East Cambridgeshire District Council

# ENVIRONMENT PLAN

***A STRATEGY AND ACTION PLAN TO BOOST THE ENVIRONMENT AND HELP MITIGATE CLIMATE CHANGE***

**(Council-EnvPlan)**

June 2020

# Contents

# Foreword

In Autumn 2019 East Cambridgeshire District Council declared a climate emergency. In doing so, we agreed to explore a wide range of actions to improve our local environment and do our bit to help mitigate climate change.

One such commitment was the preparation of this Environment and Climate Change Strategy and Action Plan (EnvPlan), and I am delighted to introduce this to you.

This Council has already done many things such as boosting recycling, improve cycling and walking infrastructure and securing better environmental standards in new development.

But we can do much more, and we must do more. We can do this both directly, through our own operations, but also by helping to facilitate change in partnership with residents and businesses across the district.

This EnvPlan sets out our vision, which is that by 2050 or earlier the Council's operations will reach net zero carbon emissions and, in partnership with all stakeholders, for East Cambridgeshire as a whole, with clear and demonstrable progress towards that target year on year. At the same time, our vision is to support our communities and East Cambridgeshire's biodiversity and environmental assets so they can adapt and flourish as our climate changes.

To guide us towards meeting that vision, this first ever EnvPlan sets out where the Council's current emissions come from so we can identify those areas we will focus on, therefore maximising meaningful reductions over the coming months and years.

This EnvPlan also sets out how, here in East Cambridgeshire, we can make significant improvements to our natural environment, by creating new habitats and enhancing the special places we already have.

This is our first EnvPlan. Achieving our long-term vision will take years of hard work and commitment, a change of culture to one of "think zero" by default and the setting of new projects and targets year after year.

This EnvPlan is therefore only the first step. But if we deliver what this 'first step' is aiming to achieve, we will, by next year, have already made a real difference. Influenced by what you told us we should do through the Ideas Forum that ran over Winter 2019/20, we:

- Will have reviewed our entire **electricity and gas contracts**, and, provided we are able, amended them to 100% renewable electricity tariffs and 100% carbon off-set gas tariffs;
- Will have put in place a completely new '**think climate, think nature, think communities**' culture throughout the Council, with compulsory staff training and compulsory carbon impact assessments for key decisions;
- Will have thoroughly researched how the Council's biggest CO2 emitter – our **bin lorries** – can become less carbon intensive, perhaps through electric vehicles or new ways of working, and put in place a detailed plan to achieve it;
- Will have completed or started a new wave of energy efficiency improvements on **The Grange** – our second biggest CO2 emitter after bin lorries;

- Will have worked with, lobbied and persuaded **our partners** to take action to cut their emissions and bolster the natural environment;
- Will have adopted two new **Supplementary Planning Documents**, one on the Natural Environment and the second on Climate Change, which will give the Council additional powers to require new development to contribute to achieving our vision;
- Will have started a new **tree planting programme**, where opportunities to do so have been found.

With the Covid-19 outbreak still in its early phases, we are of course presently living in uncertain and worrying times. The pandemic, as awful as it has been and continues to be, has brought a collective examination of what is important in life with a new sense of increased value being placed on our natural environment and on the importance of having time to appreciate it. The recovery from the pandemic therefore requires us to think about a different future and to capture and nurture those positive things that people have experienced.

Nature has had a welcome break from human activity during the pandemic and is thriving; air quality has improved and CO2 emissions fallen across the globe. We've also seen Government promise large sums of money to boost cycling and walking, and East Cambridgeshire is well placed to take advantage of these opportunities as it concludes its extensive Bus, Cycle, Walk consultation. We must take advantage of all these opportunities, to make lasting positive change.

We cannot do this alone. We are committed to working with the whole district to reduce emissions and boost the natural environment of East Cambridgeshire for current and future residents to enjoy.

We need your help, your suggestions, your pledges.

And you have been fantastic so far, offering hundreds of suggestions through our 'Ideas Forum' which we have carefully reviewed, and many of which we have incorporated in this plan. Please keep your ideas coming.

**Together** we can make a real difference.

**Together** we can achieve a clean, green, East Cambridgeshire.

**Together** we can do our bit to minimise global climate change.

**Anna Bailey**
**Leader - East Cambridgeshire District Council**

Acknowledgements

*In preparing this Environment Plan, the Council wishes to acknowledge the help and support of the County Council. With its agreement, we have aligned our EnvPlan with its similar emerging Plan, and have included similar diagrams and statistical evidence.*

# 1 Introduction

## The overriding context

The current generation has a duty to protect and improve the health of our planet for those that follow.

The world is facing unprecedented challenges in population growth, climate change, pollution and ever increasing and competing demands on its land and natural resources. By 2050 the world population is expected to rise from its current level of 7.7 billion to 9.8 billion[1]. There is global consensus that climate change poses significant risk to the health of the planet and its ability to sustain life.

Local Authorities have a responsibility, both in their own activities and those undertaken with partners, as well as in the influence they can bring to bear, to reduce the adverse effects of their populations on the planet.

East Cambridgeshire, and Cambridgeshire as a whole, is a growing area. Increasing populations result in increasing need for businesses, houses, health, retail and leisure outlets, transport and other supporting infrastructure, all of which can lead to adverse impacts on the environment. With growth comes a responsibility to balance competing demands and mitigate the negative impacts of that growth as far as is reasonably possible.

We know, and fully support, that residents are calling for action. We acknowledge that this Council has a significant role to play in protecting and improving the environment for future generations.

## What have we declared?

In October 2019, East Cambridgeshire District Council (ECDC) declared a climate emergency and committed to the development of an Environment and Climate Change Strategy and Action Plan.

In doing so, we acknowledged that our natural and built environment is the most precious inheritance for which we act as caretakers for the next generation.

We also accept that greater rigour is needed now, and hereafter, to protect our environment and mitigate the effects of climate change. We accept that every day action is delayed it becomes more likely we will pass irreversible environmental tipping points. Human driven climate change is one of the most complex issues facing us today. It poses significant risk to our health, our economy, our environment, and endangers the wellbeing of future generations.

Pollution, in all forms, is also another global environmental concern. It involves many dimensions – science, economics, society, politics and moral and ethical questions – and is a global problem, felt on local scales, that will be around for decades and centuries to come. People of all ages, all walks of life and all social and economic backgrounds are becoming increasingly concerned they will leave or inherit an environment that is irreparably damaged, forcing others to live with the consequences of the decisions we make today.

Carbon dioxide, the greenhouse gas that has driven recent global warming, lingers in the atmosphere for hundreds of years, and the planet (especially the oceans) takes a while to respond to warming. So even if we stopped emitting all greenhouse gases today, global warming and climate change will continue to affect future generations. All Governments (national, regional and local) have a duty to limit the negative impacts of environmental change by cutting carbon emissions, protecting

[1] United Nations, Department of Economic and Social Affairshttps://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html

biodiversity and reducing pollution. The necessity of reaching net-zero was enshrined in UK law on 27th June 2019, with a target requiring the UK to bring all greenhouse gas emissions to net zero by 2050.

Human activity contributes significantly to the increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. The International Panel on Climate Change (IPCC) estimates that human activity has already caused 1°C warming above pre-industrial levels. If temperatures increase at the current rate, warming is likely to reach 1.5°C between 2030 and 2052, leading to regional scale changes to climate including dramatic increases in the frequency and intensity of flood or drought events across the world, including the UK. These risks are set to increase should warming reach 2°C, and the longer that temperatures remain high, the harder it becomes to reverse the damage.

## Balancing growth and environmental protection

As one of the fastest growing counties within the UK comes the demand for more housing, food security, water resources and efficient public transport, all of which compete for land use and put pressure on our natural environment. Some land use changes bring negative effects to our environment, for example, damage to landscape from minerals extraction for building materials, loss of natural habitat, increased air pollution from power generation, unsustainable travel and the impact of agricultural pesticides on water quality and biodiversity.

Saying 'no' to growth is not an option. There is a pressing need for new homes and infrastructure, but we recognise the need for ***sustainable growth*** such as minimising the need to travel, providing sustainable transport options and reducing the carbon emissions from buildings, whilst enhancing its natural assets through restoring local heritage, providing increased green spaces for people and nature and increasing tree planting to assist with shade and urban cooling.

## Imperatives for Action

There are three clear imperatives for action, as outlined by the Global Commission for Adaptation, which will directly impact our ability to serve our communities in the most effective way.

***The Human Imperative:*** Climate change exacerbates existing challenges to our services and the communities we serve. Increasing frequencies of heatwaves, flooding and its contamination of water supplies pose a particular threat for our most vulnerable residents. Climate refugees, people displaced from their homes as a result of the impacts of climate change, are likely to bring increased pressure on our social care delivery by 2050. It also puts an unfair burden on future generations who will have to cope with the challenges we are leaving them.

***The Environmental Imperative:*** The natural environment is our first line of defence against extreme environmental events such as floods, droughts and heatwaves. A thriving natural environment is fundamental to effective and lasting adaptation. Yet, one in four species is facing extinction, about a quarter of all ice-free land is now subject to degradation, and ocean temperatures and acidity are rising. Climate change will bring adverse effects on our natural environment everywhere. We must protect and work with nature to build resilience and reduce climate risks at all scales before the damage has gone too far.

***The Economic Imperative:*** Mitigation and adaptation are now in our strong economic self-interest: the cost of doing nothing far outweighs the cost of taking positive action now. The Global Commission on Adaptation has demonstrated that the overall rate of return on investments in improved resilience is high, with benefit-cost ratios ranging from 2:1 to 10:1, and in some cases even higher. Introducing climate adaptation considerations into our financial decision making will have commercial benefit to our economy in the long run.

## What have we done so far?

We know we can and must do more. But we should not dismiss the good work and action we have already completed and begun prior to this first Environment Plan, such as:

- A District wide review of bus services to inform a detailed plan, which aims to increase the number and frequency of services, to be presented to the Combined Authority in its county wide bus review;
- Development of an East Cambs Strategic Cycle/Footpath Network, identifying gaps in the current network, and seeking funding opportunities to improve the network over time;
- Thanks to our residents, achievement of one of the highest recycling rates in the country, leading to a new target of 65%; we stand ready to make further improvements in line with the Government's emerging Resources and Waste Strategy;
- Through planning policy we favour sustainable development, we secure energy and sustainability measures on all developments of 5 dwellings or more and we seek BREEAM 'very good' build standard on non-domestic developments greater than 1000$m^2$;
- We seek to secure landscaping, tree planting and biodiversity improvements in new developments;
- Our Tree Strategy and Conservation Area policies are helping to protect and improve the tree stock across the District;
- We work with wildlife groups to increase habitat and biodiversity;
- We have established wildflower habitats on some of our own open spaces;
- Our Purge on Plastics campaign and action plan is helping to reduce the Council's use of single use plastics and to encourage others across the district to do the same;
- Ely Markets' Bring your Own Campaign is helping to raise awareness and reduce the use of single use plastic by market traders and customers;
- We are signed up to and supporting the Doubling Nature campaign and the Local Nature Partnership;
- Our free energy advice service helps residents improve the energy efficiency of their homes;
- Participation in the Energy Company Obligation Flexible Eligibility Scheme is helping to reduce carbon emissions and tackle fuel poverty;
- Together with Cambridgeshire County Council, we are developing ideas to design an energy system to deliver net zero carbon emissions from energy use in East Cambridgeshire by 2050. This will require shifting transport, gas and oil use to electricity and to grow the electricity network to cater for the change;
- We are working with Swaffham Prior Community Land Trust and Cambridgeshire County Council to secure funding for the low carbon Swaffham Prior Community Heat Scheme;
- Kennett Community Land Trust has been designed using Garden Village principles;
- We are building new homes at Haddenham Community Land Trust to high energy efficient standards;
- 2 rapid electric vehicle charging points were installed at The Hive car park;
- At end of life all lightbulbs on Council premises are replaced with LED lightbulbs; and
- Grant applications to the Council are asked to explain what steps are being taken to make a project environmentally sustainable.

But we recognise the need to build on this positive work, to further embed positive environmental thinking, behaviours, and action throughout our organisation and to seek to influence partners and others to do the same. This EnvPlan aims to commence and facilitate that process.

## Our Vision

Our vision for 2050 is to deliver net zero carbon emissions for the Council's operations and, in partnership with all stakeholders, for East Cambridgeshire as a whole, with clear and demonstrable progress towards that target year on year. At the same time, we will support our communities and East Cambridgeshire's biodiversity and environmental assets to adapt and flourish as our climate changes.

Our vision also fully aligns with that of the County Council, as follows:


(Source of graphics: Cambridgeshire County Council Climate Change and Environment Strategy)

## Purpose of the Strategy

The purpose of the strategy is to provide a clear statement of the Council's climate change and environmental objectives and to set out how the Council will continue to address environmental and climate change challenges.

It will describe how we will look to address our own impacts and how working together with our public sector partners and our communities we will support the transformation needed across East Cambridgeshire and beyond to tackle these challenges.

## Objectives

Our Objectives are to:

- Reduce our own, and the district's as a whole, greenhouse gas emissions to mitigate the impacts of human-made climate change;
- Support our communities and biodiversity to adapt to a changing climate;
- Improve East Cambridgeshire's natural environment for the benefit of present and future generations;
- Empower East Cambridgeshire communities and businesses to buy-into and support the delivery of the Strategy;
- Support the County Council's aim of delivering 100% clean energy for our communities by 2050.

## Our Approach

To deliver the vison and objectives of the Strategy we will step up our engagement with Officers, Members, partners, businesses and our communities to build a shared understanding of the challenges and grow our collective knowledge, capacity and skills to create the vision we have set ourselves.

This will include:

- Identifying, and keeping up to date, the carbon footprint for the Council's operations and for the district as a whole;
- Developing carbon targets and tracking carbon emissions reductions for the Council's operational footprint and the broader impact of its activities and policies;
- Preparing and regularly updating an action plan with our staff, communities and partners that shows how we are going to deliver our Strategy, where we will lead or where we must support or work with others to lead;
- Working closely with Cambridgeshire and Peterborough Combined Authority and Cambridgeshire County Council to support the implementation of county wide measures
- Demonstrating leadership and setting a good example, through using our numerous statutory responsibilities and duties to bring forward positive change; and
- Financing the delivery of the EnvPlan and providing a framework for the Council to inform its budget setting and delivery of its corporate priorities for the people of East Cambridgeshire.

## Identifying the Key themes to build our Strategy and Action Plan

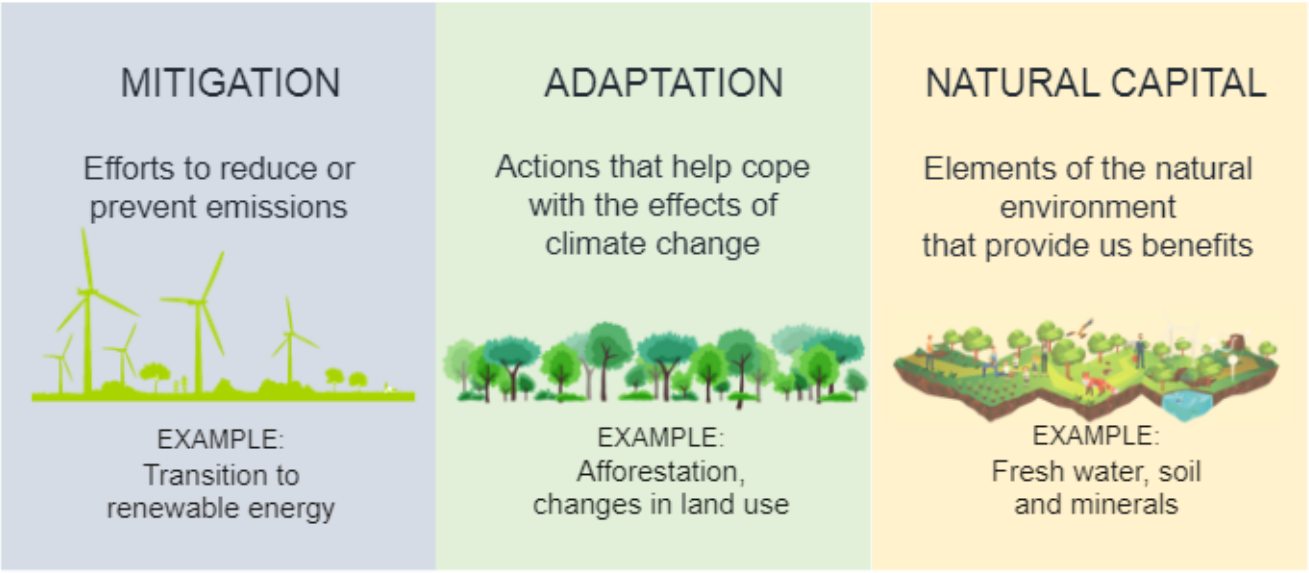
In preparing its own strategy, Cambridgeshire County Council identified, in 2020, three key themes covering technical, organisational and engagement aspects to provide the context and how we work with partners and our community. ECDC endorses these themes and, to assist with coordination of activities with the County Council, will use the same themes in this Strategy.

Three themes:

1. Quantifying our carbon footprints to inform and deliver climate change mitigation through efforts to reduce or prevent carbon emissions;

2. Adaptation to cope with the existing and future impacts of climate change;

3. Enhancing and conserving natural capital such as wildlife, plants, air, water and soils.




(Source: Cambridgeshire County Council Climate Change and Environment Strategy)

**What is mitigation?**

Mitigation of carbon emissions addresses the causes of climate change. It describes those actions which reduce, prevent or capture greenhouse gas emissions. A strong strategy must be informed by robust evidence. The current carbon footprints of both ECDC itself as an organisation, and that of the entire geographical area of East Cambridgeshire will inform our action planning as well as the views of our communities.

**What is adaptation?**

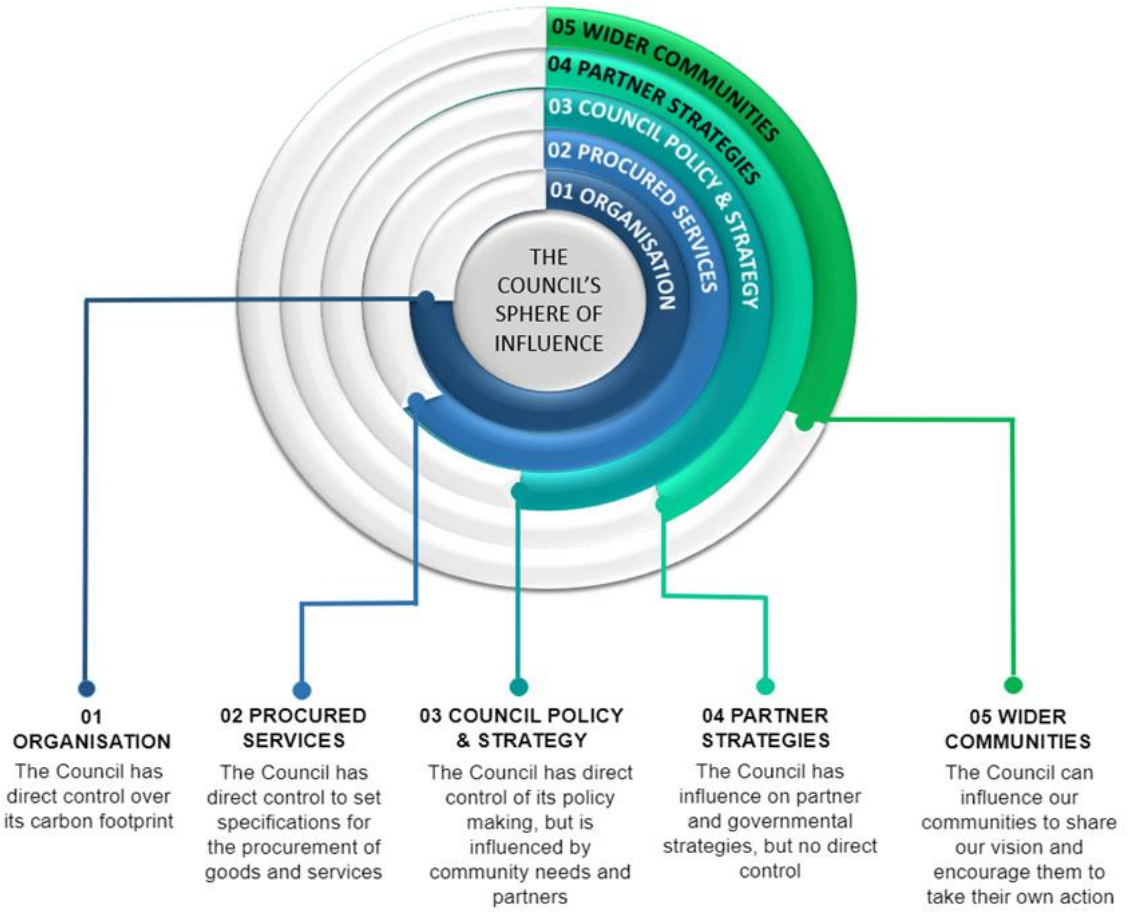
Adaptation consists of those actions that enable us to deal with the effects of climate change, such as flood risk management in response to heavier more frequent rainfall. We are proposing to prepare a separate document over 2020/21 in relation to the adaptation actions the Council can take, though Appendix 3 has some preliminary views on how society can and will need to adapt.

**What is natural capital?**

Natural capital comprises our 'stock' of waters, land, air, species, minerals and oceans. This stock underpins our economy by producing value for people, both directly and indirectly. Goods provided by natural capital include clean air and water, food, energy, wildlife, recreation and protection from hazards. Improving our natural capital addresses how to enhance our existing nature reserves, improve biodiversity and tackle air, land and water pollution to keep our planet healthy for all species.

**Control and influence of the strategy**

This is a strategy for ECDC (rather than the district of East Cambridgeshire) and identifies how we must work with our public and private sector partners and communities across East Cambridgeshire and beyond. As part of its strategy, the Council recognises what is under its direct control and wider influence. The diagram below was developed by the County Council, but is equally applicable to ECDC:



# 2 Mitigating Climate Change

## What is climate change mitigation?

Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, reducing consumption and waste, or changing management practices or consumer behaviour, to reduce or prevent emission of greenhouse gases and limit the magnitude or rate of long-term global warming due to human emissions of greenhouse gases.

It is important to understand that the sooner mitigation of carbon emissions occurs, the greater the overall reduction of carbon emissions generated by 2050. For example, if you reduce 20 tonnes of CO2 in 2020, this produces a cumulative impact of 600 tonnes reduction by 2050.

'Net Zero Carbon' means, first, the reduction of greenhouse gas emissions to the lowest possible level. Then, for any remaining emissions, offsetting them through carbon removal methods such as tree planting or carbon capture and storage, so we have net zero emissions overall to the atmosphere.

However, offsetting should be seen as a last resort. Planting trees, even on a massive scale across East Cambridgeshire, will only go a tiny fraction of the way to balance out our current emissions.

For the UK as a whole, the net zero target legally must be reached by the end of 2050.

**Pathway to Net Zero Carbon**


(Source: Cambridgeshire County Council Climate Change and Environment Strategy)

## Carbon Footprints

Before we decide what we should do differently to reduce our emissions, we need to properly understand what our current activities are emitting. This is sometimes known as working out our 'carbon footprint' which, in technical terms, is a measure of the greenhouse gases (GHGs)[2] emitted into the atmosphere from sources in a specified area or organisation. It usually includes all relevant greenhouse gases, the most common of which is carbon dioxide ($CO_2$). Emissions of other GHGs such as methane ($CH_4$) or nitrous oxide ($N_2O$), are measured in 'carbon dioxide equivalent' ($CO_2e$)[3].

[2] The main GHGs are: carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride ($SF_6$) and Nitrogen Trifluoride (NF3). The Kyoto Protocol – the international agreement addressing climate change - covers these seven main GHGs. The last four are fluorinated gases ("F-gases") which are a range of man-made compounds (including HFCs, PFCs, SF6 and NF3) used in a variety of industries including refrigeration, air-conditioning and the manufacture of cosmetics, pharmaceuticals, electronics and aluminium. F-gases are extremely potent greenhouse gases with some having GWPs of several thousand or more (BEIS, 2019a). The greenhouse gases covered by the Kyoto Protocol account for over 99% of global greenhouse gas emissions.

[3] By using $CO_2e$ as a measuring tool means that the different global warming potential (GWP) of different gases are taken into account. Quantities of GHGs are multiplied by their GWP to give results in units of carbon dioxide equivalent ($CO_2e$)

Nationwide, emissions of $CO_2$ make up 81% of GHG emissions, with the remainder from methane (11%), nitrous oxide (4%) and fluorinated gases (3%), when weighted by Global Warming Potential (GWP)[4]. The biggest source of greenhouse gas emissions in the UK is transport, closely followed by energy supply.

To help set the wider context, this EnvPlan reports the carbon footprint of the geographical area of Cambridgeshire-Peterborough as a whole, then East Cambridgeshire as a whole, and finally that of ECDC as an organisation.

Whilst not an exact science, you can also have a go at calculating your own (or your family's) carbon footprint using an online tool such as https://footprint.wwf.org.uk/. Calculating a carbon footprint can provide a useful indicator of how much impact you or a business is having, and pointers to where action could be taken to reduce the footprint (and hence reduce your impact on the environment).

## Cambridgeshire's Carbon Footprint

In 2019, Cambridgeshire County Council's annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE) brought a team of researchers together to develop an evidence base of current carbon emissions for Cambridgeshire and Peterborough (improving on the 'CO2-only' data published by the department for Business Energy and Industrial Strategy), to provide a more accurate carbon footprint for the area.

This report found that Cambridgeshire and Peterborough communities together produced 6.1 million tonnes of carbon dioxide equivalent (CO2e) in 2017. The breakdown of this is shown below (source: CUSPE) (LULUCF = land use, land use change and forestry).

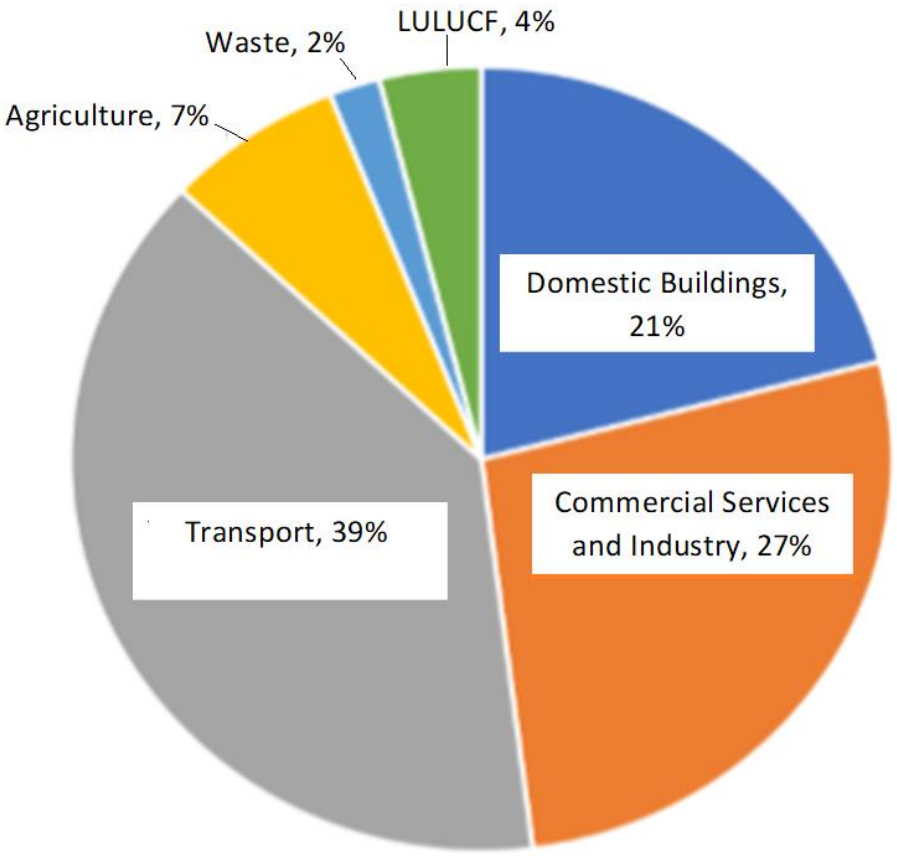



**Figure**: Breakdown of Cambridgeshire and Peterborough GHG emissions by source, 2017.

[4] Global warming potential. A factor describing the radiative force impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of $CO_2$.

As well as looking at current emissions, the research team also modelled two scenarios projecting future emissions up to 2050; presented as: “business as usual” and “net zero emissions by 2050”. The difference between the two scenarios highlights the policy gap to reach Government’s ambition of net zero carbon by 2050. This is illustrated below.

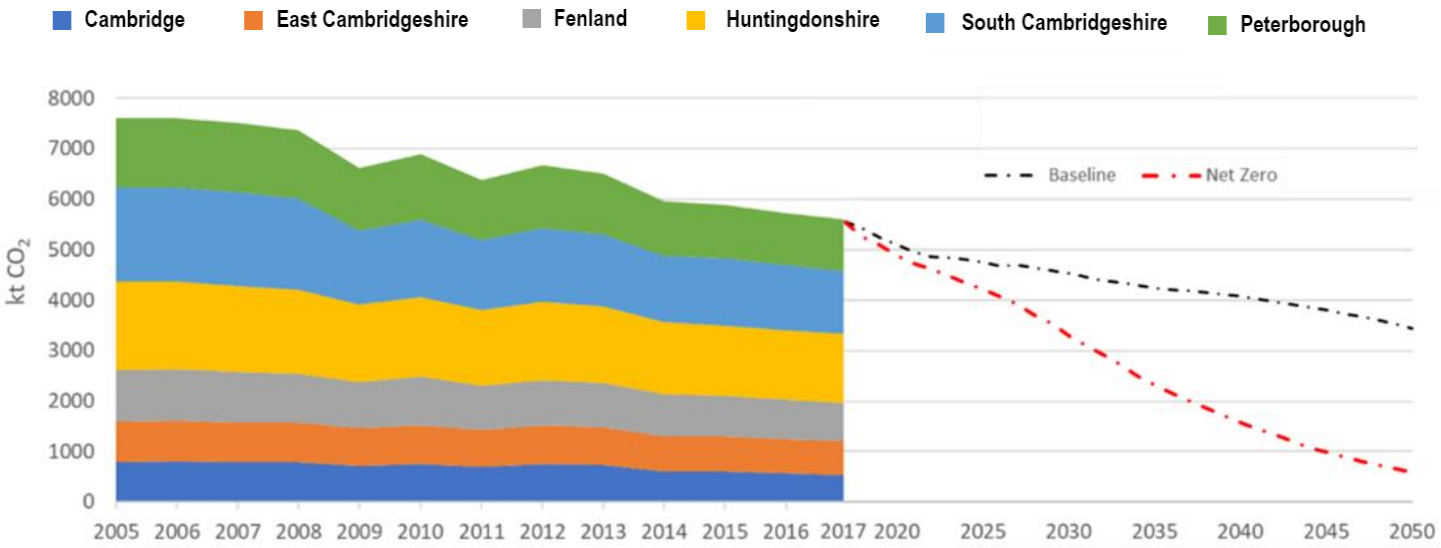



**Figure**: GHG Emissions Pathways to 2050 (Source: Cambridgeshire County Council Climate Change and Environment Strategy)

To achieve the ambitious reduction scenario, the report highlighted the key areas that Councils across Cambridgeshire, and their partners, should consider incorporating into new policy, including:

- Decarbonisation of heat and improvements to the energy efficiency of the housing stock;
- Implementation of low carbon heating and carbon capture and storage in commercial and industrial buildings;
- All cars, vans, buses and motorcycles and most HGVs to be electric, as well as shifting more transport away from cars to walking, cycling and public transport;
- A significant reduction of food waste, reduction of demand for red meat and dairy by 20%, and increased fertiliser efficiency, breeding measures, and livestock food additives;
- Deployment of carbon capture and storage on waste sites, increasing capture of landfill and compost gas emissions and electrification of waste transport;
- Extensive afforestation;
- Further research on peatland emissions and to work with experts to find the best solution to ameliorate the current impact of our peatland areas.

The full report from the CUSPE team can be viewed online here: CUPSE Report.

# East Cambridgeshire's Carbon Footprint

The carbon footprint for the geographical area of East Cambridgeshire should comprise all GHG emissions that occur in the area – this includes commercial and industrial sources, domestic homes, transport, agriculture, waste and land use.

There is no simple 100% accurate way of calculating a carbon footprint, as it relies on a number of assumptions. The Government Department for Business, Energy and Industrial Strategy (BEIS) annually publishes detailed local authority level $CO_2$ emissions data. However this does not provide data on the other recognised Kyoto Protocol GHGs emissions, collectively known as $CO_2e$ emissions. As such, this data 'misses' 19% of all GHGs.

The data is published with a 2 year lag (year x-2), and therefore 2017 is the most recent data available. From this it is evident the trend in East Cambridgeshire is reflective of the national trend: $CO_2$ emissions slowly and steadily declining over the last few years, due mainly to the decarbonisation[5] of the electricity grid. See figure below. Emissions from agriculture, waste and peatlands are not included in these figures because they primarily produce methane rather than $CO_2$, therefore are missed from these calculations (BEIS, 2019). The drying (due to intensive agriculture) of peatlands is also not included, but if they were included would dramatically increase the carbon footprint of East Cambridgeshire (perhaps increase by 100%, or more – more research is needed on this).

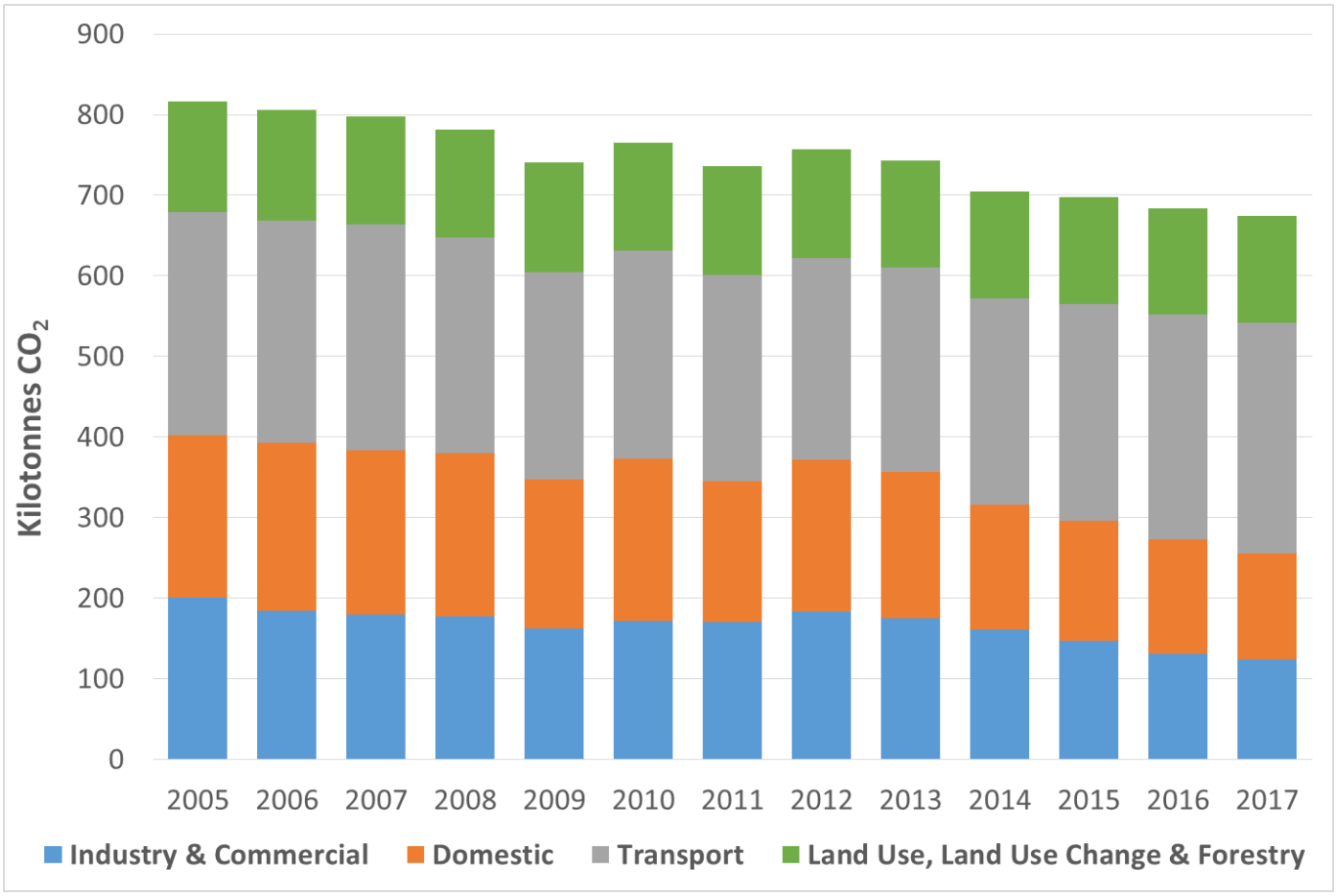



**Figure: East Cambridgeshire's CO2 emissions by end-user sector, 2005 – 2017 (BEIS, 2019c)**

[5] Decarbonisation means reducing the carbon intensity of energy in the national grid, this is achieved by reducing the proportion of fossil fuels and increasing the proportion of renewable energy sources such as solar and wind.

It is also useful to look at this data on a per capita basis. This shows that each resident in East Cambridgeshire is currently responsible for emissions amounting to 7.59 $tCO_2$ annually, illustrated in the figure below, significantly higher than the national average at 5.32 $tCO_2$. We are uncertain at this stage why this is the case.

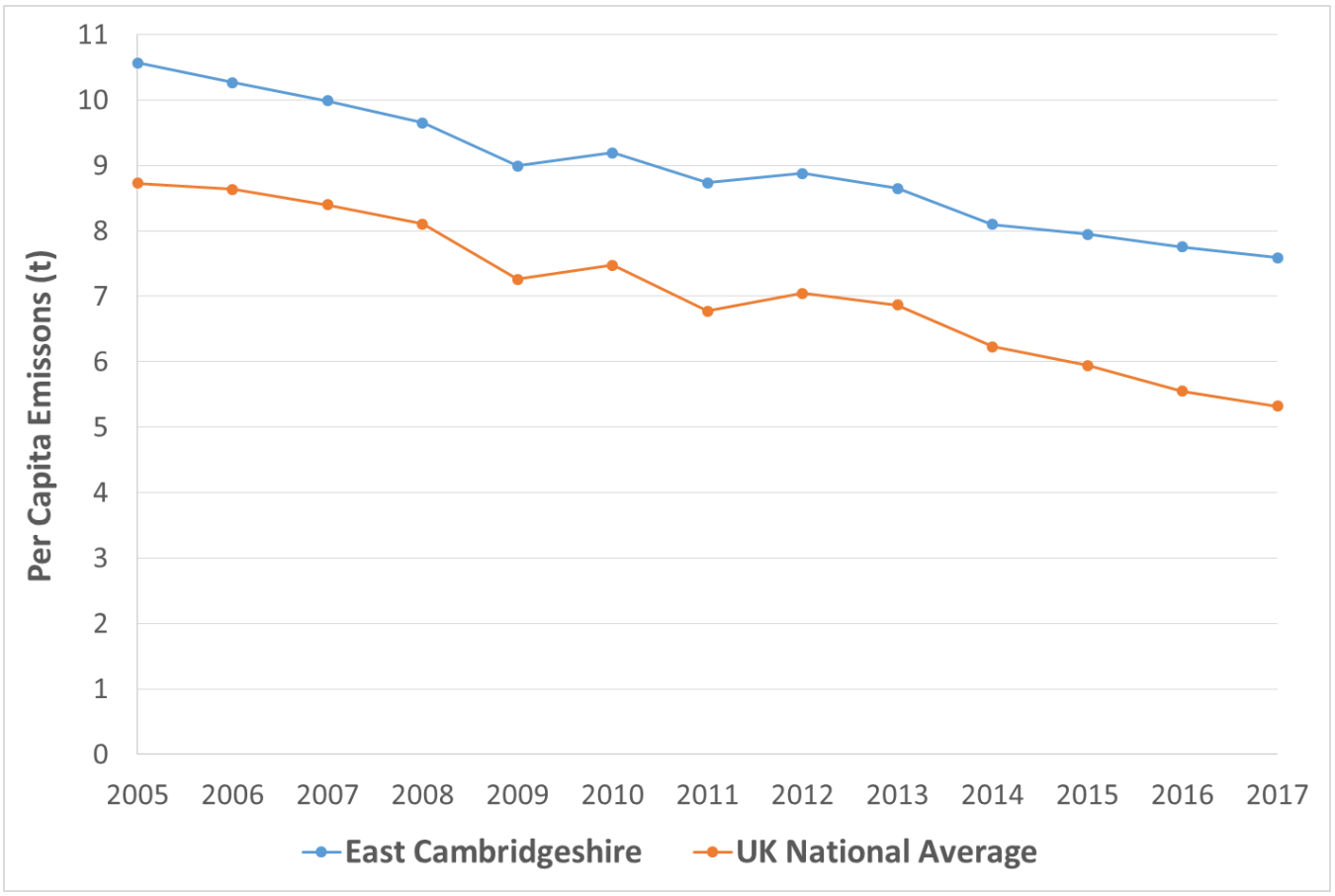



**Figure: Per capita emissions for East Cambridgeshire and UK National Average, 2005 – 2017 (BEIS, 2019c)**

# East Cambridgeshire District Council's Carbon Footprint

## Defining the Scope

The previous section, looking at Cambridgeshire-Peterborough as a whole, and East Cambridgeshire as a whole, used data collected and published by other parties. However, to work out the carbon footprint of an individual company or organisation, like ECDC, then a lot more data collection and analysis is required.

The starting point for carbon management is to accurately establish the emissions baseline. The scope of the baseline includes the required types and sources of emissions over a defined timescale. The baseline is a fixed point against which a reduction target can be set and future performance monitored.

Emissions-releasing activities are classified into three groups known as scopes. These, their relevant associated activities, are defined in the GHG Protocol Corporate Standard as follows:

| **Scope** | **Definition / Activity** |
|---|---|
| **1 (Direct)** | ***Emissions from sources that are owned or controlled by the organisation*** |
| Fuels | Fuel sources combusted at a site or in an asset owned or controlled by the organisation. |
| Passenger vehicles | Travel in cars and on motorcycles owned or controlled by the organisation. |
| Delivery vehicles | Travel in vans and heavy goods vehicles that are owned or controlled by the organisation. |
| **2 (Indirect)** | ***Emissions that are a consequence of the organisation's operations, but occur from sources owned or controlled by another company*** |
| Electricity (grid) | Electricity used by an organisation at sites owned or controlled by them. |
| **3 (Other Indirect)** | ***Emissions that are a consequence of the organisation's operations, which occur at sources which they do not own or control*** |
| Well-to-Tank (WTT): Fuels | Upstream emissions associated with extraction, refining and transportation of the raw fuel sources to an organisation's site (or asset) prior to their combustion. |
| Transmission and distribution (T&D) | Emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the organisations that purchase it). |
| Land business travel | Travel for business purposes in assets not owned or directly operated by the organisation. |
| Well-to-Tank (WTT): Passenger vehicles | Upstream emissions associated with extraction, refining and transportation of the raw fuels before they are used to power the transport mode. |
| Well-to-Tank (WTT): Delivery vehicles | Upstream emissions associated with extraction, refining and transportation of the raw fuels before they are used to power the transport mode. |
| Well-to-Tank (WTT): Land business travel | Upstream emissions associated with extraction, refining and transportation of the raw fuels before they are used to power the transport mode. |
| Hotel stays | Overnight hotel stays for work purposes. |

**Table: GHG Emission scopes and associated emission releasing activities (BEIS,2019)**

In order to produce our organisational carbon footprint it is essential to accurately establish the scope of the operations on which our organisation will report. This process is known as defining the organisational boundary.

This means establishing what activities and functions are counted (or 'in scope') for the purpose of determining the Council's overall emissions, and by default what activities and functions are not counted ('out of scope'). This stage of the process involves reviewing the Council's operations to determine activities that give rise to carbon emissions.

We have determined that it is appropriate to include the following sources:

| Scope | Activities typical to an office based organisation | | Identified Council emission sources |
|---|---|---|---|
| 1 | **Stationary** | Production of electricity, heat or steam | • Gas used in Council Offices e.g. The Grange<br>• Gas used in buildings operated by the Council e.g. E-Space North |
| | **Mobile** | Transportation of raw materials/waste | • Travel in cars, vans and heavy goods vehicles operated by the Council |
| | **Fugitive** | Hydrofluorocarbons (HFC) emissions during use of refrigeration and air-conditioning equipment | • Air conditioning used in Council Offices e.g. The Grange |
| 2 | **Stationary** | Consumption of purchased electricity, heat or steam | • Electricity used in Council Offices e.g. The Grange, Portley Hill Depot<br>• Electricity used in street and car park lighting which also includes road signs and illuminated bollards<br>• Electricity used in business facilities operated by the Council e.g. E-space North, E-space South<br>• Electricity used in public facilities operated by the Council e.g. Ely Market Square, Jubilee Gardens |
| 3 | **Stationary & Process** | Production emissions from purchased materials | ***Excluded (see below)*** |
| | **Mobile** | Transportation of raw materials/ products/ waste, employee business travel, employee commuting | • Staff business travel and accommodation<br>• Employee commuting ***– Excluded (see below)***<br>• Supply and treatment of water used in Council Offices e.g. The Grange<br>• Supply and treatment of water used in public facilities e.g. Public toilets |

**Table: Identified Council related emissions in relation to typical GHG emissions for service sector / office based organisations (WRI/WBCSD, 2004)**

## Excluded Emissions

In addition to those sources detailed above there are other areas which give rise to emissions that the Council feels should be included but for which, at this time, insufficient detail is held to enable them to be included:

### SCOPE 3

- Waste production
- Purchased materials
- Employee commuting
- Third parties

However, for future editions of this EnvPlan we intend to make as many of these areas as possible 'in scope', therefore taking responsibility for the full emissions arising.

## Data Collection

The energy data used to calculate the baseline was gathered from different sources, for example invoices received by the Council, annual energy statements from utility providers and property services. Work continues to ensure that this data is robust and systems are in place to ensure ongoing timely and accurate collection of such data.

| Energy Type | Source | Data Quality/Estimation techniques |
|---|---|---|
| **Gas** | Energy invoices from different suppliers, meter readings. | Where estimations have been used records are held with source data.<br>Methods include:<br>Annualising consumption or average data calculated using bookended data. |
| **Passenger vehicles** | Staff mileage claims, fuel purchased and vehicle log books. | Annualising consumption where required |
| **Delivery vehicles** | Fuel purchased and vehicle log books. | Annualising consumption where required |
| **Electricity** | Energy invoices from different suppliers, meter readings. | Where estimations have been used records are held with source data.<br>Methods include:<br>Annualising consumption or average data calculated using bookended periods. |
| **Business travel** | Staff mileage claims | N/A |
| **Hotel Stays** | Staff claim forms | N/A |
| **Refrigerants** | Energy invoices | N/A |
| **Water supply** | Energy invoices from different suppliers. | Annualising consumption where required |

**Table: Source of data by energy type**

## Calculating the Baseline

To calculate what your $CO_2e$ emissions are, it is necessary to convert the 'raw' data (such as KWh of electricity used) into $CO_2e$ emissions. This process is relatively straight forward, using what are known as 'conversion factors'.

The carbon conversion factors used for this Action Plan are the 2018 UK Government published carbon conversion factors (BEIS, 2019b), except where there is no appropriate emissions factor given, or a more accurate conversion factor is available. Where this is the case it will be stated.

The Council will use the most up to date conversion factors each time it updates this plan or produces an annual report.

The key conversion factors used are as follows:

| Energy Type | Conversion factor |
|---|---|
| **Fuels** | |
| Natural Gas | 0.18396 kg $CO_2e$ / kWh (Gross CV) |
| Diesel (average biofuel blend) | 2.62694 kg $CO_2e$ / litre |
| Petrol (average biofuel blend) | 2.20307 kg $CO_2e$ / litre |
| **Refrigerants** | |
| Refrigerant R410A | 2088.00 kg $CO_2e$ / kg |
| **Electricity** | |
| UK electricity | 0.28307 kg $CO_2e$ / kWh (Gross CV) |
| **Vehicles (passenger, delivery and business travel)** | |
| Small diesel car | 0.14533 kg $CO_2e$ / km |
| Medium diesel car | 0.17353 kg $CO_2e$ / km |
| Large diesel car | 0.21520 kg $CO_2e$ / km |
| Small petrol car | 0.15565 kg $CO_2e$ / km |
| Medium petrol car | 0.19386 kg $CO_2e$ / km |
| Large petrol car | 0.28411 kg $CO_2e$ / km |
| **Water** | |
| Water supply | 0.34400 kg $CO_2e$ / cubic metres |
| Water treatment | 0.70800 kg $CO_2e$ / cubic metres |
| **Hotel Stays** | |
| UK hotels | 26.4000 kg $CO_2e$ / room per night |
| **Transmission & Distribution** | |
| UK electricity | 0.02413 kg $CO_2e$ / kWh |
| **Well-To-Tank** | |
| Various | Various (dependant on fuel type) |

**Table: Key GHG conversion factors (BEIS, 2019b)**

## Overall Summary

The carbon footprint of ECDC (as an organisation) comprises emissions that occur as a result of the Council's own operations.

We have calculated the carbon footprint of the Council's own operations in line with the UK Government's Environmental Reporting Guidelines for Voluntary Greenhouse Gas Reporting[6]. The footprint is calculated using data for the financial year 1 April 2018 to 31 March 2019.

The resultant baseline for 2018/9 is 1,317 tonnes of $CO_2e$. This is summarised in the table below:

| Total Gross Emissions 2018-19 | Tonnes of $CO_2e$ |
|---|---|
| for Scope 1 (Direct) | **839** |
| for Scope 2 (Indirect) | **164** |
| for significant Scope 3 (Other indirect) | **314** |
| **Grand Total** | **1,317** |

**Table: Summary GHG emissions (CO2e, tonnes)**

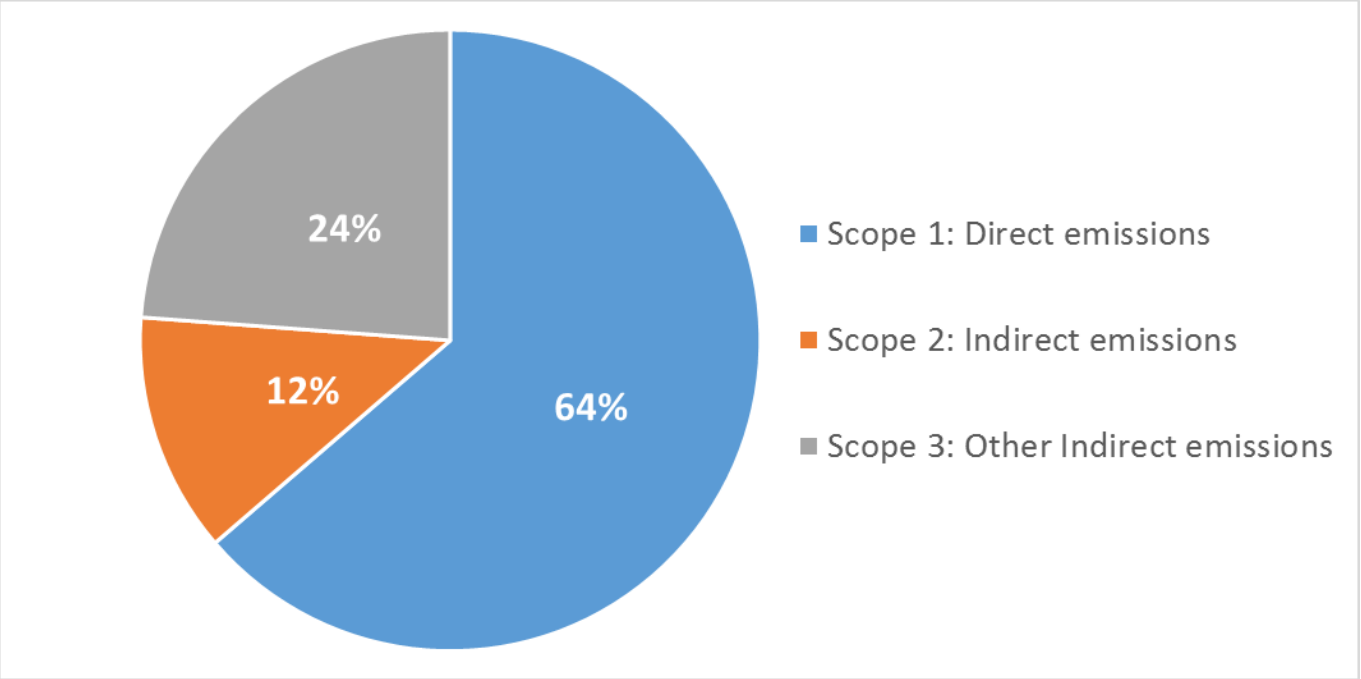



**Figure: Emissions by scope, 2018-19**

Scope 1 (direct) and scope 2 (purchased electricity) emissions amounted to 1,003 tonnes $CO_2e$. Scope 1 and 2 includes emissions from gas and oil for heating our buildings, electricity for our buildings and street lighting etc. and emissions from fleet vehicles.

Scope 1 and 2 are generally considered to be areas that an organisation has a high degree of control over and can therefore reduce the resultant emissions significantly, if not completely. Scope 3 are

[6] These reporting guidelines are based on internationally-recognised standards from the World Resources Institute and World Business Council for Sustainable Development: the GHG Protocol Corporate Accounting and Reporting Standard, and the GHG Protocol Scope 3 standard. (BEIS, 2019a)

considered to be indirect emissions that an organisation cannot directly control and therefore the ability to reduce emissions to net-zero is less realistic.

The largest single contributing area is Fleet Vehicles (an international term) which emitted approximately 765 tonnes of $CO_2e$, followed by Council Offices at 131 tonnes of $CO_2e$.

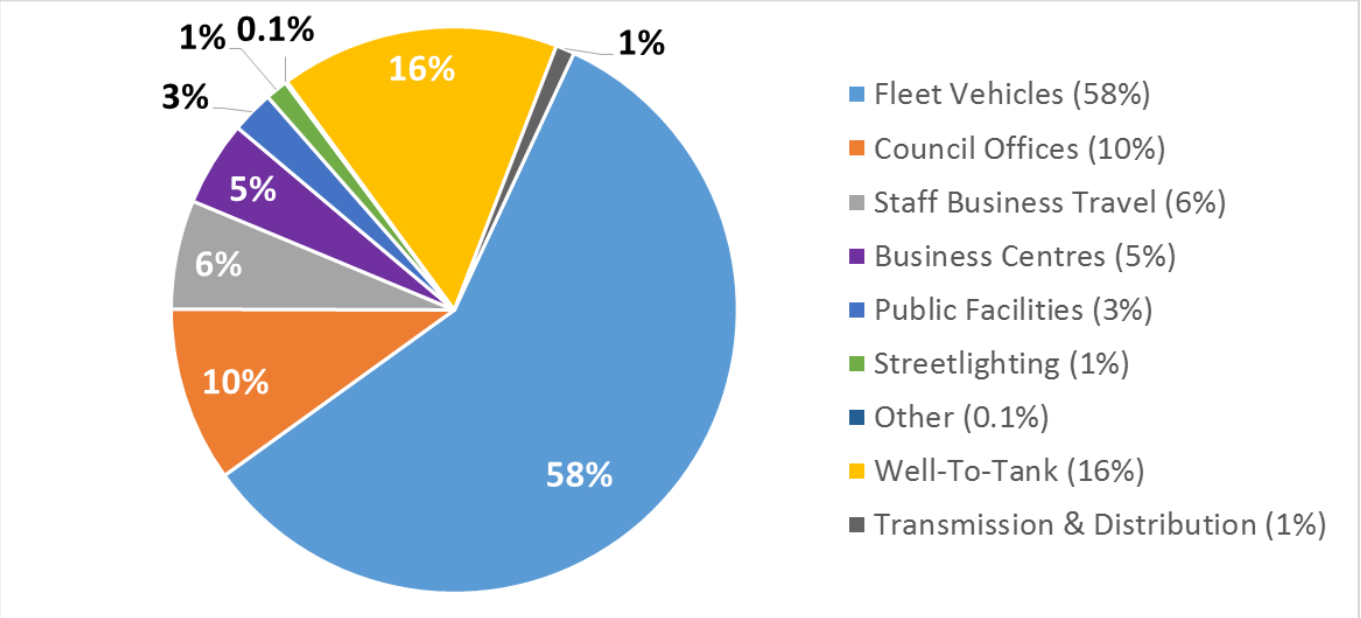



**Figure: Emissions by business area, 2018-19**

In the case of ECDC 'fleet vehicles' can be broken down to:

| Fleet Vehicle Activity | Distance or fuel consumed | Tonnes CO2e |
|---|---|---|
| Waste Collection (ECSS) | 252,813 litres | 664.126 |
| General Maintenance | 28,075 litres | 72.716 |
| Parks and Open Spaces | 8,417 litres | 22.111 |
| Lease Vehicles | 42,289 km | 6.491 |

**Table: Fleet vehicle emissions by activity**

Unsurprisingly, therefore, the Council's waste collection accounts for around half of the Council's $CO2_e$ emissions.

The largest single contributing building is The Grange which emitted approximately 132 tonnes of $CO_2e$, followed by E-Space North at approximately 62 tonnes of $CO_2e$.

Understanding the Council's biggest emitters helps focus identification of projects, as set out in Section 4 of this Environment Plan.

More detailed figures are set out below:

| GHG Emissions (Tonnes $CO2_e$) | Scope 1 | Scope 2 | Scope 3 | Grand Total |
|---|---|---|---|---|
| **Buildings & Utilities** | **73** | **164** | **30** | **268** |
| Electricity for Council Offices | 0 | 152 | 0 | 152 |
| Gas for Council Offices | 64 | 0 | 0 | 64 |
| Refrigerant Gases (from air con units) | 10 | 0 | 0 | 10 |
| Electricity for Street Lighting | 0 | 12 | 0 | 12 |
| Transmission & Distribution | 0 | 0 | 14 | 14 |
| Water and Sewerage | 0 | 0 | 7 | 7 |
| Well-To-Tank | 0 | 0 | 9 | 9 |
| **Transport** | **765** | **0** | **284** | **1,049** |
| Business Travel | 0 | 0 | 82 | 82 |
| Fleet Vehicles | 765 | 0 | 0 | 765 |
| Well-To-Tank | 0 | 0 | 201 | 201 |
| **Waste** | **0** | **0** | **1** | **1** |
| Waste Disposal from Council Offices | 0 | 0 | 1 | 1 |

**Table: Breakdown of emissions, tonnes of CO2e**

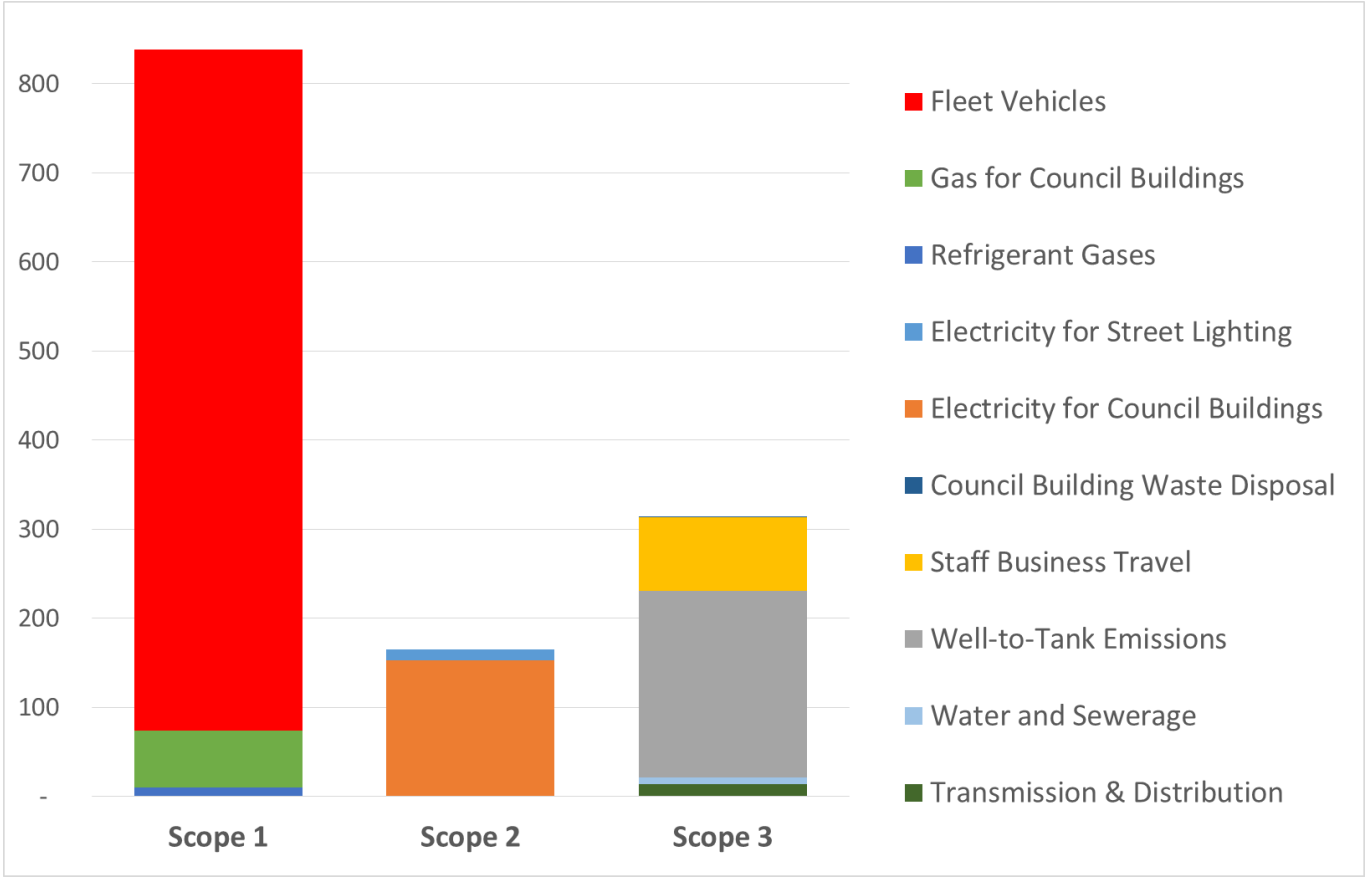



**Figure: Breakdown of emissions by scope and type, tonnes of CO2e**

## Intensity Ratios

Intensity ratios express the GHG impact per unit of physical activity or unit of economic value. The intensity ratio that is most relevant to the Council's emissions is tonnes of $CO_2e$ per full time equivalents. The Council employed 181 FTE in 2018/19 which equates to an intensity measure of 5.54 $tCO2_e$/FTE (scope 1 and 2 only).

# 3. Biodiversity and the Natural Environment

Our environment provides numerous benefits to people and communities' humanity, many of which are fundamental to our lives. It enables the food we eat to grow, clean air to breathe and water to drink. This is referred to as the 'regulating' services or benefits we get from nature. We also, of course, derive huge cultural, mental health and wellbeing benefits from the natural environment all around us.

Put another way, damaging our natural environment, especially if beyond recovery and repair, will mean a diminished quality of life for us all and for future generations.

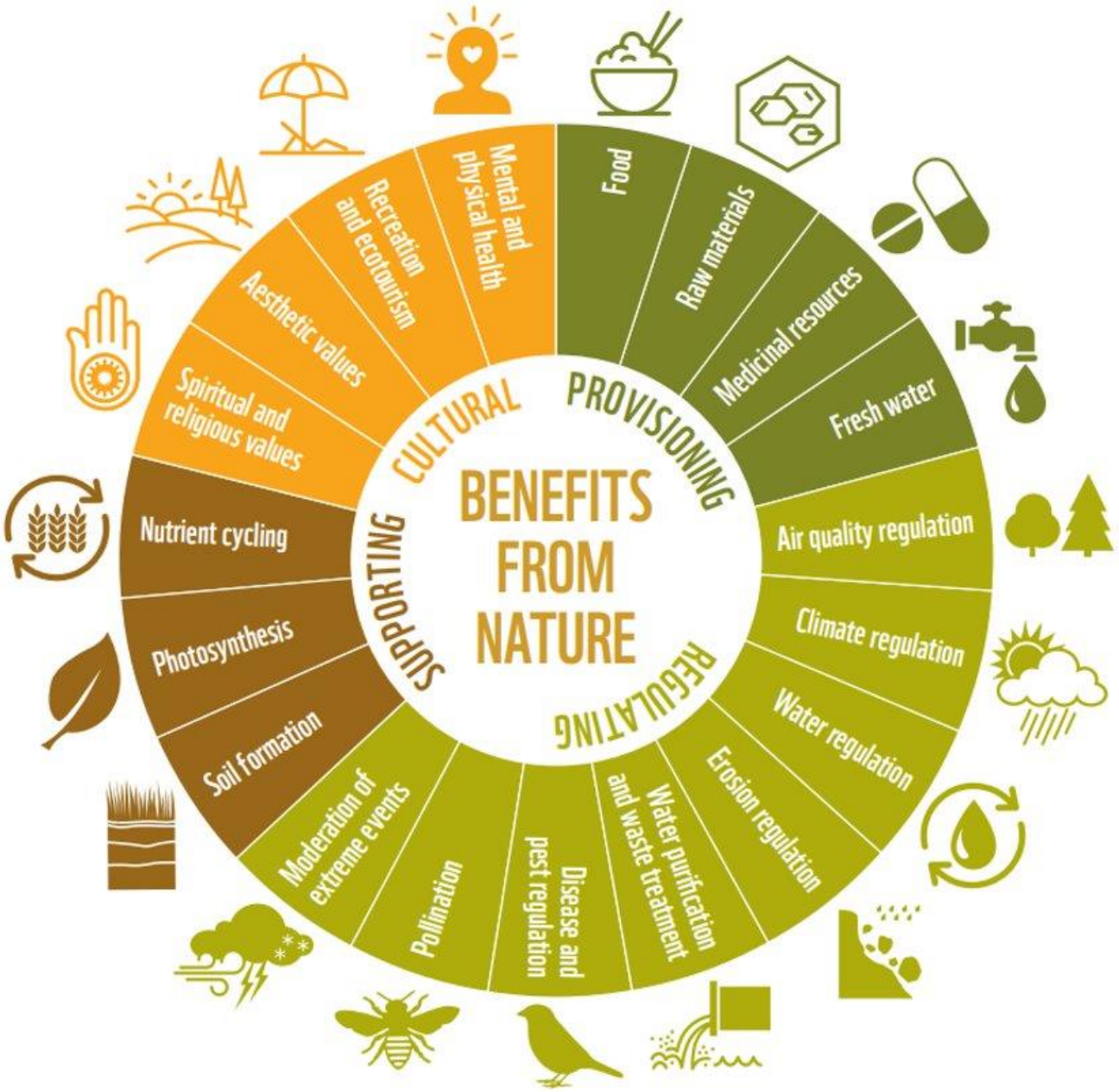



Figure: Benefits from nature, adapted from Millennium Ecosystem Assessment, 2005

(Source: Cambridgeshire County Council Climate Change and Environment Strategy)

## How can we ‘measure’ the benefits of (or harm to) our natural environment?

It isn’t easy, but there are ways to identify what benefits our natural environment provides, and consequently what harm arises if we neglect it. Scientists usually break down the natural environment into two main types to do this. First, the all-encompassing ‘natural capital’ and second, forming part of the first and the one we perhaps most think of, ‘biodiversity’. These are explained a little more below.

## Natural Capital

Natural capital is our ‘stock’ of water, land, air, species, minerals and oceans. From this stock goods and services are produced, including clean air and water, food and pollination, energy, wildlife, recreation and protection from hazards. These services provide economic, social, environmental, cultural, and well-being benefits.

## Biodiversity

Biodiversity, our flora and fauna, is an essential component of natural capital stocks and an indicator of the stocks’ condition and resilience. It provides benefits directly to people, for example, the pollination of plants to produce seeds. This benefits society primarily through food provision, and has a global economic value of approximately £120 billion and within the UK alone in the region of £690 million each year.

## Methods to measure the benefits

There are a range of established methodologies now available to value these benefits and quantify these financially to allow for easy incorporation into decision making. Such methods are not commonly used yet, but are highly likely to become more and more common, in the same way that it is becoming more common to measure the ‘carbon footprint’ of actions we take.

By providing a financial value to our natural environment, it can demonstrate to decision makers the full cost of exploiting our environment for short term gain, compared with the gains achievable through enhancing or protecting it. This is known as the ‘natural capital approach’.

As an example, currently, the UK consumes resources equivalent to three planet earths. This means that if every human on the planet consumed the same amount of resource as someone in the UK, there simply would not be enough resource to share around – we'd need three planets to do so, not just the one we have. The UK is not alone in consuming more than its fair share of what the earth can provide. Most ‘western’ developed countries are similarly around ‘three planets worth’.

This is not sustainable.

We must therefore become far more resource efficient, reduce consumption and reduce waste, especially as our environment takes time to replenish itself. The UK Government also recognises the need for change in its recent ‘A Green Future: Our 25 Year Plan to Improve the Environment”.

## Threats to our natural environment

## Climate Change:

Climate change impacts species and ecosystems, and therefore the services they provide, in many ways. Changes in prevailing weather conditions (temperature, precipitation, seasonality) directly affects ecosystem processes as well as species survival, encourages the spread of pathogens, and disrupts the timing of life cycle events. It decouples evolutionary relationships and undermines complex processes that underpin ecosystem function.

There are many lines of evidence that show that species are already being affected by climate change. With the damage to this natural capital comes impacts on the services they provide us, and the development of feedback loops which exacerbates both the cause and effects of this damage.

Risks include:

- Damage to crops from severe weather/lack of water;
- Loss of top soils due to floods;
- Changing temperatures impacting wildlife through changes to habitat and food chains;
- Damage to historic buildings from air pollution.

## Pollution

Clean air is one of our natural capital 'stocks' but air pollutants generated by a mixture of natural and human-made processes are creating health and environmental damage. The main challenge is the production of particulates and nitrogen dioxide (NO2) resulting from the combustion of fossil fuels, causing unacceptable impacts on health. Particulates, when inhaled can lodge in the lungs and exacerbate existing respiratory problems whilst NO2 can increase asthma impacts in children. Our wildlife is also impacted by poor air quality reducing new growth and vulnerable species not thriving.

The Cambridgeshire Transport and Health Joint Needs Assessment identified the following:

- Levels of air pollution in Cambridgeshire impact health, as evidenced by respiratory and cardiovascular admissions to hospital;
- 257 deaths in 2010 were attributable to air pollution in Cambridgeshire;
- Over 5% of Cambridgeshire's population mortality is attributed to air pollution;
- Hot spots of pollution include urban areas and arterial and trunk roads such as the A14;
- New developments in Cambridgeshire are often sited near poor air quality areas;
- Small particulates from traffic also contribute to indoor air pollution, where people spend most of their time and receive most of their exposure to air pollutants.

Managing the impacts of air pollution from cars and power stations is possible and there are many synergies between approaches to manage air pollution and reduce carbon emissions.

Polluting our rivers and oceans from single-use plastics and agricultural run-off poses a significant threat to marine-life and reduces the ability of our oceans to nurture and restock itself. The Council is committed to making a difference on this issue.

- An estimated 79% of all plastic waste ever created is still in our environment and needing to be cleaned up;
- Waterways become clogged with plastic pollution, preventing natural functioning of the systems and harming wildlife when consumed;
- Agricultural run-off, for example use of fertilisers, cause oxygen levels in waterways to diminish such that flora and fauna cannot survive.

## Population Growth and Development

Cambridgeshire is one of the fastest growing counties in the UK. Growth necessitates the provision of more housing, food and water, which must be managed sustainably to minimise the environmental impact of our county's success. There are numerous examples globally of economic development taking place to the detriment of nature. Examples have included:

- Damage to landscape from minerals extraction for building materials;
- Loss of natural habitat to make way for new homes or road building programmes;

- Increasing air pollution from burning fossil fuels for travel;
- The impact of agricultural pesticides on water quality and biodiversity.

To achieve sustainable growth, it is important that everyone takes action to conserve and enhance our natural capital. Using Cambridgeshire's growth as an opportunity, natural capital can be developed and enhanced through:

- Provision of increased green spaces for people and nature;
- Increasing tree planting to assist with shade/urban cooling, air quality and biodiversity;
- Switching from cars to more active travel choices such as walking, cycling and mass transport solutions.

## What can East Cambridgeshire District Council do to help conserve and enhance the natural environment?

The Council is not a major landowner (unlike, for example, the County Council which has a large farm estate portfolio), so is limited by what it can do directly. However, it has significant policy responsibilities, such as planning policy, which means it can require or influence others to take action.

East Cambridgeshire is home to a number of nationally and internationally important wildlife and historic sites. It has a number of Sites of Scientific Interest (SSSI) including Devil's Dyke. It also hosts three Ramsar sites; the Nene Washes, Great Ouse Washes and Chippenham Fen, as well as a number of Special Areas of Conservation (SACs) including part of Fenland SAC. Through our partnerships we can help to maintain these valuable sites in positive conservation status.

We can also encourage and help facilitate new sites within the district.

## Planning Policy and Planning Decision Maker

As a District Council, we are responsible for preparing planning policies for the district, as well as determining the vast majority of planning applications for development in the district (a limited number are determined by other bodies, such as minerals and waste development whereby both policy and decisions on applications are taken by Cambridgeshire County Council).

Our 2015 Local Plan contains many policies to help protect and enhance the natural environment, but over the Winter of 2019/20 we recognised we could go further. We therefore published in Feb-March 2020, for consultation, a draft 'Natural Environment Supplementary Planning Document' (SPD) setting out much more detailed requirements that development must follow. Once we have carefully considered the comments received, we intend to finalise and adopt the SPD in summer 2020. This will give the Council considerably greater powers to force developers to make significant contributions to improving the natural environment, or face refusal of permission if they do not.

Examples of the sorts of things we can achieve through making decisions on planning applications are:

- Preventing harm to any designated nature site;
- Requiring a 'net gain' in biodiversity via development i.e. the quantity and/or quality of biodiversity must be better for a particular site after development has happened, than it was before;
- Helping improve water quality;
- Avoiding development near pollution.

Parish Councils can also set their own natural environment planning policies for their local parish, via a 'Neighbourhood Plan', and we encourage them to do so and offer support throughout the process.

## Reducing plastic pollution

The Council buys services and goods to deliver its statutory responsibilities. It will look to improve its procurements and work with its supply chain to find better, more sustainable options to replace single use plastics.

## Priority areas for natural capital through collaboration with partners and our communities

**Peatland**: In its natural (damp) state, peatland acts as a 'carbon sink', sucking carbon dioxide out of the atmosphere and 'locking' it in the ground. Wicken Fen is a good example of such wet peatland. However, the vast majority of our peatland is not in its natural state. The CUSPE carbon footprint highlighted that Cambridgeshire's peatland is probably producing 5.5 million tonnes of CO2e per annum, due to the intensive farming (and consequent drying of the peat, which releases carbon dioxide into the atmosphere). This is almost the equivalent of all other emissions from all sectors (i.e. from homes, cars, businesses, manufacturing, waste etc combined) across Cambridgeshire. Thus, if we reduce all our emissions from all these others sources to zero, we would still only have cut our emissions by half because of the vast quantity of emissions arising from our drying peatlands.

Large parts of East Cambridgeshire are, of course, peat-based fenland, especially the northern half of the district.

To exacerbate matters, fen peatlands are among the UK's most diverse habitats for wildlife, but the vast majority have been lost to drainage and agricultural practices, with just small pockets like Wicken Fen remaining. These habitats rely on a delicate balance of water volume and quality to maintain their diverse range for flora and fauna, and what remains of them are often internationally recognised for their importance.

But there is some good news emerging on peatland. Already there are projects such as Wicken Fen Vision (the National Trust) and, in Huntingdonshire, the Greater Fen Project (Wildlife Trust) working to conserve and re-wet small additional areas of our peatlands.

And research is underway on how farmers and others in the agritech industry can work peatlands in a different way, preserving the peat, enhancing its biodiversity value and, at the same time, still deliver a viable return for the land and producing the crops that the country relies on. The NFU, for example, are fully behind such initiatives, not only for the sake of the natural environment, but to protect the assets the farmers own: if we continue to dry out our peatland, the rich peat soil literally disappears into the atmosphere (we lose 1-2cms of peat per year), to the point that in 50-100 years it is predicted that most of the fenland peat soil will have gone, leaving poorer quality soils (eg clay) behind.

ECDC fully supports the County Council bringing this issue to greater prominence, and welcomes its proposals to manage its own land in a different way. Whilst our ability to influence how peatlands are managed is limited, we will support all efforts to raise awareness and change land management practices, where we can, for the benefit of wildlife and for the benefit of our climate.

**Green Spaces:** Cambridgeshire has one of the smallest percentages of land managed for nature in the country. Currently only 8.5% of the county is covered by natural or green spaces. Natural Cambridgeshire, the Cambridgeshire and Peterborough Local Nature Partnership is a partnership with district councils including ECDC, the County Council, the Cambridgeshire and Peterborough Combined Authority, Natural England, the Environment Agency, the National Farmers Union and a number of others to reach a 'Doubling Land for Nature' target of 17% natural and green space coverage. ECDC fully supports this initiative.

# 4. Ideas Forum

On 16th December 2019 we launched the Climate Change Ideas Forum.

Members of the public wishing their ideas to be considered for this first EnvPlan were encouraged to submit their ideas by 31st January 2020.

Residents submitted their ideas on-line, by email, telephoning the Council or speaking to an advisor at the Council Offices during office hours. In addition, an Ideas Forum stall was available on 19th December at Ely Market.

All ideas have been acknowledged, then digitally recorded and shared with senior officers of the Council to be considered.

Separate to this EnvPlan, we have published a report summarising all of the views we received, up to the first cut off point of 31 January 2020. That report demonstrates both the huge interest the public has in environmental matters, and the wide and diverse ideas and suggestions people have.

These include:

- Lots of suggestions around improving cycling and walking facilities;
- Ideas of how to improve communication and education;
- A desire for grants to be made available to help people cut their emissions;
- Whether ECDC licenses could include incentives or requirements;
- Many ideas on how we could manage our parks and open spaces for the benefit of wildlife;
- Strong desire for the Council, via the planning system, to require new development to be environmentally friendly and energy efficient, including those via ECDC's own trading company;
- Lots of suggestions on renewable energy, including what we should encourage (and some we should not) and what incentives we should offer;
- Some suggestions to help reduce single use plastic, such as new drinking water fountains in public areas;
- A large volume of suggestions relating to transport, especially buses and electric vehicles;
- A strong desire to plant more trees;
- A request that the Council sources renewable energy for its electricity use; and
- Many ideas relating to recycling, waste and reducing litter.

The above is just a flavour – there were lots of other great ideas.

Officers have carefully gone through all the suggestions, and where we think we can do something, and quickly, we have included these in the actions page in the next chapter. But many of the ideas are still being investigated and we will continue to go through them and see what is feasible and which organisation is best to take them forward.

The Council cannot thank you enough for the time and effort that you took to send us your ideas.

And, the Ideas Forum remains open for any new ideas you may have. All those received from 1 February 2020 will be considered for the next iteration of this Environment Plan, due by June 2021. For further details, please visit www.eastcambs.gov.uk/climatechange .

# 5. Actions and Projects

To boost our natural environment as well as achieve net-zero carbon emissions by 2050 (or earlier) across both East Cambridgeshire's and the Council's operations is a momentous task. There is an indefinite list of changes required, many of which are only realistically feasible on a regional or national scale. However, there are realistic and practical actions that can be taken at a local level.

The following section of this report provides a breakdown of preliminary projects that the Council will seek to take forward. In order to make decisions on what projects to take forward, the Council has adopted the following key principles:

- Cost of the action proposed in relation to the $CO_2e$ saved (i.e. high $CO_2e$ saving per £ spent) or the degree of likely benefit to the natural environment;
- Ease of implementing (for example, easy / quick actions will make carbon savings sooner);
- Public demonstration (whilst of less importance than other principles, by undertaking highly visual actions we could stimulate others to also take action themselves).

## East Cambridgeshire District Council's Projects

As set out earlier, the Council has completed several projects in recent years that will have reduced carbon emissions and boosted our local environment. This is good news, and demonstrates the long term commitment this Council has to minimising its impact on the environment. However, there is much more to do, and this section sets out those projects we are committed to doing or investigating in the short term.

## Current or Near-Term Projects

The Council has either commenced or intends to commence a number of projects that are anticipated to reduce carbon emissions or boost the natural environment. At this stage the full details of these projects may not yet be known. The table below details the projects, and we are committed to keeping you up to date with timescales and progress on these projects as we go along:

| Project | Scope area | Project Details | Impact |
|---|---|---|---|
| Co-working | ECDC wide | • Working with a willing Parish Council, prepare a template parish-based Action Plan ('**Parish-EnvPlan**'), and subsequently encourage all Parish Councils to come up with their own targets and projects.<br>• Putting in place arrangements, by April 2021 (including a district wide partnership forum), to facilitate the preparation of a district wide Action Plan ('**District-EnvPlan**'). This Action Plan, which is prepared in partnership with a wide range of stakeholders, will set out how we can cut our carbon emissions and boost the natural environment collectively across the East Cambridgeshire area. | These projects in themselves will not directly assist in mitigating climate change and/or boosting the natural environment, but by doing them should deliver, indirectly, considerable benefits because it will help others to take direct action. |

| | | | |
|---|---|---|---|
| | | • Work proactively with the Combined Authority, as part of its Climate Change Independent Commission.<br>• Support Cambridgeshire County Council in its delivery of its recently adopted Action Plan. | |
| Organisational learning | All ECDC staff and Members | • Identify / develop a training course for all staff and Members on climate change issues, minimisation, mitigation, adaptive measures, and key environmental policies (possibly Open University's Environment: treading lightly on the Earth). Aim for all staff and Members to have completed training by 2021. All new starters from 2021 to complete training within 2 months of start date.<br>• Develop further the recently established officer group of Climate Change Champions throughout the Council to monitor and assist delivery of climate change and natural environment actions.<br>• Roll out further guidance and training for staff in relation to the recently introduced 'Carbon Impact Assessment' procedure – a new assessment which requires Council decisions to be assessed for the carbon implications of the decision being made (except for Planning Decisions as the process for assessing such impacts is already regulated by Government, as set by legislation).<br>• Introduce a compulsory action for all Council service lead officers, via their annual Service Delivery Plans, relating to the need for that service area to assist in meeting the objectives of this EnvPlan.<br>• Preparing a second Council based EnvPlan by June 2021, setting out progress over 2020/21, and proposals and targets for 2021/22. | These projects in themselves will not directly assist in mitigating climate change and/or boosting the natural environment, but by doing them should deliver, indirectly, considerable benefits because having well-educated staff and Members, and a robust decision making process in place will mean decisions are taken by the Council with the full knowledge of the benefits of making that decision, taking account of the reasonable options that are available. |

| | | | |
|---|---|---|---|
| Organisational practices | Across all ECDC departments | • Embed a greater culture of home working (to reduce commuting) and less business travel (e.g. for site visits), taking advantage of lessons learnt during the Covid-19 lockdown, with the aim of encouraging staff to undertake less, and more coordinated, site visits and meeting attendance.<br>• Prepare a Customer Access Strategy which aims to provide more services to be accessible /available online; Online services to be simple, easy to use and the most efficient way of communicating with the Council; Automated responsive services, resolved at first point of contact where possible; Encouraging those that can use online services to do so freeing up officer time to help the most vulnerable within the district; Ultimately, for climate benefits, reducing the need for customers to have access to paper documents and to travel to The Grange to access services. | Whilst these projects are unlikely to have a significant effect on the operations of the Council itself (in terms of Co2e emissions and the natural environment), the two projects should cut back on unnecessary travel by staff and residents, thereby reducing transport impacts.<br><br>The two projects also have much wider benefits not related to this EnvPlan (such as productivity, customer service; and business resilience) |
| Building and utility management | All buildings and utilities in ECDC ownership/ direct management | • Review electricity and gas contracts, and, where practical to do so, seek to amend to 100% renewable electricity tariffs and 100% carbon off-set gas tariffs as soon as possible.<br>• Appraise the impact of streetlights and consider the options to move to LED lighting, if feasible, taking account of the carbon savings, financial savings and public opinion of doing so, including consideration of whether dimming of lights is practicable and safe during certain low-use hours (note: most street lights are not under the control of ECDC).<br>• Complete an energy opportunity assessment for The Grange to identify measures that can be taken to reduce consumption and/or generate renewable energy and deliver at least one of the measures identified within a year. | A simple switch to a renewable energy electricity tariff would likely reduce the Council's carbon footprint by 10%. If the gas used can be offset, then a further 5% could be cut.<br><br>Street lights (including carparks) under ECDC control are very limited, so the scale of benefit would be low, but could act as a good public demonstration project and could help others (residents and businesses) to follow our example.<br><br>The Grange and E-Space North are ECDC's two buildings with the greatest CO2e impact. |

| | | | |
|---|---|---|---|
| | | • Complete an energy opportunity assessment for E-Space North to identify measures that can be taken to reduce consumption and/or generate renewable energy and deliver at least one of these. | However, 'easy wins' to improve their energy efficiency have been done over the years, therefore more specialist advice is needed to see what else could be done to reduce energy use in the two buildings. By delivering some of the actions recommended, we would hope at least 10% reduction in energy use in the buildings could be achieved (weather adjusted i.e. for cold winter years, it is inevitable that more energy will be used than in a milder winter year) |
| Strategic Planning | Planning policy covering whole district | • Prepare, consult and adopt two Supplementary Planning Documents, one on the Natural Environment and the second on Climate Change. | These two documents will not lead to direct benefits to ECDC operations, but should lead to widescale benefits to both the climate and the natural environment. |
| Natural Environment | District wide | • Undertake a thorough appraisal of the Council's land assets, and determine whether a programme of tree planting and/or meadow planting can take place on any of it. If so, commence that programme during the 2020/21 winter/spring planting season. | The Council has only a limited land portfolio, and it is important not to plant trees in the wrong place, hence the need for appraisal (for example, trees planted on peat soils will result in more carbon emissions than no trees at all; and trees planted on meadow land could destroy rare habitats). The best solution might be an indirect one whereby the Council facilitates tree planting on private land, where such land is identified as offering the greatest benefits for doing so (eg improved grasslands). |

| | | | |
|---|---|---|---|
| Transport | Fleet vehicles | • Work with ECTC and ECSS, the Council's wholly owned companies responsible for matters such as waste collection, street cleansing and maintaining public open spaces, to conclude a review into alternative options for its vehicle fleet, linking to the emerging new national waste strategy, and set out a programme of how its vehicle fleet will become less carbon intensive, potentially with some of the smaller fleet vehicles replaced within 12 months*.<br>• Conduct a review of our waste collection methods, to determine whether more efficient route collections can be secured, thereby reducing vehicle fuel consumption (and consequently reduce CO2 emissions). Implement as soon as practical.<br><br>**Note: vehicles will only likely be replaced when the existing vehicles reach their end of life. Replacing vehicles before their end of life can have a greater negative carbon impact, due to the high levels of embodied energy within new vehicles (arising from the manufacturing of those vehicles).* | The Council's 'bin lorries' and other vehicles (as operated through ECTC and ECSS) are the biggest source of ECDC's CO2e, far greater than emissions arising from its buildings. So, if we can shift that fleet to electricity based, with electricity being renewable energy sourced, then the Council could perhaps, approximately, halve its carbon footprint (as well as other benefits, such as local air pollution). However, this would come at a considerable financial cost, and will either take time to implement or require substantial grants.<br><br>In the shorter term, if we can make our waste collection routes even more efficient, we will use less fuel and emit less CO2. For every 2% of fuel we can reduce, we would reduce the entire Council's carbon footprint by 1%. |
| | Whole district | • Work with Cambridgeshire County Council (CCC) to identify and deliver electric vehicle charging infrastructure to support urban and rural needs.<br>• Work with CCC to deliver wider change to the highway network, which supports sustainable travel modes (walk / cycle / bus), informed by the ongoing strategy development and public consultation.<br>• Take advantage of the Government's Covid-19 related | These projects in themselves will not directly assist in reducing ECDC's carbon footprint, but by doing them should deliver, indirectly, considerable benefits because it will help people reduce car-based travel (with 39% of all Cambridgeshire's emissions via transport, even a small shift towards |

| | | | |
|---|---|---|---|
| | | pledges to boost our cycling and walking infrastructure. | walking/cycling/public transport can make a significant CO2e saving). |
| Palace Green Homes (PGH) | Operations of PGH | • ECDC will work with PGH, the Council's commercial property and development company, to establish over 2020/21 a new sustainability policy for the company; this will then inform how it can progress its development schemes in the most sustainable, yet viable, way. | At present, the full impact of PGH's operations are not accounted for in the carbon footprint of ECDC (for example, the energy used and emissions arising from building the new homes). This action will not, therefore, directly improve ECDC's emissions reported in this EnvPlan. However, construction of homes is an intensive CO2e operation, though also an opportunity to create new habitats. Therefore, this action will enable PGH to consider further options to reduce its overall impact, and increase its environment gains, without reducing its ability to operate in a viable way. |

## Medium Term Projects

The Council is committed to identifying further projects that require more research in order to ascertain individual feasibility and contribution to the overall vision. At this stage it is not possible to calculate the initial cost of these projects or the timescale within which they will be completed. At this stage this includes the following opportunity areas:

| Project | Scope area | Project Details |
|---|---|---|
| Waste management | Domestic and business waste collection by ECSS | Work with Cambridgeshire County Council to develop more sustainable waste management practices. |
| | | Encourage residents and businesses to minimise food and other waste to reduce carbon emissions e.g. foodcycle, foodhub, lovefoodhatewaste. |
| | | To promote waste awareness, waste reduction and waste education, and encourage sustainable approaches to waste to local residents and businesses, such as making available to residents waste reduction and recycling initiatives provided by industry organisations. |

## Additional Projects

The actions and projects above are only a small step towards achieving net zero carbon emissions and the boosting of our natural environment.

Alone, they will not achieve our long-term vision.

We need to build momentum and continually identify new projects and actions. We intend to publish an update of this report every year, identifying those projects.

# Summary of Actions

## 20 Commitments for 2020/21:

We have set a long-term vision to deliver net zero carbon emissions for the Council's operations and, in partnership with all stakeholders, for East Cambridgeshire as a whole, with clear and demonstrable progress towards that target year on year. At the same time, we will support our communities and East Cambridgeshire's biodiversity and environmental assets to adapt and flourish as our climate changes.

To help move one step towards that vision, the following forms a summary of the top 20 commitments we aim to achieve over the next 12 months. These are real actions the Council will take to play its part to help mitigate climate change and boost the natural environment:

**To help mitigate climate change:**

1. Review its entire electricity and gas contracts, and, where practical to do so, will seek to amend to 100% renewable electricity tariffs and 100% carbon off-set gas tariffs as soon as possible.
2. Appraise the impact of its streetlights and consider the options to move to LED lighting, if feasible, taking account of the carbon savings, financial savings and public opinion of doing so, including consideration as whether dimming of lights is practicable and safe during certain low-use hours (note: most street lights are not under the control of ECDC).
3. Embed a greater culture of home working (to reduce commuting) and less business travel (eg for site visits), taking advantage of lessons learnt during the Covid-19 lockdown, with the aim of encouraging staff to undertake less, and more coordinated, site visits and meeting attendance.
4. Undertake a thorough appraisal of the potential to expand electric car charge points.
5. Roll out further guidance and training for staff in relation to the recently introduced 'Carbon Impact Assessment' procedure – a new assessment which requires all Council decisions to be assessed for the carbon implications of the decision being made.
6. Work with ECTC and ECSS, the Council's wholly owned companies responsible for matters such as waste collection, street cleansing and maintaining public open spaces, conclude a review into alternative options for its vehicle fleet, and set out a programme of how its vehicle fleet will become less carbon intensive, plus review our waste collection methods to determine whether more efficient route collections can be secured, thereby reducing vehicle fuel consumption (and consequently reduced CO2 emissions).
7. Complete an energy opportunity assessment for The Grange to identify measures that can be taken to reduce consumption and/or generate renewable energy and deliver at least one of the measures identified within a year.
8. Complete an energy opportunity assessment for E-Space North to identify measures that can be taken to reduce consumption and/or generate renewable energy and deliver at least one of these.
9. Develop a Customer Access Strategy, which at its heart will enable customers to undertake activities with the Council without the need for physical attendance at Council Offices.

10. Finalise the Council's bus, cycling and walking review (which commenced over winter 2019/20), and work with a wide variety of partners to try to implement its findings, taking advantage of new Government funds, linked to Covid-19 recovery, to boost cycling and walking infrastructure.

**For both boosting the natural environment and to help mitigate climate change:**

11. Undertake a thorough appraisal of the Council's land assets, and determine whether a programme of tree planting and/or meadow planting can take place on any of it. If so, commence that programme during the 2020/21 winter and spring planting season.

12. Prepare, consult and adopt two Supplementary Planning Documents, one on the Natural Environment and the second on Climate Change.

13. Identify / develop a training course for all staff and Members on climate change issues, minimisation, mitigation, adaptive measures, and key environmental policies (possibly Open University's Environment: treading lightly on the Earth). Aim for all staff and Members to have completed training by 2021. All new starters from 2021 to complete training within 2 months of start date.

14. Put in place arrangements, by April 2021 (including a district wide partnership forum), to facilitate the preparation of a district wide Action Plan ('District-EnvPlan'). This Action Plan, which is prepared in partnership with a wide range of stakeholders, will set out how we can cut our carbon emissions and boost the natural environment collectively across the East Cambridgeshire area.

15. Work with a willing Parish Council, to prepare a template parish-based Action Plan ('Parish-EnvPlan'), and subsequently encourage all Parish Councils to come up with their own targets and projects.

16. Prepare a second Council-EnvPlan by June 2021 (ie a review of this document), setting out progress over 2020/21, and proposals and targets for 2021/22.

17. Work proactively with the Combined Authority, as part of its recently launched Climate Change Independent Commission

18. Support Cambridgeshire County Council in its delivery of its recently adopted Action Plan.

19. The Council also acknowledges that in recognising there is a climate emergency, the actions needed to be taken are not all about mitigating the impacts, but also adapting to the inevitable changes of climate change. As such, the Council also commits to commence preparation of a Climate Adaptation Plan over the next 12 months.

20. Work with Palace Green Homes (PGH), the Council's commercial property and development company, to establish a new sustainability policy for the company; this will then inform how it can progress its development schemes in the most sustainable, yet viable, way.

# 7 Financing the Strategy and Action Plan

Like all councils, we have challenging financial and resource pressures. We are also a small Council, operating with a relatively small budget (around £10-£12m per annum total spend), compared with other councils. County Councils, for example, have operating budgets of hundreds of £millions. However, we cannot use any of these challenges as an excuse for not finding new ways of living, and doing 'our bit' with the budgets we operate under. We can find realistic and genuine ways to make positive changes that limit our impact on and improve our environment, and we can also regulate others to do their fair share, through the policies we set and licenses we operate.

All potential projects referred to in this EnvPlan will, where necessary, go through the Council's approval process and receive expenditure approval in accordance with the budget setting process. It must be noted that these corporate controls are required regardless of eventual funding streams as the Council needs to ensure Value for Money is achieved.

The Council has access to several potential funding streams and the choice of most appropriate funding will depend upon achievement of Value for Money. This will be assessed following the completion of relevant business cases for individual projects. External funding will always be considered before the use of internal Council funds.

Some of the ways the Council may decide to fund the projects associated with the EnvPlan are:

- **Invest to Save:** For example, capital expenditure ('investment') to improve the energy efficiency of the buildings or vehicles we own can save money every year thereafter through lower energy costs. The money to fund the original expenditure could be from a council's own reserves or from a loan.
- **Grants and Loans:** These can be from Government or private sources.
- **Match-Funding:** Some grants might require the Council to contribute some (often half) the funding for a project.

# 8 Further Reading

There is a host of information available on the internet, and we set out some links in the Appendices.

We also intend to improve information we post on our own website, via this page: https://www.eastcambs.gov.uk/climatechange

If you are particularly interested in learning more about climate change and environmental matters, and would like to reward yourself with a certificate, we recommend you have a go at completing the following Open University course. It is free, and takes up to 15 hours to complete.

https://www.open.edu/openlearn/nature-environment/environmental-studies/environment-treading-lightly-on-the-earth/content-section-0?active-tab=description-tab

# 9 Monitoring and Evaluation

Successful implementation and ongoing delivery requires a robust, transparent governance procedure which will ensure strategic ownership of the Council's carbon reduction aims in line with the climate emergency declaration. This governance process will bring together the diverse range of projects undertaken throughout the Council which contribute to the organisation's overall environmental impact.

## Identifying Projects

The Council is committed to identifying opportunities to reduce carbon emissions across all areas of its operations. In order to achieve this the Council has introduced the following:

- A core team of officers, representing key service areas, have been identified. These officers will meet informally on a regular basis in order to discuss their current workloads and forthcoming projects. This will allow early conversations about opportunities to reduce the potential carbon impact to take place.
- Decisions taken by the Council are now be subject to a Carbon Impact Assessment (CIA). This involves lead officers undertaking a review of their project/decision and considering what impact it will have on the Council's aim to achieve net-zero carbon emissions. A summary of the CIA will be included in the governing report to enable the relevant decision maker to make an informed decision. The introduction of this process will also help to raise awareness of the challenge amongst officers and will lead to them considering the potential impacts earlier in the decision making process, for example, at the contract specification stage.
- Steps to ensure that officers throughout the organisation have the opportunity to make suggestions for projects that could help to reduce carbon emissions.

## Initiating Projects

Before any project gets off the ground the relevant Council officer will ensure that all of the necessary procurement and governance steps are undertaken. Consideration will also be given, on a case by case basis, to any communication activity that may be required alongside any specific monitoring requirements.

## Monitoring

The impact of individual projects will primarily be monitored by collating data for all emissions sources that are within the organisational scope. This will be undertaken in line with the process set out earlier in this document. Where it is possible and feasible to do so individual projects will be monitored more frequently to ensure any deviation from projections are identified and addressed as soon as possible.

Separately, the Council will continue to monitor the Government's approach to UK carbon pricing and the implications of that new scheme on the Council and wider stakeholders.

## Reporting Progress

Each year the Council will produce an annual report no later than the 30th June each year.

## Baseline Year Recalculation Policy

There may be circumstances under which it becomes necessary to recalculate our baseline year emissions. If significant changes were to occur - either within the Council's organisation or to recognised methodologies - it could challenge the validity of existing data. To mitigate this we have developed the following baseline year recalculation policy which will ensure that any significant changes are identified, measured for a recalculation threshold and processed accordingly:

| Change scenario | Baseline year recalculation? |
|---|---|
| **Mergers, Acquisitions, Divestitures** | |
| Acquisition of (or insourcing) a facility that did not exist in the baseline year. | Potentially recalculate baseline year emissions depending on likely impact to be consistent with new approach, or correct errors |
| Disposal of (or outsourcing) a facility to another company. | Potentially recalculate baseline year emissions depending on likely impact to be consistent with new approach, or correct errors |
| Transfer of ownership/ control of emissions sources. This includes changes in lease status. | No base year recalculation required |
| **Organic Growth and Decline** | |
| Organic growth | No base year recalculation required |
| Organic decline | No base year recalculation required |
| **Changes in Quantification Methodologies / Errors** | |
| Changes in emission factors or methodologies (e.g. change in activity data) that reflect real changes in emissions (i.e. changes in fuel type or technology) | No base year recalculation required |
| Changes in measurement methodologies, improvements in the accuracy of emission factors/ activity data, or discovery of previous errors/ number of cumulative errors | Potentially recalculate baseline year emissions depending on likely impact to be consistent with new approach, or correct errors |

**Table Baseline year recalculation policy**

The Council will review the scope on an annual or biennial basis to ensure that data is collected from all relevant sources.

# 10 Stakeholder engagement

It is clear that the Council, working alone, cannot achieve the target of net-zero carbon emissions across both the geographical area of East Cambridgeshire and throughout the Council's own operations. Yet, the Council is committed to working in partnership in order to make this ambition a reality. As such, in addition to Council Members and Officers, the Council plans to work with the following stakeholders:

- **Youth Council**
- **Citizen Engagement**
- **Schools**
- **Natural Cambridgeshire Local Nature Partnership (LNP)***
- **Business Community**
- **Parish Councils**
- **Cambridgeshire County Council**
- **Cambridgeshire and Peterborough Combined Authority**
- **Other Local Authorities**
- **Government**

**The LNP comprises a wide range of organisations committed to improving the natural environment of Cambridgeshire, including: Natural England; Defra; Environment Agency; NFU; RSPB; Wildlife Trust; Anglian Water and Cambridge University*

# Appendices

## Appendix 1: Impacts of Climate Change

Climate change has many impacts. These will be realised by the Council in a variety of different ways. The table below summarises some of these.

| Impact | Description | Possible Impacts for the Council |
|---|---|---|
| Flood Risk | Projected increases in extreme rainfall will bring increased risk of flooding. The nature of surface water rainfall means that many areas will be affected by increased flooding. Runoff from compacted or impermeable areas will increase and water will accumulate in low spots. As temperatures increase and sea levels rise areas like the Fens will become under greater threat. | **Infrastructure**: Disruption to transport links could affect staff travel to work and access to parts of the district and wider county for meetings. Disruption to travel could disrupt Council response processes by restricting access to some parts of the district. There may be increased risk of power outages associated with flooding and thunderstorms, which could cause disruptions to transport, logistics and processes. |
| | | **Finance**: Increased costs of flood related damage and flood investigations. Increased costs for providing flood resilient infrastructure to existing buildings. Increased social costs associated with providing support for people suffering from emotional issues associated with flooding and uncertainty. |
| | | **People and health:** Council employees may suffer from increased stress or mental health problems associated with flooding of their homes or the uncertainty associated with increased flood risk. |
| | | **Property**: Council buildings and property may be damaged by flooding if located within flood risk areas. |
| Heat Waves | Climate change is projected to bring an increase in warm temperature extremes and it is very likely that heat waves will occur more frequently and last longer. Cambridgeshire is one of the warmer parts of the country, so could be significantly impacted by these changes. Cities will be impacted more than rural areas | **Infrastructure**: Disruption to transport links could affect staff travel to work and meetings. Disruption to travel could also disrupt Council response processes by restricting access to some parts of the district. |
| | | **Finance:** Increased costs associated with summer cooling in Council buildings. Increased costs associated with installation of air conditioning and heat resilient infrastructure. |
| | | **People and health:** Working conditions may become unsuitable for staff which could impact employee concentration and performance. |
| | | **Property:** Office spaces may become unsuitable to work in during heat wave conditions. This will have implications on the design, construction and maintenance of existing and new office space. |
| Drought | With increased temperatures extremes and more frequent and longer lasting heat waves will mean increased water restrictions in Europe. Cambridgeshire is already one of the driest counties in | **Infrastructure:** Roads can be affected under drought conditions and subject to cracking (a matter of concern for Cambridgeshire County Council with knock effects for ECDC residents). |
| | | **Finance:** Increased water costs for office buildings. Increased social costs as more people fall below the poverty line as a result of increased food and water costs. |

| Impact | Description | Possible Impacts for the Council |
|---|---|---|
| | England so could be significantly impacted by this. The frequency of drought is likely to increase in presently dry regions by the end of the 21st century | **People and health:** Employees may be emotionally or physically impacted by reduced food and water availability and increased costs associated with this. |
| Sea Level Rise (SLR) | Rising global temperatures are causing polar ice to melt and oceans to expand, resulting in global sea level rise. Global sea levels rose by circa 0.19 metres between 1901 and 2010. Cambridgeshire is one of the most low-lying counties in England so could be significantly impacted by sea level rise in tidal and fen areas.<br><br>It is anticipated that the East of England could experience a dramatic sea level rise of up to 0.54 metres by 2100 under a high greenhouse gas emission scenario. | **Infrastructure:** Transport links may be impacted by SLR in low-lying parts of the district. SLR could restrict or prevent access to low-lying parts of the district, disrupting access for social needs, emergency planning and other service provision. |
| | | **Finance:** Costs of re-locating Council buildings, infrastructure and Council operated housing away from high risk areas and provision of SLR resilient infrastructure. |
| | | **People and health:** Council staff and communities in low- lying regions may be emotionally affected by the uncertainty surrounding sea level rise and re-location. Increased pressure on social needs to provide increased support. |
| Air pollution | Transport is a major source of short-lived greenhouse gas pollutants, which can result in direct damage to human health. Road transport (particularly diesel traffic) is a significant contributor to air pollution such as particulate matter (PM) and ground-level ozone ($O_3$). Rising temperatures are also projected to increase levels of ozone, as are other greenhouse gases such as carbon monoxide, methane and nitrogen oxides. Short-lived greenhouse pollution can also cause acid rain. Air pollutants have been linked to health conditions such as asthma and eczema. | **Infrastructure:** Ground level ozone could create a risk of damage to infrastructure, ecosystem services and functions. This could in turn influence agricultural productivity and water supply. |
| | | **Finance:** Increased social costs associated with providing support to people impacted by pollution related health impacts. Increased costs associated with repair of Council buildings impacted by acid rain. |
| | | **People and health:** Poor air quality can pose a risk to employee health which could lead to more sick days. Air pollution has been associated with the development and worsening of asthma and can also make people who already have asthma more sensitive to asthma triggers. Air pollutants have also been associated with health implications such as eczema. Urban air pollution can increase risk of cardiovascular, respiratory diseases and cancer. Council staff travelling for or to work may be particularly impacted by air pollution from vehicles. |
| | | **Property:** Ozone pollution can cause acid rain which could cause damage to Council buildings. Indoor air pollution could increase mould and damp in office space. |

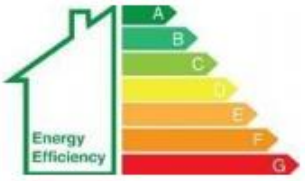
## Appendix 2: Climate Change Mitigation Measures

Climate change mitigation measures can be incorporated into both existing and new infrastructure to reduce carbon emissions and improve energy efficiency. There are a number of ways to do this, and the following table describes some of these measures.

*Table: Methods to mitigate carbon emissions*

| | Mitigation measure | How does this mitigate carbon emissions? | Description |
|---|---|---|---|
| Renewable Energy and Storage | Solar Panels  Photo | Reduces fossil fuel usage for electricity and heating (if electric). | Sunlight is absorbed by the photovoltaic panels and is used to generate electricity. |
| | Solar Thermal  Photo ©Greentech | Reduces fossil fuel usage for water heating. | Heat from the sun is used to warm water running in pipes through the panel. Depending on the temperature the water reaches, the temperature can be "topped up" using conventional methods. |
| | Battery Energy Storage  Photo ©Greentech Media | Enables intermittent renewable energy sources to become viable alternatives to fossil fuels. | Stores electricity for use at times when generation is low. |
| | Air Source Heat Pump  Photo ©burtonwright | Reduces or removes fossil fuel usage for heating. | Air is used to heat liquid refrigerant. The pump uses electricity to compress the refrigerant to increase its temperature then condenses it back to release stored heat. This heat is sent to radiators and stored as hot water. |
| | Ground Source Heat Pump  Photo ©Homebuilding & Renovation | Reduces or removes fossil fuel usage for heating. | Coils or pipes containing refrigerant are buried in the ground. Heat from the ground is used to warm the refrigerant and an electric heat pump is used to raise this temperature further. This heat is transferred from the refrigerant via a heat exchanger in the building to providing hot water and heating. |

| | Mitigation measure | How does this mitigate carbon emissions? | Description |
|---|---|---|---|
| | Hydrogen<br>  <br>Photo ©National | Reduces or removes fossil fuel usage for heating. | Hydrogen, produced through electrolysis of water using solar or renewable energy, or, produced using natural gas but using carbon capture and storage, is being considered heating homes. |
| | Planning<br>  <br>National Planning Policy Framework<br>Presented to Parliament<br>by the Secretary of State for Housing, Communities and Local Government<br>by Command of Her Majesty<br>February 2019 | Enables standard requirements for mitigation actions within developments. | The Planning System in England is 'plan-led.' The Local Plan contains policies that set out what development is needed where – either by identifying specific sites or general types of site. When a planning application is submitted, it is tested against those policies to see whether or not it should be approved. |
| | Building Regulations<br>  <br> | Can be set to reduce energy demand of homes (e.g. through energy efficiency measures). | These are statutory minimum standards for design, construction and alterations to virtually every building. |
| Energy Efficiency | Passive House<br>  <br><br>Photo ©Magnetitte | Little to no domestic heating requirements. | Homes designed to combine ultra-low energy consumption with consistently good air quality. They are built with superinsulation, low-volume heat recovery ventilation systems and tightly controlled rates of air infiltration, which combine to make sure the building's carbon footprint is as small as possible. These types of buildings do not require conventional heating systems. |

| | Mitigation measure | How does this mitigate carbon emissions? | Description |
|---|---|---|---|
| | Fabric First/Insulation<br>  <br>Photo ©MyBuilder.com | Reduces heat loss from buildings, reducing heating requirements. | Materials used to reduce heat loss from buildings – these can be built into new builds or retrofitted. It can come in many forms specific to the area being insulated including:<br>Pipe insulation<br>Roof insulation<br>Wall insulation |
| | Other energy efficiency measures<br>  <br>Image ©Base Energy | Reduce energy consumption, thereby reducing emissions from generation. | Various methods to reduce energy consumption. e.g. LED Lighting and double glazing. |
| | District Heating/Heat Networks<br>  <br>Image ©Energy Saving Trust | Facilitates low carbon heating. | Groups of co-located (e.g. a village or town) buildings sharing the same heating source. They are directly connected via insulated pipes to a local renewable heating source, such as a ground source heat pump. This enables faster transition to renewables. |
| Transportation | Active transport eg. Cycling, walking<br>  <br>Photo ©The Independent | Zero carbon. | Avoids travel by vehicles. |
| | Car Sharing/Car Clubs<br>  <br>Photo ©Pacific Rent-A-Car | Reduces the number of vehicles on the road. | Car sharing is the sharing of car journeys so that more than one person travels in a car, and prevents the need for others to have to drive to a location themselves. Car clubs are a model of car rental where people rent cars for short periods of time, often by the hour. |
| | Public Transport<br>  <br>Photo ©intelligenttransport.com | Reduces the number of vehicles on the road. | Public Transport reduces the number of vehicles on the road, but provides far greater benefits than car sharing as more people can use the same vehicle. |

| | Mitigation measure | How does this mitigate carbon emissions? | Description |
|---|---|---|---|
| | Electric Vehicles (private and public) and Chargepoints<br>  <br>Photo ©Rolec<br>  <br><br>Photo ©Electrek | Removes combustion of fossil fuels as the direct source of energy. | Electric vehicles (EVs) do not rely on the internal combustion engine (ICE) burning petrol or diesel to function. Instead they contain batteries which charge on electricity, removing their carbon emissions as well as reducing air quality impacts.<br>If the electricity comes from renewable sources, use of these vehicles is carbon free. |
| | Hydrogen Vehicles<br>  <br><br>Photo ©intelligenttransport.com | Removes combustion of fossil fuels as the direct source of energy. | For larger vehicles, Hydrogen could be used as a fuel source. This is where Hydrogen is electrolysed to produce electricity. Water vapour is the only by-product emitted from the exhaust. |

## Appendix 3: Adaptation measures

Climate change adaptation measures can be incorporated into both existing and new infrastructure to reduce the effects of climate change. This is done by improving our resilience to the changes that are anticipated to come forward over the coming years. There are a number of ways to do this, and the following table describes some of these measures.

*Table Methods to adapt to climate change impacts*

| Adaptive measure | What change does this adapt to? | Description |
|---|---|---|
| Rainwater harvesting/ water butts  ©SusDrain 2019 | Flood and drought. | Rainwater is collected in water butts and used as a non-portable water resource such as toilet flushing. Harvested water can also be used for gardening and small-scale infrastructure. |
| Grey water harvesting  © The Green Age | Flood and drought. | Wastewater from baths, showers, washing machines, dishwashers and sinks can be re-used for portable water sources. |
| Sustainable Drainage Systems (SuDS)  ©SusDrain 2012 | Flood, heat waves and drought. | SuDS mimic nature and manage rainfall at the source. They slow the flow of surface water and treat it before it enters watercourses. They provide areas to store water at the surface and allow green and blue infrastructure to be incorporated into urban spaces. |
| Property Level Resilience (PLR)  ©Flood Protection Solutions | Flood, SLR. | Protective measures installed in existing homes and buildings to offer protection from flooding. This is best suited for existing buildings located in high flood risk areas which are expected to be impacted most by high intensity flooding and sea level rise associated with climate change. |

| Adaptive measure | What change does this adapt to? | Description |
|---|---|---|
| Green space and low level vegetation  ©Cambridge Independent | Flood, drought, heat waves. | Can be incorporated into both new and existing developments. Areas of green space can be used as flood storage providing adaptation to flooding. They also allow water to be absorbed into the ground, recharging drinking water supplies to provide adaptation to drought. |
| Tree planting  ©Cambridge City Council | Air pollution, flood, heat waves and drought. | Trees provide shading and urban cooling to allow adaptation to increased temperatures and heat waves. They provide adaptation to increased rainfall and flooding by intercepting rainfall. The interception of rainfall allows more water to be absorbed into the ground providing groundwater recharge and thus adaptation to drought. Trees can improve air quality by removing particles and gases from the air (14). |
| Resilient building design  ©Building Green | Heat waves, flooding, sea level rise, air pollution, drought. | Buildings designed better to adapt to changing temperatures through installation of energy efficient air conditioning, window shading and tinting. Buildings can also be designed with air pollution filters, and ventilation to reduce indoor air pollution. Green walls can be a successful air pollution adaptation measure in city areas, as planting of large trees along narrow streets can obstruct wind flow, limiting their ability to absorb pollutants. Buildings can be designed with floor levels above the projected flood or sea level to adapt to flooding and sea level rise. Buildings can also be adapted to include water re-use/ recycle measures and water saving features such as automatic taps to adapt to drought. |
| Locating services  ©The Independent | Flooding, sea level rise. | Infrastructure services such as power supplies, property and transport links should be located in areas at less risk of flooding and sea level rise. |

## Appendix 4: Natural Capital Components and Impacts

Natural capital will be impacted in Cambridgeshire primarily through Growth and Climate Change.

*Summary of potential ways growth and climate change may affect natural capital*

| **Natural capital component** | **Example of benefit** | **How are climate change and growth expected to impact this area within Cambridgeshire?** |
|---|---|---|
| Flora / Fauna | Flora and Fauna provides us with numerous benefits such as:<br><br>Clean water<br>Clean air<br>Food (pollination)<br>Timber<br>Flood protection<br>Recreation (accessible green space/rights of way) | **Climate Changes** may have the following impacts<br>Severe or altered weather patterns causing damage to habitats and species<br>Earlier onset of seasonal events, resulting in disruption of ecosystem, with early migrations & mismatch of predator-prey relationships<br>Species distributions shifting northwards in response to warmer temperatures, resulting in loss of species at edge of their range but increase in southern / continental species (e.g. Great Green Bush Cricket), including new risks to local biodiversity, agriculture and health<br>Summer droughts result in significant impact on tree species, leading to changes in woodland structure and timber production<br>Higher temperatures are not suitable for crops grown within Cambridgeshire, impacting food security<br>Milder winters lead to increased microorganisms and insect populations which can adversely affect health and agriculture<br><br>**Growth** may have the following impacts:<br>Increased demand for food with a possible increase in the intensity of agricultural practices<br>Increased agricultural practices may reduce carbon storage and soil stability<br>Increased population may result in an increase in demand for, and an adverse impact on, existing green spaces and sensitive habitats and species<br>Fragmentation and isolation of habitats reducing ability for species to move through the landscape & adapt to climate change<br>Increase in light, air and water pollution affecting quality of habitat and species populations and their resilience to climate change |

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|---|---|---|
| Water | Fresh water is required for:<br>Drinking<br>Cooking<br>Cleaning<br>Irrigation (e.g. Farming)<br>Industrial uses e.g. Cooling<br>Wetland habitats | **Climate Change** may have the following impacts (24):<br>Impacts on hydrological processes, including changes in temperature, evaporation and precipitation. Impacting the availability of water resources<br>Increased drought conditions through the reduction in surface water and groundwater resources<br>Increase in the demand for water resources to grow crops and to maintain important protected habitats<br>Increased flood risk especially in terms of sudden and intense thundery showers<br><br>**Growth** may have the following impacts :<br>Demand for water will increase which may cause environmental damage to surface water and groundwaters<br>Increasing concentrations of pollutants in water bodies<br>Increases in impermeable areas leading to increased flood risk |
| Clean Air | Air provides the oxygen we need to breath. | **Climate Change** may have the following impacts:<br>Higher summer temperatures will increase potential for more atmospheric pollution<br>These pollutants include nitrogen oxides, particles, carbon monoxide and hydrocarbons<br>Air pollutants can travel great distances and cause harmful effects from a far<br>Pollutants being emitted into the atmosphere will have an impact on human health<br>Also impacting the surrounding natural environment<br><br>**Growth** may have the following impacts:<br>Exponential growth expected will result in a heavy reliance upon the use of fossil fuels to provide energy<br>There is a correlation between growth and the number of cars on the roads<br>This will in turn will reduce the quality of the air |

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|---|---|---|
| Heritage | Education/ understanding history of East Cambridgeshire<br><br>Provides our sense of community, identity and culture | **Climate Change** may have the following impacts:<br>Impacting preservation of the historic environment<br>Impacting the historic built environment (pollution)<br>Rise in water levels in fenland environments<br>Changes in agricultural practice rising from Climate Change<br>Impacts on land use viability refocussing development areas<br><br>It is worth pointing out that East Cambridgeshire has adapted to changing environments and Climate Change in the past, with rising and falling water levels in fenland environments influencing human interactions with those environments. We can see these actions through the historic environment.<br><br>Studying paleo-environments can help understand reactions to and environmental changes arising from Climate Change. These include an understanding gained through palynology and environmental responses to sea level rises. It also helps understand the nature and development of the peat deposits, the management of which is intrinsic to managing the district's carbon footprint.<br><br>**Growth** may have the following impacts:<br>Demand for land on new developments could lead to greater pressure on heritage assets |
| Green Infrastructure | Provides multi-functional uses (e.g. recreational, cultural experiences)<br><br>Clean water<br>Clean air<br>Food (pollination)<br>Timber<br>Flood protection<br>Recreation (accessible green space/rights of way) | **Climate Change** may have the following impacts:<br>Increased demand for green spaces due to increasing air temperature<br>Changes in water availability may cause damage<br><br>**Growth** may have the following impacts:<br>Increase in formal green spaces<br>Reduction in natural green spaces |

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|---|---|---|
| Minerals | Minerals provide raw material to build infrastructure and property. | **Climate Change** may have the following impacts:<br>Increased sea level rises could lead to mineral sites not being accessible and therefore capable of being worked<br>Increased water table could result in areas of the mineral resource being unable, or uneconomic, to be worked<br><br>**Growth** will have the following impacts:<br>Reduce the raw materials available for building / infrastructure through either the use of the mineral, or through sterilisation of the reserve by alternative development such as housing<br>Population increase may lead to intensification of agriculture which could in turn stop the underlying mineral being worked |
| Soils | High quality soils are essential for agriculture, carbon storage and habitat. | **Climate Change** may have the following impacts:<br>Reduction in soil quality for agriculture/flora/fauna<br>Decay of peat land<br>Reduction in carbon storage<br><br>**Growth** may have the following impacts:<br>Population increase may lead to intensification of agriculture which in turn may lead to increased use of pesticides and/or loss of natural habitat<br>Reduction in habitat for species |