can be most pronounced in the two years which follow the incident²¹. Dangerous pathogens carried by flood water which can cause illness and

¹⁷ Climate Change Risk Assessment 2017: Projections of future flood risk in the UK <https://www.theccc.org.uk/wp-content/uploads/2015/10/CCRA-Future-Flooding-Main-Report-Final-06Oct2015.pdf.pdf>

¹⁸ Northamptonshire Local Flood Risk Management Strategy <https://www.floodtoolkit.com/wp-content/uploads/2016/11/Northamptonshire-LFRMS-Report-Final-November-2016.pdf>

¹⁹ For more information on how to prepare for a flood, visit the Flood Toolkit - <https://www.floodtoolkit.com/emergency/preparation/>

²⁰ The Effects of Flooding on Mental Health. Health Protection Agency, 2011.

²¹ Alderman, K., Turner, L.R., & Tong, S. (2012). Floods and human health: A systematic review. *Environment International*, 47, 37-47.

disease, the trauma of losing possessions which may have a sentimental value, and the smell and dampness which can take months to erase from homes are all factors which could contribute to the prevalence of poor mental health amongst individuals who have experienced flooding.

There is a great deal of partnership work being undertaken throughout the county in response to these risks, which is detailed in the Northamptonshire LFRMS and associated Action Plan²².

4.2. Risks to health, well-being and productivity from high temperatures

Future changes in climate are likely to result in both changes to mean temperatures and increased weather variability. Ensuring that the risks to health, well-being and productivity associated with these changes are appropriately accounted for in policy is of paramount importance, but at present there are few comprehensive policies in place to adapt existing homes and other buildings to high temperatures, manage the urban heat island effect or safeguard new homes.

Older people are particularly vulnerable to the detrimental health impacts associated with high temperatures, and in the UK the proportion of the population aged over 75 is projected to increase from 8% in 2015 to 18% by 2085, which could exert significant pressure on the health and care systems. In Northamptonshire, the number of individuals aged 65 and over increased from 106,036 in 2011, to 125,194 in 2015. Of the overall population of the county, people aged 65 and over comprised 15.3% of the population in 2011, compared to 17.3% in 2015²³. The proportion of older people in the county is therefore growing, and careful consideration needs to be given to how to mitigate the risk of this population being adversely affected by warmer temperatures. For instance, there is a risk that insulating homes to improve thermal efficiency could result in overheating.

The average number of hot days per year is increasing, as is the chance of severe heat waves. Past events provide evidence that extreme temperatures can significantly inhibit production and well-being: on the 19th July 2016, with temperatures in London of over 30°C, a surge of health problems and transport disruptions were reported, and the media even reported increased levels of violence²⁴.

These impacts are particularly pronounced in urban centres, and therefore it is essential that measures are taken to minimise the adverse effects of warm temperatures for people of all ages. Incorporating green infrastructure into urban design is a way to lessen the urban heat island effect, and thus urban temperatures, and planning policy is a critical component of the mechanism through which this can be achieved.

²² See the 'Statutory and Project Documents' section of the Flood Library for the latest versions of the LFRMS and Action Plan - <https://www.floodtoolkit.com/pdf-library/>

²³ Northamptonshire Analysis. Population and Census. <https://www.northamptonshireanalysis.co.uk/bytheme?themeld=6&themeName=Population>

²⁴ Heat waves, productivity, and the urban economy: What are the costs? <http://www.lse.ac.uk/GranthamInstitute/news/heat-waves-productivity-and-the-urban-economy-what-are-the-costs/>

In response to these risks, the North Northamptonshire Joint Core Strategy²⁵ has adopted a number of policies to influence development over the coming decades. Policy 9 – Sustainable Buildings, sets out that *“The layout and design of sites, buildings and associated landscapes should...Maximise the use of passive solar design to address heating and cooling...”*. Furthermore chapter 3 ‘The Green Infrastructure Framework’ identifies special policy areas which, amongst other aspects, will be a focus for promoting climate change mitigation, and also highlights that green infrastructure *“supports healthier lifestyles, manages flood water, improves air quality and helps to mitigate the effects of climate change”*. Policies 19, 20 and 21 further expand on these areas and sets out how green infrastructure will be delivered in North Northamptonshire.

4.3. Risk of shortages in the public water supply, and for agriculture, energy supply and industry

Climate change will result in changes to the way that water circulates through the water cycle, and this, coupled with significant population growth, is likely to place a great degree of stress on the availability of water in the future.

This presents a risk to the UK economy, with the availability of water for irrigation likely to become a serious limiting factor to agricultural production, and the requirements of freshwater use for cooling in energy generation expected to rise significantly. The public water supply will also be impacted, and the ecology of rivers and lakes may alter in response to reduced water availability, particularly during the summer months, which could have a devastating effect on biodiversity as well as detracting from the amenity value of these environments.

At present, action is primarily targeted at reducing demand, and water companies, abstractors and governments have worked together to attempt to elicit a change in water consumption behaviour. Adapting to a changing climate necessitates a shift in the way we live our lives, and it is not yet clear how dependent this shift is on the availability of water. Thus, action is needed to conserve water now given the uncertainty of its availability in the future.

In June 2017, the Environment Agency published a document entitled, ‘Drought response: our framework for England’²⁶. Although this document provides a high level national response, implementation is underway at a regional and local level, through co-ordination with water and sewerage companies, as well as other groups such as the National Farmers Union and the Country Land and Business Association.

4.4. Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity

²⁵ North Northamptonshire Joint Core Strategy - <http://www.nnjpu.org.uk/publications/docdetail.asp?docid=1573>

²⁶ Environment Agency ‘Drought response: our framework for England’, June 2017 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/625006/LIT_10104.pdf

Many ecosystems have already begun to adjust and adapt to the impacts of climate change, but it is likely that their capacity to do so in the future will be significantly constrained by the increasing pressures of habitat loss and fragmentation, pollution, over-exploitation of resources and the spread of invasive species.

A key risk to natural capital associated with a changing climate is the deterioration of productive agricultural land. Higher levels of soil aridity, coupled with reduced water availability for irrigation, is likely to significantly impact upon crop yields and farming versatility. Thus hampering the agricultural output of UK farms and threatening national food security.

Loss of habitat and the corresponding breakdown of ecosystems, in terrestrial, freshwater, coastal and marine environments, can not only result in the depletion of species populations and thus biodiversity, but also the ability for natural carbon storage, which will become increasingly critical as levels of carbon dioxide in the atmosphere continue to rise.

Responding to these identified risks, in Northamptonshire through the Nene Valley Nature Improvement Area project, a study was undertaken to map, and place a value on, natural capital and ecosystem services in the Nene Valley²⁷. It highlighted that natural capital and the ecosystem services these provide, are worth £118.7 million annually to the Nene Valley. Further work is currently in progress on habitat opportunity mapping, to identify areas where habitat creation could enhance natural capital and ecosystem services throughout Northamptonshire, in order to improve air quality, reduce flood risk and better water quality.

The final step to this process is the development of a Natural Capital Investment Plan, which is being progressed with funding from Defra, via a collaboration between five Local Nature Partnership (including Northamptonshire) covering the South East Midlands area. This plan will help to influence development throughout the area, identifying areas where an investment in natural capital could greatly enhance the delivery of numerous ecosystem services.

Together this work helps to highlight the importance and value of natural capital, in terms of health and wellbeing, economic prosperity and biodiversity, to Northamptonshire and the wider South East Midlands area, as well as the need to address the impacts climate change and future development pressures could have on the ecosystem services they provide.

4.5. Risks to domestic and international food production and trade

Although a changing climate may present opportunities to increase domestic food production, the condition of soils and availability of water, both of which are already impacted by climate change, are likely to be limiting factors to realising these opportunities.

Parts of southern, eastern and central England have already been identified as likely to become unviable for some farming activities due to the intensive water requirements of these activities. The

²⁷ Valuation of ecosystem services in the Nene Valley NIA - <http://www.nenevalleynia.org/project/ecosystem-services/> Mapping natural capital and ecosystem services in the Nene Valley - <http://www.naturalcapitalsolutions.co.uk/previous-projects/case-study-2/>

forecasted trend of wetter winters is also likely to exacerbate the problems of soil compaction and erosion, which can severely impact upon agricultural productivity.

Climate change is likely to shift the balance of food production between regions, both internationally and nationally. These changes will influence markets, trade and domestic prices, and the impacts of which are likely to disproportionately affect farmers and lower income households.

The Northamptonshire Food and Drink Strategy, produced by NCC and Groundwork Northamptonshire, attempts to address these risks by highlighting the challenges the food and drink sector faces within the county, whilst also mapping the important work underway to mitigate against these.

4.6. New and emerging pests and diseases, and invasive and non-invasive species, affecting people, plants and animals.

There is broad agreement within the scientific community that pests and invasive non-native species may increase in number and range in a warmer, wetter atmosphere, and that there is a significant chance of an increase in the prevalence of pathogens that are already present in the UK, as well as new pathogens arriving from overseas.

However, projections of the impact of climate change on human diseases are uncertain, as it is not clear precisely what conditions are likely to prevail in an altered UK climate. As such, surveillance and monitoring of species and pathogens that are likely to pose the biggest challenge in the changing climate should be prioritised.

The Northamptonshire Local Nature Partnership monitors progress being made by partners on several natural environment priorities in the county. Priority 2 focuses on the need to 'promote co-ordinated address and management of specifically threatened habitats or species'.

There are a great many threats from invasive species and emerging diseases both nationally and in Northamptonshire. Two specific examples reported to the Northamptonshire Local Nature Partnership include the spread of Ash tree die-back (Chalara), with Woodland Trust volunteers carefully monitoring the situation and delivering 'Tree Disease Recovery Packs' where loss is occurring; and the recent identification of the invasive 'Killer Shrimp' (*Dikerogammarus villosus*) in Pitsford Reservoir, which is being responded to through the draft of an action plan by River Nene Regional Park, in partnership with Anglian Water and the Environment Agency. This draft plan aims to raise awareness of the threat of this species and promote soft and hard mitigation actions that can be implemented to slow the spread.

5. Aims and objectives for future action

The Climate Change Strategy recognises the need to establish key aims that will direct efforts to tackle climate change and its impacts within Northamptonshire over the next three years. Broadly, these aims can be grouped under the following three objectives, which constitute distinct focus and review areas within this Climate Change Strategy:

1. [Raise awareness of the issues of climate change](#);
2. [Reduce emissions of greenhouse gases](#); and
3. [Plan and adapt to the impacts of climate change](#).

The aims associated with these objectives are identified below, with further information on progress against the objectives provided in chapters 6, 7, and 8.

5.1. Raise awareness of the issues of climate change

Key aims within this objective include:

- **Communications and advertising** – engage public and stakeholder organisations through online and social media communications and household leaflets, to help reduce emissions and energy usage as well as assist adaptation to climate change.
- **Events and Workshops** – develop and deliver events to raise awareness of the issues of climate change and sustainability to the public, organisations and partners.
- **Education in schools** – work with schools to increase awareness of the issues of climate change especially related to waste, energy and adaptation.

5.2. Reduce emissions of greenhouse gases

Key aims within this objective include:

- **Improve Home Energy Efficiency** – advise on any funding opportunities available to install energy saving measures, such as insulation and boiler replacements, as well as fuel switching and collective tariff schemes which may help homeowners to reduce their energy bills.
- **Improve Resource Efficiency in the Business, Commercial and Voluntary Sectors** – seek opportunities to develop business support programmes which target the proliferation of resource efficiency measures and activities.
- **Improve Resource Efficiency in the Public Sector** – utilise existing funding programmes to develop and deliver resource efficiency projects and explore opportunities for local authorities to undertake holistic resource management and sustainable procurement, focusing on energy, waste and water.
- **Reduce Energy Use and Emissions from Transport** – initiate and lead the way on a modal shift to sustainable travel and low carbon fuel infrastructure.

- **Encourage Sustainable New Development and Land Use** – capture climate change considerations within local plans and policies and encourage land development which promotes sustainability.
- **Minimise Waste** – identify and support opportunities to reduce emissions by reducing, reusing and recycling waste.
- **Increase Low and Zero Carbon Energy Use** – work with organisations in all sectors to implement low and zero carbon energy measures, with a focus on renewables.

5.3. Plan and adapt to the impacts of climate change

Key aims within this objective include:

- **Local Government and Public Services** – embed ‘planning to adapt’ activities into public sector processes, practices and policies.
- **Business, Industry and Commerce** - identify the businesses that are most sensitive to the impacts of climate change and work with them to help them take adaptive action.
- **Built Environment and Infrastructure** – ensure that policies are effective in encouraging sustainable construction and development, and maximise opportunities for ‘greening’ the county through green infrastructure initiatives and activities.
- **Natural Environment, Agriculture and Forestry** – implement natural initiatives which help to adapt to and minimise the impacts of climate change, as well as preserving and enhancing existing natural assets.
- **Healthy and Resilient Communities** – enhance the awareness and preparedness of individuals and communities to the effects of climate change and its mitigation.

6. Raise awareness of the issues of climate change

The need to raise awareness on climate change cuts across every area of the Northamptonshire Climate Change Strategy and for this reason it has been maintained as a distinct focus area.

The 'Greener Northants' website²⁸, set up by the Northamptonshire Local Nature Partnership (LNP) to promote environmental issues and the projects being run by the partners, continues to be a forum in which greater awareness of climate change issues in Northamptonshire is facilitated. The website provides information on local projects, news and events, and policies, guidance and strategies. There is also a dedicated Twitter feed, available at: [@greennorthants](https://twitter.com/greennorthants).

A number of events and workshops have been held in the county with the aim of raising awareness of the issues of climate change and sustainability. Examples of these have included:

A Northamptonshire Local Nature Partnership conference is held annually to outline the key themes and priorities of the LNP and highlight the natural environment projects being delivered in the county.

A series of engagement events were carried out through the Defra Community Resilience Pathfinder Scheme to raise awareness of the impacts of flooding and flood risk to 15 communities in Northamptonshire.

A number of workshops on climate change and soil management were delivered to farmers and landowners by the National Farmers Union, Climate UK and NCC.

With regard to raising awareness through education settings, the NCC Waste and Energy Education Team (NWEET)²⁹ worked with schools across the county to increase recycling and improve energy efficiency through the EU funded INTERREG IVB Project ZECOS. This led to the identification of champion schools, installation of biomass boilers in four schools and a number of exemplar sustainability case studies.

Over the next three years, there is also the opportunity to raise awareness to landlords of properties (in the domestic and non-domestic sectors) that are not energy efficient, that there is now legislation in place which is likely to require them to carry out improvements. For example, since April 2016, domestic private rented sector tenants have been able to request consent from their landlord to install energy efficiency improvement measures in the property they rent and the landlord is now unable to unreasonably refuse consent, providing the tenant is able to secure suitable funding for the requested improvements. Furthermore, from April 2018, all private rented properties will be required to be brought up to a minimum energy efficiency standard rating, likely to be set at EPC rating "E". This legislation will support the achievement of carbon reduction targets as well as reducing energy costs for tenants.

²⁸ Greener Northants website (currently under redevelopment at the time of writing) - <http://www.greennorthants.org>

²⁹ NCC Waste and Energy Education Team - <http://www.wasteandenergyeducation.co.uk/>

7. Reduce emissions of greenhouse gases

7.1. Trends in emissions data

Local authority carbon dioxide emissions are published annually by government³⁰, with the latest available data relating to 2015 together with revised figures for each year since 2005. Note that two sets of these figures are published – a full data set and a reduced set showing only emissions within the scope of influence of local authorities. It is data from the latter that is quoted below since these correspond to the former NI186 data (per capita CO₂ emissions in the Local Authority area) that was used for the original strategy. The main difference between these is that transport emissions are much lower in the latter set, due to the inclusion of motorways (through Daventry, South Northamptonshire and to a much lesser extent, Northampton), as well as diesel railways.

Figure 1 below shows the percentage breakdown of the CO₂ emissions by sector in Northamptonshire in 2005 and 2015. This highlights that in 2015, Northamptonshire's transport sector produced the greatest proportion of the county's CO₂ emissions (38%), in comparison to the industry and commerce sector in 2005 (38%). Since 2005 both the domestic, and industry and commerce sector have seen a 3% decrease in the proportion of CO₂ emissions in the county.

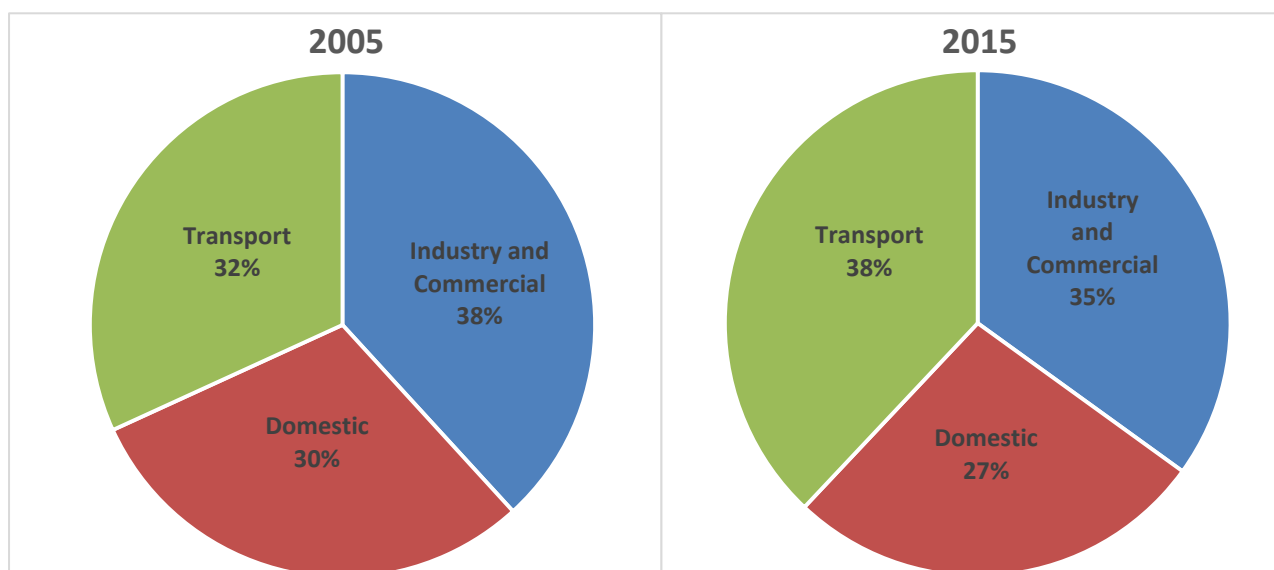


Figure 1: CO₂ emissions by sector in Northamptonshire

However, when considering the actual consumption figures between 2005 and 2015 as presented in Figure 2, the overall trend is a gradual reduction in all sectors with the exception of 2010 and 2012, where the higher emissions are likely to be due to the exceptionally cold months at the beginning and end of that year, and the transport sector, which has seen a gradual increase since 2013, in line with national trends.

³⁰ Local Authority carbon dioxide emissions data 2005 – 2015 - <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2015>



Figure 2: CO₂ emission trend per sector in Northamptonshire

Therefore overall emissions have fallen in all sectors since 2005, but at a slower rate in the transport sector (a reduction of only 8.3% compared to 30.6% in both the domestic and industry and commercial sectors). Overall the reduction in total emissions for Northamptonshire is 23.5%, as detailed in Table 2.

Year	Northamptonshire			England
	Total emissions (kt CO ₂ p.a.)	Population (thousands)	Per capita emissions (t)	Per capita emissions (t)
2005	5,627.4	654.5	8.6	7.2
2006	5,628.4	663.6	8.5	7.1
2007	5,490.6	672.1	8.2	6.9
2008	5,360.9	678.2	7.9	6.7
2009	4,857.1	683.5	7.1	6.1
2010	5,120.6	688.0	7.4	6.3
2011	4,682.7	694.0	6.7	5.7
2012	4,937.6	700.6	7.0	5.9
2013	4,798.3	706.4	6.8	5.7
2014	4,424.7	714.4	6.2	5.0
2015	4,304.3	723.0	6.0	4.8
Percentage reduction	23.5%	-10.5%	30.8%	33.6%

Table 1: Total CO₂ emissions and per capita Northamptonshire vs. England

The figures in Table 1 show that the per capita emissions in Northamptonshire have decreased by 30.8% over this ten year period – this is higher than the 23.5% decrease in total emissions due to a 10.5% increase in the population. For England as a whole, there has been a similar decrease in the per capita emissions from 7.2 to 4.8 tonnes per year (a decrease of 33.6%). Northamptonshire is thus slightly above the national average in terms of per capita emissions.

Whilst the percentage decrease trends in the emissions for the county have been similar to those for England as a whole, there have been significant differences between the decreases in the local authority areas within the county. Table 2 summarises the total emission reductions in each district and borough, as well as Northamptonshire as a whole.

Local Authority area	2005 emissions (kt CO ₂)	2015 emissions (kt CO ₂)	Percentage reduction
Corby	695.1	487.2	29.9%
Daventry	808.2	620.6	23.2%
East Northamptonshire	653.7	565.8	13.4%
Kettering	745.9	635.2	14.8%
Northampton	1,398.3	953.8	31.8%
South Northamptonshire	737.7	596.6	19.1%
Wellingborough	588.4	445.1	24.4%
Northamptonshire	5,627.4	4,304.3	23.5%

Table 2: Total emissions by local authority area

These figures indicate that there have been greater percentage reductions in Northampton and Corby in particular and lower reductions in East Northamptonshire and Kettering. However, these differences appear to be primarily due to the respective changes in the Industry and Commercial sector in these areas, which probably reflect changes in economic activity levels, over a period affected by economic recession, rather than investment in measures designed to achieve reductions in emissions.

When the emissions for each local authority area are expressed as per capita (see Table 3 below), a slightly different pattern emerges due to differing rates of population growth, with Corby closely followed by Northampton experiencing the greatest percentage reductions (both around a 40% reduction during this ten year period).

Local Authority area	2005 per capita emissions (t)	2015 per capita emissions (t)	Percentage reduction
Corby	12.8	7.3	42.9%
Daventry	10.7	7.8	27.3%
East Northamptonshire	8.0	6.3	21.0%
Kettering	8.6	6.5	24.4%
Northampton	7.1	4.3	39.7%
South Northamptonshire	8.7	6.7	23.0%
Wellingborough	8.0	5.8	27.5%
Northamptonshire	8.6	6.0	30.8%

Table 3: Per capita emissions by local authority area

The 2014-17 iteration of the Climate Change Strategy compared emission data trends from 2005-2013 using publicly available data provided by government. Since the publication of the 2014-17 Strategy, government has released new data which has updated all of the previously provided data as well as providing new data for the year 2015. Therefore, for the purposes of this Strategy, total and per capita emissions data by local authority area between 2014 and 2015 has been compared to review progress made towards reducing emissions based on the most up to date and publicly accessible data.

Local Authority area	2014 emissions (kt CO ₂)	2015 emissions (kt CO ₂)	Percentage reduction
Corby	517.4	487.2	5.8%
Daventry	623.9	620.6	0.5%
East Northamptonshire	531.7	565.8	-6.4%
Kettering	638.9	635.2	0.6%
Northampton	1,026.3	953.8	7.1%
South Northamptonshire	617.4	596.6	3.4%
Wellingborough	469.2	445.1	5.1%
Northamptonshire	4,424.7	4,304.3	2.7%

Table 4: Total emissions by local authority area (2014 – 2015 comparison)

Local Authority area	2014 per capita emissions (t)	2015 per capita emissions (t)	Percentage reduction
Corby	7.9	7.3	7.8%
Daventry	7.9	7.8	1.8%
East Northamptonshire	6.0	6.3	-5.4%
Kettering	6.6	6.5	1.3%
Northampton	4.7	4.3	8.3%
South Northamptonshire	7.0	6.7	4.4%
Wellingborough	6.1	5.8	5.1%
Northamptonshire	6.2	6.0	3.9%

Table 5: Per capita emissions by local authority area (2014 – 2015 comparison)

Table 5 demonstrates that between 2014 and 2015, per capita emissions at the county level were overall reduced by 3.9%, a significant reduction which surpasses the 1.5% per annum reduction target prescribed by the 2014-2017 Climate Change Strategy. However, East Northamptonshire appears to have seen an actual increase of 5.4% per capita emissions over this time, primarily as a result of a large increase (37.3% total emissions) in 'Industry and Commercial Electricity'. Further analysis and investigation is required to understand the cause of this significant increase.

A table providing full details of the breakdown of total and per capita emissions by local authority area and by sector is provided in Appendix 2.

7.2. Other local achievements in climate change mitigation

NCC has successfully implemented an energy management system which has been certified with the ISO50001:2011 standard and is the first local authority to have received the certification. The system ensures a documented and auditable approach to energy management is undertaken by the authority, and that measures are taken to continually improve the energy performance of all functions and operations.

It is through the implementation of the energy management system that reductions in NCC's carbon footprint are effectively recorded, reported and monitored. In 2012/13 NCC's carbon footprint was calculated to be 76,124 tCO₂e; and in 2015/16 it was recorded as 46,680 tCO₂e, a reduction of 38.7%.

Additional achievements include reduced energy bills for NCC and schools as a result of an energy procurement risk management strategy; solar PV installations for schools, fire stations and libraries; and the provision of Ultra Low Emission Vehicles (ULEVs) for Waste and Adult Social Care services.

The INTERREG IVB Project ZECOS was completed in 2015. The project facilitated a high volume of schools being educated in recycling and energy efficiency, the identification of champion schools within three communities (Oundle, Braunston and Crick and Long Buckby), and the installation of biomass boilers within four schools: Yelvertoft Primary School, Crick Primary School, The Gateway School and Oundle CE Primary School.

The Northants Warm Homes Partnership (NWHP)³¹ has co-ordinated a number of fuel poverty projects including:

'Big Switch Daventry' – Using collective purchasing power to secure better deals on gas and electricity tariffs for householders. More than 2,000 households in the District have signed up since its launch in December 2014 and over 800 householders have successfully switched energy provider.

'Switch, Save, Smile' – Households in East Northamptonshire Council are encouraged to sign up to the project to receive guidance on switching energy suppliers and to register for collective switching.

'Climate Friendly Communities' – Providing help and advice to communities seeking to integrate climate friendly practices into the use of buildings, with the overall aim of reducing the community's carbon footprint.

NWHP has also overseen Northamptonshire's involvement in the Community Action Partnership (CAP) programme, an initiative delivered by National Energy Action (NEA) and British Gas in partnership with local authorities in eight key geographical areas. As part of the programme, one hundred 'energy champions' have been recruited in Northampton, Corby, Kettering and Daventry to help people in the community to become more energy efficient and to reduce the cost of household

³¹ Northants Warm Homes Partnership - <http://www.northantswarmhomes.com/>

energy bills. The Northamptonshire Fire and Rescue Service have also received front-line training which has educated crews on the ways in which they can identify people who are in fuel poverty.

A further output of the Northamptonshire CAP programme is the creation of the Northants Community Directory³², a resource which details the agencies offering energy efficiency, fuel debt and other related support to vulnerable householders. The Directory serves as a mechanism through which support workers and front-line staff across the county are able to provide more streamlined and efficient referral services.

Implementation of the Northamptonshire Transportation Plan has ensured that more focus is given to achieving carbon reduction through modal shifts, with an increased emphasis placed upon sustainable travel.

E-Car Club have established four E-Car Club Hubs within Northamptonshire with electric vehicles, available for public use, provided at each. The four Hubs are located at: Campbell Square, Northampton; Guildhall Road, Northampton; Berrywood Hospital, Northampton; and St Mary's Hospital, Kettering.

Northamptonshire Waste Partnership (NWP) has implemented a Waste Strategy and Action Plan (2012-16) to continue to engage with NCCOG to help reduce CO₂ by reducing, reusing and recycling waste. The latest figures for 2015/16 identify that 46% of waste is either being recycled or composted in the county, exceeding the target of 25% by 2015/16.

KierWSP, who run the Northamptonshire Highways contract, has implemented a Sustainability Action Plan. The key performance indicator for this is the reduction in carbon footprint based on fuel (including red diesel), electricity, gas (where available), water (excluding Towcester) and waste to landfill. Latest figures report a 47.9% reduction since 2008/09.

7.3. Implications of national emissions targets over 2017 – 2020

It is proposed that any emissions targets set for Northamptonshire should again be set in line with national targets. The government's Carbon Plan defines targets in terms of 5 year carbon budgets, i.e. total emissions over 5 year periods with a total of 3,018 MtCO₂e for 2008 – 2012 and 2,782 MtCO₂e for 2013 – 2017. This corresponds to a 7.82% reduction over 5 years or an average of a 1.56% reduction each year. As the next iteration of the government's Carbon Plan is due to be released in 2017, and with it the identification of new 5 year emission reduction targets, it is suggested that a reduction in the emissions in the county of 1.5% per year or 4.5% over the 3 years is endorsed by this Strategy.

Based on the 2014 data reported above, a reduction of 1.5% per year corresponds to the following reduction in emissions for each sector:

- Industry and commerce – approximately 22,573 tonnes CO₂ per year;
- Domestic – approximately 17,472 tonnes CO₂ per year; and

³² Northants Community Directory - <http://www.northantswarmhomes.com/files/2012/09/Copy-of-Northants-Community-Directory-WEB.xlsx>

- Transport – approximately 24,518 tonnes CO₂ per year.

The actions associated with this Climate Change Strategy will support the uptake of measures which contribute towards the achievement of these targets.

8. Plan and adapt to the impacts of climate change

8.1. Built Environment and Infrastructure

The Local Plan documents of the county's planning authorities have been, or are in the process of being, reviewed to ensure policies are in place to encourage sustainable construction and adaptation, including the next steps towards what will be needed in 50-100 years and the promotion of Northamptonshire as a sustainable and pro-active county. Surface water management plans for new developments have also been reviewed.

District and borough authorities are developing Green Infrastructure Plans as part of their evidence bases to inform their Part 2 Local Plans, which will help guide future infrastructure needs.

A number of Green Infrastructure projects have been implemented across the county. These include the implementation of Sustainable Drainage Systems (SuDS) as part of NCC's role as the LLFA for Northamptonshire; working with KierWSP (the contractor working in partnership with the County Council) to maintain and improve the highways infrastructure; working with borough and district councils to increase the number of street trees in the county; and exploring opportunities for large scale woodland creation in planned sustainable urban extensions.

8.2. Healthy and Resilient Communities

The **Green Leaders** is a three year project funded via Big Lottery Fund and delivered by Groundwork Northamptonshire, which aims to recruit 50 young adults between 14-19 years old each year, to raise awareness of climate change issues and preparedness to impacts, in their local communities.

An update to the **Northamptonshire Local Flood Risk Management Strategy** has been finalised and endorsed and approved by the Place Commissioning Scrutiny Committee on the 9th March 2016 and by NCC Cabinet on the 8th November 2016.

Five Surface Water Management Plans³³ (SWMP) are now complete including Northampton, South Northamptonshire, Daventry, East Northamptonshire and Wellingborough.

A **Groundwater Flood Risk Study for Northamptonshire**³⁴ has been completed and serves to improve understanding of the risk from groundwater flooding in the county.

A process and formal protocol for the reporting and investigation of flooding incidents is in use and regularly exercised.

Northamptonshire County Council participated in the **Pathfinder Project**, funded by DEFRA, as one of thirteen local authorities exploring the ways in which communities can be supported to improve their flood resilience. The Northamptonshire Pathfinder Project set out to provide information about community flood resilience through an online toolkit detailing 'how to' information on the actions residents, businesses and communities can take to improve their flood resilience. The

³³ See the 'Statutory and Project Documents' section of the Flood Library for the SWMPs - <https://www.floodtoolkit.com/pdf-library/>

³⁴ See the 'Statutory and Project Documents' section of the Flood Library for the Groundwater Study - <https://www.floodtoolkit.com/pdf-library/>

Northamptonshire County Council Flood Toolkit is now live and publicly accessible:

<https://www.floodtoolkit.com/>.

The impact of climate change on health also needs to be considered. In particular, extreme weather conditions such as heat waves, severe cold snaps and flooding present challenges to the delivery of health services as well as introducing new risks to health. The NHS funded Sustainable Development Unit works to promote sustainability across the public health and social care system. They have developed a toolkit – “Under the Weather - Adapting to a changing climate”³⁵ – to support Health and Wellbeing boards, and others, and ensure organisations and communities are prepared for the impacts of climate change.

8.3. Natural Environment, Agriculture and Forestry

The Nene Valley Nature Improvement Area (NIA) has created and restored 115 hectares of wildflower meadows, enhanced 4km of river through improvement to water quality and river habitats, and improved public access to the area which attracts 2.4 million visitors a year. A new Business Plan for the NIA has recently been created, which covers 2015-2020.

The annual **Northamptonshire Tree Planting Scheme**, delivered in conjunction with the Woodland Trust, has resulted in over **150,000 trees being planted in schools, communities and farms** across Northamptonshire since 2012.

The **Yardley Whittlewood Ridge project** has engaged with over 250 landowners in an attempt to enhance ancient woodland habitats in the region.

There has also been the continued **development of the Guidance on Highway Tree Planting**, helping to encourage tree planting on new and existing developments, as well as a trial of a slow/low growing climate resilient grass seed mix for the county verges to help reduce maintenance costs and help in adapting to a changing climate. This trial was completed in 2016 and seed mix sent to Development Control to be used as the standard mix for the future.

Biodiversity in the county has improved, with the percentage of Local Wildlife Sites in positive management up to **43% in 2016/17**; from 22% in 2008/9.

The **Biodiversity Action Plan 2015 – 2020**³⁶ has now been published on the planning section of the NCC website. This document sets out the highest priorities for action to conserve Northamptonshire’s most threatened and declining habitats and species.

A **Mini Wildflowers Project** was initiated by Daventry District Council in 2016, with annual or perennial wildflower seeds awarded to five communities to create mini wildflower meadows in their local community.

³⁵ Under the Weather – Adapting to a changing climate - <http://www.sduhealth.org.uk/areas-of-focus/community-resilience.aspx>

³⁶ Biodiversity Action Plan 2015-2020 - <http://www3.northamptonshire.gov.uk/councilservices/environment-and-planning/planning/planning-policy/archaeology-biodiversity-and-landscape/Pages/biodiversity.aspx>

The **Nene Catchment Partnership**³⁷ (between Natural England, the Environment Agency and River Nene Regional Park) has been running since 2009 with the aim of promoting Catchment Sensitive Farming. This is land management that minimises pollution of watercourses through an arrangement of measures such as appropriate management of the use of fertilisers and pesticides and promoting good soil structure and rain infiltration. This is consistent with the Defra Catchment Based Approach³⁸ to improve the quality of our water environment, which was launched across the whole of England in June 2013 after an initial pilot phase in 2012. It also offers the opportunity for integrated delivery of NAP objectives and associated Green Infrastructure.

Climate UK has developed an online Farm **Business Resilience Healthcheck tool**³⁹ to help farmers identify the risks that climate change can pose to their business and the ways in which their business resilience can be improved.

8.4. Business, Industry and Commerce

Business and supply chain resilience is high on the agenda of many of the partners involved in the Climate Change Strategy.

Businesses are able to assess their vulnerability to the effects of climate change by undertaking an online Business Resilience Healthcheck⁴⁰, a tool developed by Climate UK. This tool also helps businesses to identify the actions they can take to build their resilience and reduce their vulnerability to climate change.

The Carbon Trust Green Business Fund⁴¹ provides an energy efficiency support service for small and medium-sized enterprises (SMEs) and is able to offer up to £10,000 capital contribution towards the purchase of energy saving equipment, including renewable technologies.

8.5. Local Government and Public Services

‘Planning to adapt’ activities will continue to be embedded into public sector processes, practices and policies.

³⁷ River Nene Regional Park, Catchment Sensitive Farming -

<http://www.riverneneregionalpark.org/projects/catchment-sensitive-farming-csf/>

³⁸ Defra Catchment Based Approach - <https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment>

³⁹ Farm Business Resilience Healthcheck - <http://www.farmbusinessresilience.co.uk/>

⁴⁰ Business Resilience Healthcheck - <http://www.climate-em.org.uk/resources/item/business-resilience-healthcheck/>

⁴¹ Carbon Trust Green Business Fund - <https://www.carbontrust.com/client-services/programmes/green-business-fund/>

9. Implementation of the Climate Change Strategy

The Climate Change Strategy will continue to be implemented by NCCOG in association with a range of partners as relevant for each activity. In addition there are a number of groups that focus on specific areas of the Strategy (e.g. NCCOG, Northamptonshire Local Nature Partnership and many others) to ensure that the actions are taken forward and that objectives and targets are met.

Each year, the Strategy will be supported by an annual Action Plan that covers each area of the Strategy and provides additional information about what will be done, the measures that will be used to track progress, and the targets that have been set. The actions, which will follow the headings used in the Strategy, will highlight the 'lead organisation' for each activity and be funded/resourced appropriately.

These annual Action Plans will provide the framework for monitoring and capturing the various activities being undertaken to tackle the causes and effects of climate change. They will be actively monitored at the quarterly NCCOG meetings with progress on actions assessed using a RAG rating.

The Action Plan will be reviewed at the end of each financial year and a further Action Plan will be developed for the following year. Targets will also be reviewed regularly to ensure that they are consistent with the evolving science and any changes to related national or regional strategies.

This Climate Change Strategy covers the period 2017-2020. Following this period, the Strategy will be reviewed to report on whether the objectives have been met, and to highlight any and all achievements over those three years. A refresh to this Strategy for 2020-2023 will then be considered in light of any legislation changes, and national, regional and local priorities.

Appendices

Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) – Membership

Appendix 2 – Summary of emissions by Local Authority area

Appendix 1 – Northamptonshire Climate Change Officer Group (NCCOG) Membership

- Northamptonshire County Council
- Corby Borough Council
- Daventry District Council
- East Northamptonshire Council
- Kettering Borough Council
- Northampton Borough Council
- South Northamptonshire Council
- Borough Council of Wellingborough
- Northamptonshire Police
- Northamptonshire General Hospital
- University of Northampton
- Northamptonshire Chamber
- Groundwork Trust
- Northamptonshire ACRE
- North Northants Joint Planning Unit
- West Northants Joint Planning Unit
- Northamptonshire Waste Partnership
- Northants Warm Homes Partnership
- Northamptonshire Highways (KierWSP)
- Electric Corby
- Climate UK
- Environment Agency

Appendix 2 – Summary of emissions by Local Authority area (within scope of Local Authority influence)

Local Authority Area	Year	Industry and Commercial Total (kt CO₂)	Domestic Total (kt CO₂)	Transport Total (kt CO₂)	Grand Total Emissions (kt CO₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Corby	2005	462.0	138.7	94.3	695.1	54.5	8.5	2.5	1.7	12.8
	2006	458.8	138.2	92.7	689.6	55.4	8.3	2.5	1.7	12.4
	2007	440.0	134.4	92.8	667.1	56.8	7.7	2.4	1.6	11.7
	2008	423.7	134.2	88.4	646.3	57.9	7.3	2.3	1.5	11.2
	2009	364.9	122.3	85.8	573.0	59.0	6.2	2.1	1.5	9.7
	2010	412.2	133.0	85.7	630.9	60.1	6.9	2.2	1.4	10.5
	2011	357.2	117.0	84.0	558.1	61.6	5.8	1.9	1.4	9.1
	2012	385.8	124.9	82.5	593.3	63.1	6.1	2.0	1.3	9.4
	2013	385.9	123.3	82.4	591.6	64.2	6.0	1.9	1.3	9.2
	2014	328.6	103.6	85.2	517.4	65.4	5.0	1.6	1.3	7.9
	2015	297.5	102.4	87.2	487.2	66.9	4.5	1.5	1.3	7.3
Percentage change		-35.6%	-26.2%	-7.5%	-29.9%	22.7%	-47.5%	-39.8%	-24.6%	-42.9%
Daventry	2005	287.6	205.5	315.1	808.2	75.7	3.8	2.7	4.2	10.7
	2006	288.6	205.5	316.3	810.3	76.5	3.8	2.7	4.1	10.6
	2007	271.8	199.5	323.9	795.2	77.0	3.5	2.6	4.2	10.3
	2008	262.4	199.5	300.5	762.3	77.1	3.4	2.6	3.9	9.9
	2009	241.7	180.9	285.4	708.0	77.7	3.1	2.3	3.7	9.1
	2010	265.8	194.5	284.3	744.6	77.7	3.4	2.5	3.7	9.6
	2011	240.6	169.8	283.5	693.9	78.1	3.1	2.2	3.6	8.9
	2012	240.8	182.2	282.6	705.7	78.3	3.1	2.3	3.6	9.0
	2013	230.8	176.0	277.2	683.9	78.6	2.9	2.2	3.5	8.7
	2014	195.9	146.3	281.7	623.9	79.0	2.5	1.9	3.6	7.9
	2015	196.4	140.3	283.8	620.6	80.0	2.5	1.8	3.5	7.8
Percentage change		-31.7%	-31.7%	-9.9%	-23.2%	5.6%	-35.3%	-35.4%	-14.7%	-27.3%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
East Northamptonshire	2005	168.1	213.0	272.6	653.7	81.9	2.1	2.6	3.3	8.0
	2006	172.5	213.4	269.2	655.1	83.3	2.1	2.6	3.2	7.9
	2007	162.3	209.0	271.7	642.9	84.8	1.9	2.5	3.2	7.6
	2008	156.4	207.5	258.6	622.5	85.6	1.8	2.4	3.0	7.3
	2009	139.5	188.5	248.0	576.0	85.9	1.6	2.2	2.9	6.7
	2010	153.3	204.6	243.1	601.0	86.3	1.8	2.4	2.8	7.0
	2011	137.3	177.6	238.4	553.3	86.9	1.6	2.0	2.7	6.4
	2012	145.0	192.0	238.3	575.3	87.4	1.7	2.2	2.7	6.6
	2013	132.5	185.7	235.6	553.8	88.0	1.5	2.1	2.7	6.3
	2014	136.8	155.4	239.5	531.7	88.9	1.5	1.7	2.7	6.0
2015	168.2	150.0	247.6	565.8	89.7	1.9	1.7	2.8	6.3	
Percentage change		0.1%	-29.5%	-9.2%	-13.4%	9.6%	-8.7%	-35.7%	-17.1%	-21.0%
Kettering	2005	221.8	223.7	300.4	745.9	86.6	2.6	2.6	3.5	8.6
	2006	241.2	223.0	308.3	772.5	88.0	2.7	2.5	3.5	8.8
	2007	222.0	216.9	314.2	753.1	89.9	2.5	2.4	3.5	8.4
	2008	222.1	217.0	298.4	737.5	91.2	2.4	2.4	3.3	8.1
	2009	193.1	195.6	277.6	666.2	92.1	2.1	2.1	3.0	7.2
	2010	239.2	212.0	280.4	731.6	92.9	2.6	2.3	3.0	7.9
	2011	219.5	184.9	274.4	678.8	93.8	2.3	2.0	2.9	7.2
	2012	232.4	199.4	270.9	702.7	94.8	2.5	2.1	2.9	7.4
	2013	234.6	194.1	269.4	698.1	95.8	2.4	2.0	2.8	7.3
	2014	199.7	161.8	277.4	638.9	96.9	2.1	1.7	2.9	6.6
2015	191.2	157.9	286.1	635.2	97.7	2.0	1.6	2.9	6.5	
Percentage change		-13.8%	-29.4%	-4.8%	-14.8%	12.7%	-23.5%	-37.4%	-15.5%	-24.4%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Northampton	2005	585.5	490.2	322.6	1,398.3	196.8	3.0	2.5	1.6	7.1
	2006	578.0	481.9	321.0	1,380.9	200.4	2.9	2.4	1.6	6.9
	2007	546.5	469.1	320.8	1,336.4	203.0	2.7	2.3	1.6	6.6
	2008	547.2	469.7	308.6	1,325.5	205.6	2.7	2.3	1.5	6.4
	2009	448.8	418.1	296.3	1,163.3	207.9	2.2	2.0	1.4	5.6
	2010	466.6	450.7	292.2	1,209.5	210.1	2.2	2.1	1.4	5.8
	2011	424.6	392.8	283.2	1,100.6	212.5	2.0	1.8	1.3	5.2
	2012	487.0	424.8	279.7	1,191.4	214.6	2.3	2.0	1.3	5.6
	2013	445.8	413.0	277.7	1,136.4	216.7	2.1	1.9	1.3	5.2
	2014	397.5	342.6	286.1	1,026.3	219.5	1.8	1.6	1.3	4.7
	2015	332.0	332.0	289.8	953.8	222.5	1.5	1.5	1.3	4.3
Percentage change		-43.3%	-32.3%	-10.2%	-31.8%	13.0%	-49.8%	-40.1%	-20.5%	-39.7%
South Northamptonshire	2005	220.1	225.6	292.1	737.7	84.9	2.6	2.7	3.4	8.7
	2006	217.3	226.6	289.2	733.1	85.5	2.5	2.6	3.4	8.6
	2007	203.9	222.6	293.2	719.7	85.9	2.4	2.6	3.4	8.4
	2008	204.5	222.7	279.6	706.8	85.8	2.4	2.6	3.3	8.2
	2009	189.1	199.7	264.4	653.2	85.7	2.2	2.3	3.1	7.6
	2010	195.1	216.0	261.6	672.7	85.6	2.3	2.5	3.1	7.9
	2011	177.0	189.6	257.6	624.2	85.4	2.1	2.2	3.0	7.3
	2012	198.0	203.2	257.6	658.8	86.4	2.3	2.4	3.0	7.6
	2013	189.8	197.3	255.3	642.3	87.2	2.2	2.3	2.9	7.4
	2014	190.7	166.2	260.5	617.4	88.2	2.2	1.9	3.0	7.0
	2015	167.1	159.5	270.0	596.6	89.1	1.9	1.8	3.0	6.7
Percentage change		-24.1%	-29.3%	-7.5%	-19.1%	5.0%	-27.7%	-32.7%	-11.9%	-23.0%

Local Authority Area	Year	Industry and Commercial Total (kt CO ₂)	Domestic Total (kt CO ₂)	Transport Total (kt CO ₂)	Grand Total Emissions (kt CO ₂)	Population ('000s)	Industry and Commercial Per Capita (t)	Domestic Per Capita (t)	Transport Per Capita (t)	Grand Total Per Capita Emissions (t)
Wellingborough	2005	223.2	180.8	184.4	588.4	74.0	3.0	2.4	2.5	8.0
	2006	226.2	178.4	182.3	586.9	74.5	3.0	2.4	2.4	7.9
	2007	219.4	173.2	183.4	576.1	74.7	2.9	2.3	2.5	7.7
	2008	211.7	173.2	175.1	560.1	75.1	2.8	2.3	2.3	7.5
	2009	187.7	155.0	174.7	517.4	75.1	2.5	2.1	2.3	6.9
	2010	192.6	166.3	171.6	530.5	75.2	2.6	2.2	2.3	7.1
	2011	164.8	144.7	164.2	473.7	75.6	2.2	1.9	2.2	6.3
	2012	190.1	156.6	163.7	510.4	76.1	2.5	2.1	2.2	6.7
	2013	179.9	151.7	160.5	492.1	76.0	2.4	2.0	2.1	6.5
	2014	179.4	126.2	163.5	469.2	76.4	2.3	1.7	2.1	6.1
	2015	152.5	122.8	169.8	445.1	77.2	2.0	1.6	2.2	5.8
Percentage change		-31.7%	-32.1%	-7.9%	-24.4%	4.3%	-34.5%	-34.9%	-11.7%	-27.5%
Northamptonshire Total	2005	2,168.3	1,677.5	1,781.6	5,627.4	654.5	3.3	2.6	2.7	8.6
	2006	2,182.5	1,666.9	1,779.0	5,628.4	663.6	3.3	2.5	2.7	8.5
	2007	2,065.9	1,624.6	1,800.1	5,490.6	672.1	3.1	2.4	2.7	8.2
	2008	2,027.9	1,623.8	1,709.3	5,360.9	678.2	3.0	2.4	2.5	7.9
	2009	1,764.7	1,460.1	1,632.3	4,857.1	683.5	2.6	2.1	2.4	7.1
	2010	1,924.7	1,577.1	1,618.8	5,120.6	688.0	2.8	2.3	2.4	7.4
	2011	1,721.1	1,376.5	1,585.2	4,682.7	694.0	2.5	2.0	2.3	6.7
	2012	1,879.1	1,483.0	1,575.4	4,937.6	700.6	2.7	2.1	2.2	7.0
	2013	1,799.3	1,441.0	1,558.1	4,798.3	706.4	2.5	2.0	2.2	6.8
	2014	1,628.7	1,202.1	1,594.0	4,424.7	714.4	2.3	1.7	2.2	6.2
	2015	1,504.9	1,164.8	1,634.5	4,304.3	723.0	2.1	1.6	2.3	6.0
Percentage change		-30.6%	-30.6%	-8.3%	-23.5%	10.5%	-37.2%	-37.1%	-17.0%	-30.8%