

# Climate & Ecological Emergency - Action Plan

**Insert photo from Phil Sutcliffe (and throughout draft report)**

This Action Plan was produced by Square Gain Ltd



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# Foreword

perhaps by Cllr Tim Valentine/ Roger Truelove, Council Leader - TBC

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# Introduction

## **The need for change**

Greenhouse gases are present in the atmosphere, without which our planet would be too cold to support life. However, since the industrial revolution, human activities have significantly increased the amount of these gases, and particularly carbon dioxide (CO<sub>2</sub>) that are present in the atmosphere.

Over the past 50 years, the average global temperature has increased at the fastest rate in recorded history and the trend is accelerating. According to the World Meteorological Organization (WMO), the 20 warmest years on record have been in the past 22 years, with the top four in the past four years. The Intergovernmental Panel on Climate Change (IPCC) special report on Global Warming of 1.5°C reported that the past five years, 2014-2018, was 1.04°C above the pre-industrial baseline.

The scale of the challenge that climate change presents us with is unprecedented. The warming climate due to anthropogenic (originating from human activity) emissions, coupled with rapid biodiversity and ecosystem loss, is combining to create a mass extinction event that threatens or severely impacts all life on our planet.

The climate crisis is not something that any of us are insulated from, and the impact of climate change is already being felt across the globe. While major national and intercontinental organisations can plan for how we meet this challenge head on, action is incumbent on us all, across multiple systems, communities, organisations and individuals.

## **The opportunity for Swale**

As a council, Swale Borough Council recognises that with the scale, complexity and pervasive nature of the challenge, identifying which actions to take can be difficult, but we also recognise that the need for action is urgent, and that we must respond immediately to the climate and ecological emergency. This was recognised on 26<sup>th</sup> June 2019 when Swale Borough Council unanimously declared a Climate and Ecological Emergency (See Appendix I).

The declaration includes the commitment to

- take all measures within our control to make Swale Borough Council's own operations carbon neutral by 2025
- engage with businesses, organisations and residents to facilitate the action required to make the Borough of Swale carbon neutral by 2030.

- make space for nature as a key priority, and safeguard our wild places,
- ancient woodlands and hedgerows

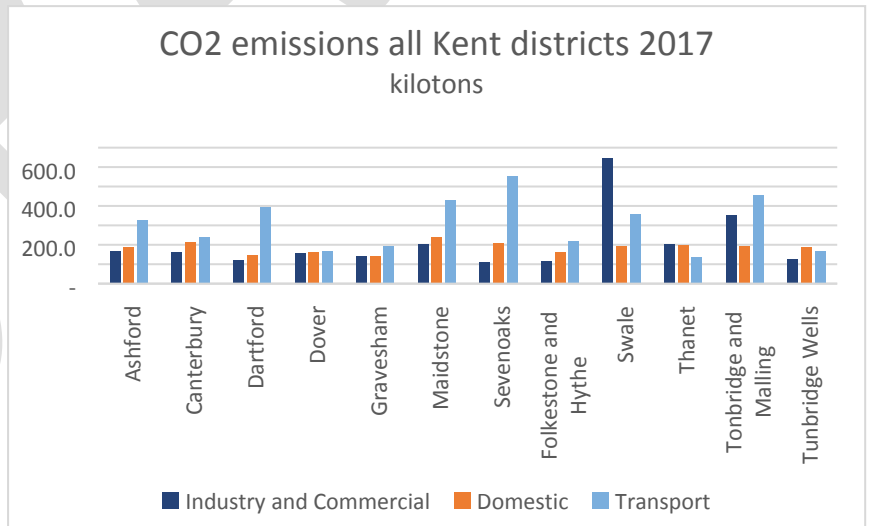
The scope of both of these commitments includes both production consumption emissions (scope 1, 2 and 3 carbon). The above commitments are Swale’s ‘overarching objectives’ under which sits this action plan, and a detailed delivery plan.

Researchers at the Tyndall Centre for Climate Change Research have developed a tool which local authorities can use to determine reductions. Inputting our details gives an annual reduction across the borough of between 13 - 25% reduction per year in order to achieve our targets

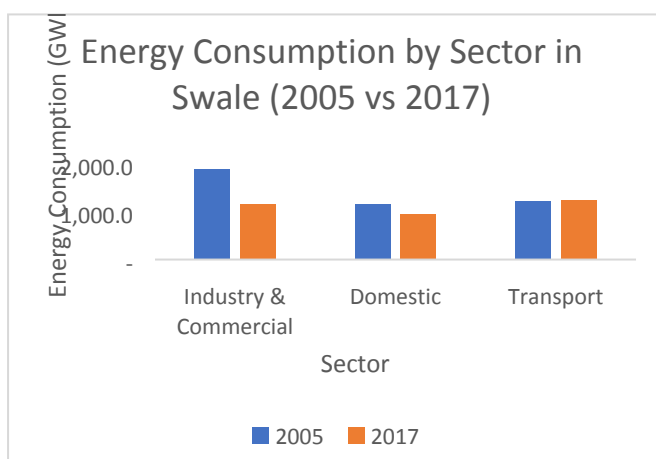
Latest figures on CO<sub>2</sub> emissions are released annually by the Department for Business, Energy and Industrial Strategy (BEIS). The latest figures, released in July, give us the data up until the end of 2017. Due to the nature of businesses in Swale, the district has always had high energy consumption and emissions compared with other Kent Districts.

In order to establish the activities required to achieve our targets we needed to understand the existing situation in both the council and the borough as a whole due to the nature of businesses in the borough, Swale has always had high energy consumption and emissions compared with other Kent Districts.

If we look at levels of emissions over the last 12 years, we can see an overall decrease across the borough, with the exception being in the Transport sector, which has hardly changed during the same period. In Swale 29% of emissions come from domestic properties, 32% from transport, and 39% are industrial and commercial emissions.



Source BEIS

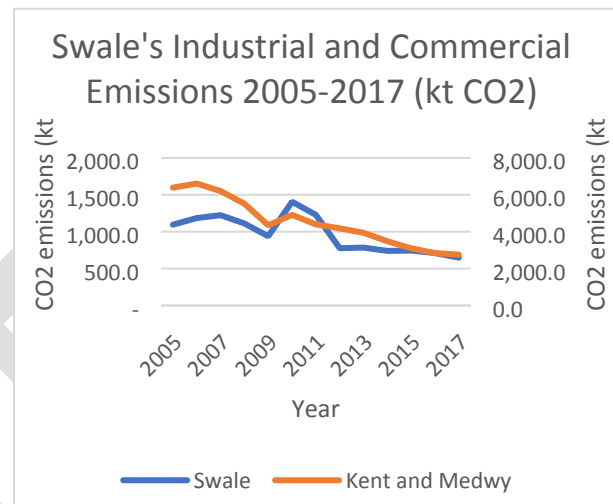


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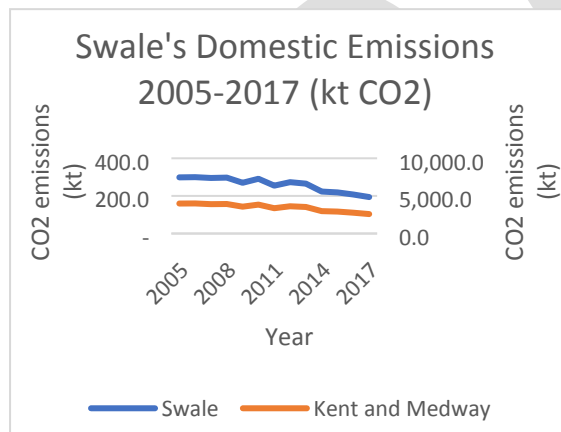
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come from domestic properties, 32% from transport, and 39% are industrial and commercial emissions.

At both borough and county level there has been a decrease in emissions from industry. Within Swale's industrial and commercial sector there has been a 41% decrease in CO<sub>2</sub> emissions between 2005-2017 with a steep fall to between 2010-2012, which has continued to decline overall. The 2017 total of 648.4kt CO<sub>2</sub> comprises 55% of the districts total CO<sub>2</sub> emissions.



Source BEIS



The average domestic electricity consumption per household in Swale was 3,909kWh in 2017, with the average mean consumption of 10,552kWh.

The mean gas consumption (domestic and non-domestic) in Swale in 2017 was 20,186GWh, higher than the Kent average of 18,389GWh. This is lower than in 2015 where the mean for Swale was 23,240GWh

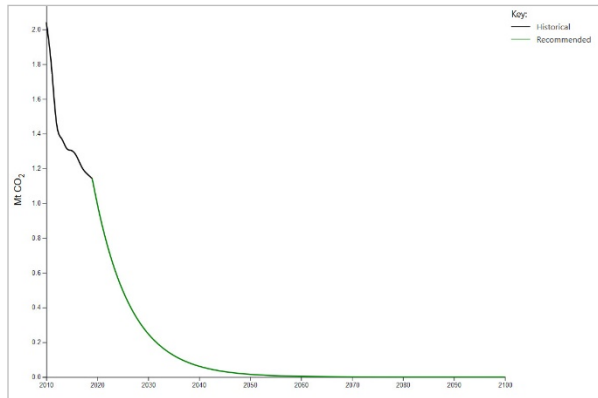
Source BEIS

Despite an overall downward trend in emissions they are not falling quickly enough to achieve our borough wide target of net zero carbon by 2030.

To become a carbon neutral council by 2025 and borough by 2030 is a considerably ambitious target which will require the council to work in partnership with a wide range of partners and all the residents of the borough. This creates great opportunities and the potential to realise significant economic, social and environmental benefits, including new businesses, jobs and improved quality of life for local residents.

The Carbon Trust report for Swale Borough Council (January 2020) recommended the following pathway to zero carbon for the borough:

- 13% cut in CO<sub>2</sub> emissions each year from 2020
- 81.1% reduction in annual emissions by 2030, offsetting 19.9% to achieve zero net carbon
- Zero or near zero by 2042



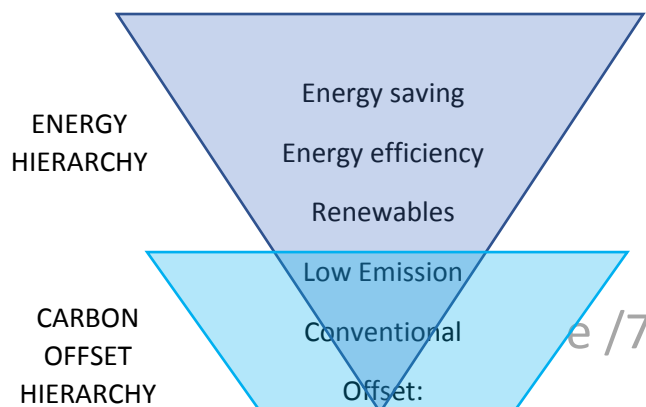
Both the UK Government and the Committee on Climate Change consider that this shift to a very low carbon energy future represents the best course for the UK's economic development.

It cannot be stated strongly enough that to meet the ambition of the motion by 2030 will be incredibly challenging. It is an ambition the Council is prepared to pursue in good faith and in endeavouring to achieve the goal will take us further than backing off this challenge. The evidence available shows that the scale of change is unprecedented. Global and national system change will be needed to support local system change.

This is a challenge where the totality of the solutions needed is not clear and the approach we take will be emergent. The council cannot provide all of the solutions, as combating climate change needs system wide change that involves communities, business, individuals and stakeholders across all sectors of the economy. Swale Borough Council's direct control over the emissions from Swale is minimal, at around 1% and there is recognition of the important role the council can play to stimulate and support climate action from others.

Given the scale of the challenge to achieve a net zero carbon goal it is likely that some future measures will entail radical steps that will require far reaching policy and societal changes. They will also rely on the measures taken at a national and international level to achieve an overall carbon reduction target. As was recognised in the declaration, the council cannot do this alone.

The scope of the Swale Borough Council zero net carbon commitment is all greenhouse gases determined as carbon dioxide equivalents (CO<sub>2</sub>e). For ease throughout this report we refer to CO<sub>2</sub>e as 'Carbon'.



**Zero net carbon** (also referred to as carbon neutral) means that the activity balances its energy use with its renewable energy generation, or carbon sequestration, and emits no 'net' carbon dioxide. This may be through 100% reduction of carbon using efficiencies and renewable technologies at the location, or could be using a **Carbon Offset**, which absorbs carbon or generates electricity without carbon emissions to achieve zero 'net' carbon emissions.

As well as reducing our carbon emissions to stop contributing to climate change, we also need to consider how we will ensure Swale is resilient, and adapts to the climate change that is predicted to occur based on previous carbon emissions.

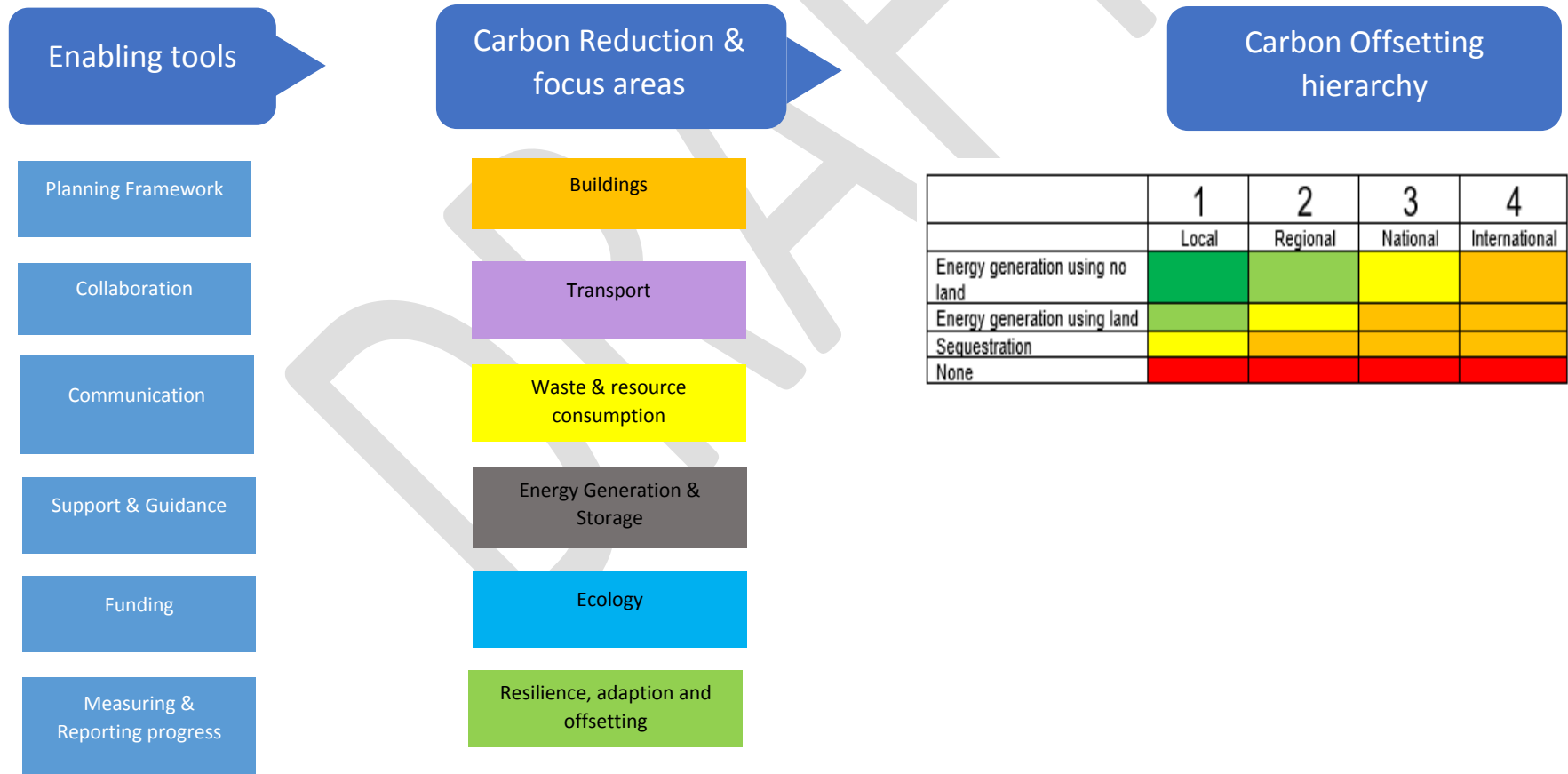
This Plan is not intended to provide a step by step response to how the key changes or outcomes set out in the declaration are to be achieved, but its purpose is to describe the initial pathways and process that will be engaged in order to achieve the outcomes.

This is a living plan and will evolve as needed and progress will be reported on an annual basis.



# Overall structure and carbon reduction focus areas

Swale Borough Council’s approach to tackling the Climate and Ecological emergency is to focus on the tools within its control and specific actions that it can take, in partnership with others, to focus on specific areas of carbon reduction. Residual carbon emissions will be secondary focus with a preference for offsetting within the boundary of the borough. Offsetting these residual carbon emissions, is important to achieve borough-wide net zero carbon by 2030, but will not actively be promoted over tackling and reducing carbon emissions at source.



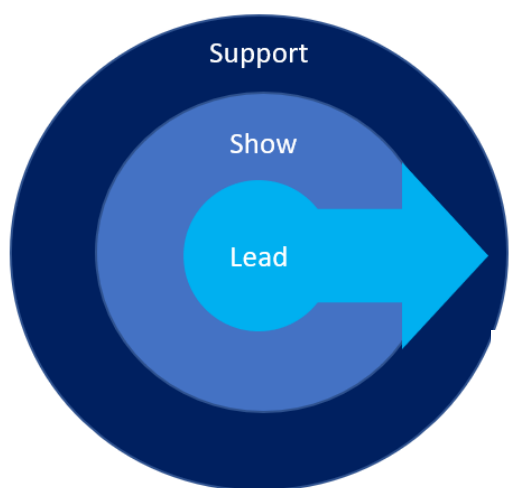
# Scope

The scope of the Swale Borough Council Climate and Ecological Emergency Action Plan incorporates all greenhouse gases (GHGs) and uses carbon dioxide equivalents (CO<sub>2</sub>e) as the unit of measure. For ease throughout this report we use the term 'carbon'.

Scope 1, 2, and 3 carbon emissions are included within the scope of our commitment, which means all carbon emissions resulting from activities undertaken in the borough, including the emissions from the supply chain in procurement, use, and eventual disposal.

Much of the resulting carbon emissions are outside the direct control of the council and it is vital that the council works with others to tackle the climate emergency.

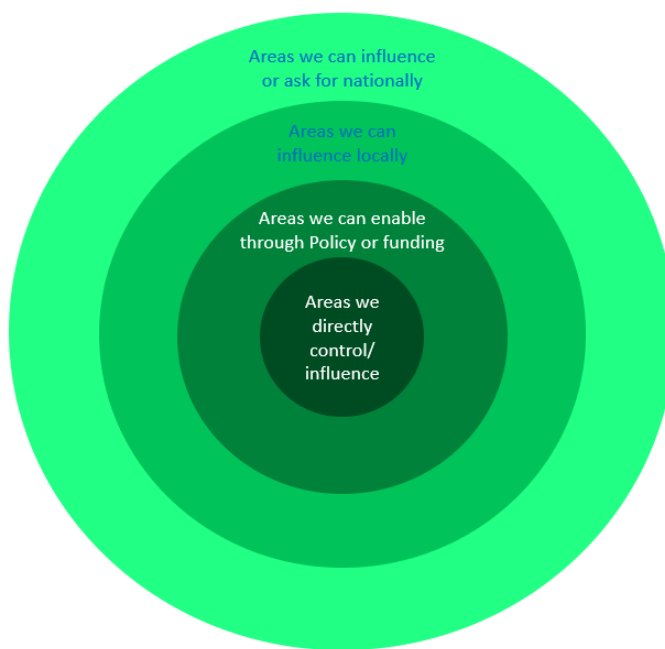
Climate crisis action is urgent and Swale Borough Council recognises the importance leadership, to rapidly build and maintain momentum and therefore has determined to establish itself as a beacon of best practice and learning, to stimulate and support borough wide action. A three-point framework has been developed to help prioritise actions:



1. **Lead:** Get SBC operations improved (as per the Carbon Trust action plan) and engage with local businesses and others that are already taking positive action on carbon.

2. **Show:** Use Swale House refurbishment and retrofit as a beacon of best practice for zero carbon, demonstrate and communicate positive actions of local businesses and others.

3. **Support:** Provide guidance, support and signposting to local residents and businesses including technical, and commercial 'How to Guides', use the new ultra-low carbon Swale House as a local green business incubator and use the building to help build zero carbon skills and capacity in the borough.

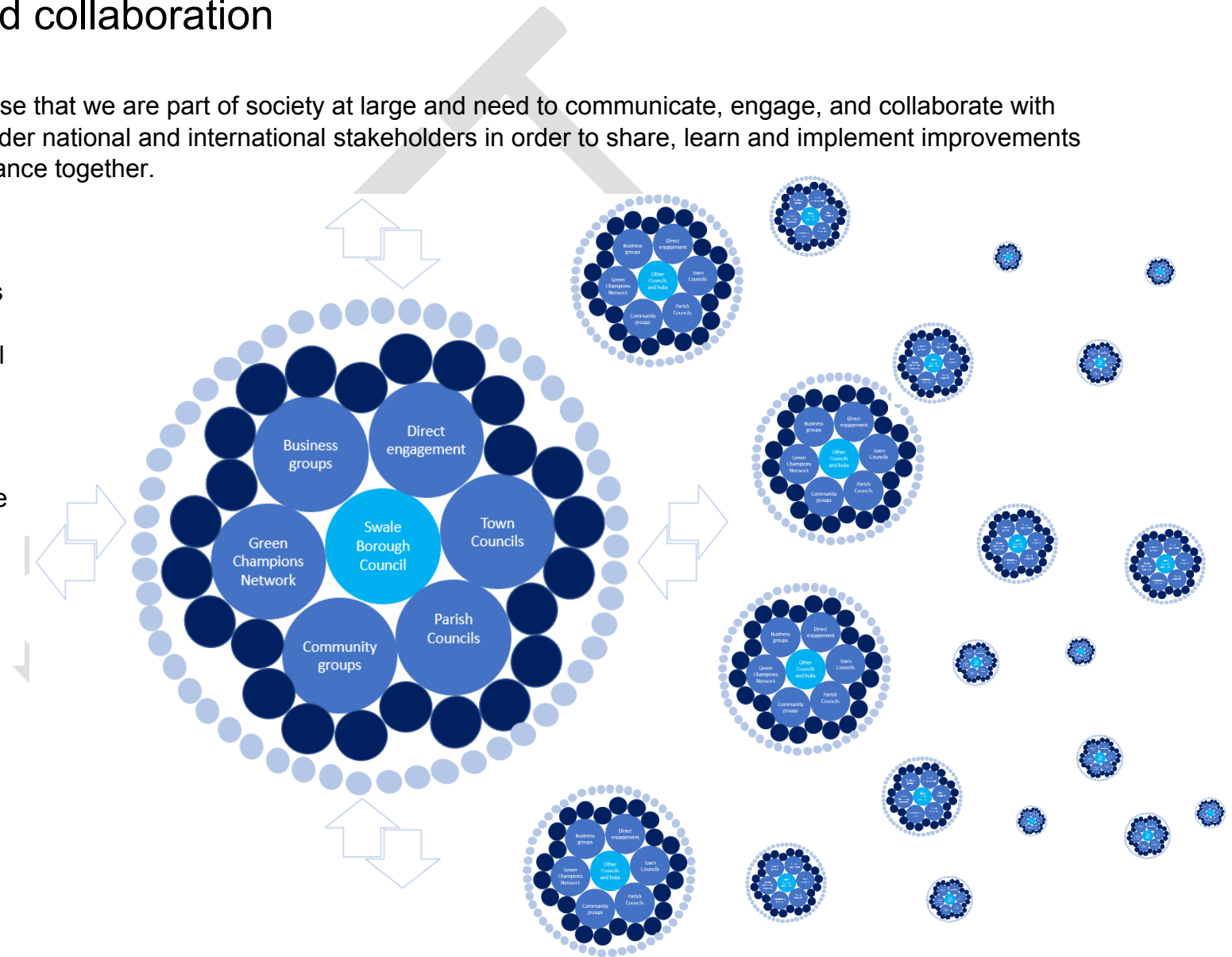


# Communication and collaboration

Swale Borough Council recognise that we are part of society at large and need to communicate, engage, and collaborate with many local stakeholders and wider national and international stakeholders in order to share, learn and implement improvements efficiently and improve performance together.

This is an interconnected support & learning network. The Swale network links with, is supported by and in-turn provides supports to, other local networks across Kent, the UK and internationally.

This mutually supportive network will help ensure that the climate and ecological emergency is tackled as effectively and efficiently as possible.



## Enabling tools – cross cutting themes and actions

Swale Borough Council recognises that there are cross-cutting actions that are needed to underpin the actions that are specifically targeted at the particular causes of carbon emissions. These are outlined below and build on the council's three-point framework of Lead, Show, Support.

Objective	Action	Timescale
	Actions Swale Borough Council can take	
	Rolling out a climate change skills / learning and development programme for staff to improve understanding of carbon and wider environmental context. The skills programme will include: <ul style="list-style-type: none"> <li>• Encouraging personal responsibility and roll out of a Green Champions Network.</li> <li>• Base level training for all employees</li> <li>• More targeted/ intensive training for organisational decision-makers to enable them to adequately assess carbon impacts in their decisions</li> </ul>	Short
	Sharing our knowledge – we will provide capacity to share our learning and approaches with others, such as Town and Parish Councils and community groups.	Short
	Agricultural policy is largely outside the remit of the council although, through planning policy and the implementation of green infrastructure requirements, there may be some opportunities to influence land management. A key role will however be in the promotion of low carbon food through council facilities and communication. This will need to involve the active promotion of vegan and vegetarian diets and, where meat is included in the diet, ensuring it is from extensive farming systems.	Medium

	Explore creating a climate offset fund through implementing an internal offset charge for council run. For example, this fund can be used for activities such as tree planting or installing energy efficient measures elsewhere.	Short
New idea	Investigate available tools to incorporate whole-life costing into Swale Borough Council's procurement process with support from finance. This knowledge can then be shared with local businesses and others.	Medium
New idea	Identify and align to national days of action to reinforce the message of collective action	Short
	Establish a Special Projects Fund has been set up to fund projects which will include those that help to tackle the emergency	Short

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## Buildings and energy efficiency

The direct emissions from Swale Borough Council's own offices at Swale House are significant and produce 13% of the council's own emissions (336 tCO<sub>2</sub>e).

### Current activities, actions and programmes

- Only 39% of Swale's homes are well insulated. Poorly insulated homes cost more to run, which is inefficient and contributes to fuel poverty. Swale needs to ensure all homes are properly insulated by 2030. Upgrading the insulation of 3,604 homes per year within the Swale area will ensure all homes are properly insulated by 2030, lifting as many people as possible out of fuel poverty.
- We also need to switch from gas central heating, which is a major source of greenhouse gases, to eco-heating (such as heat pumps), which doesn't burn fossil fuels. The government provides grants for installing eco-heating. There are only 128 government funded eco-heating systems in the Swale area, yet the UK needs to fit around 1 million per year. A fair share for Swale would be fitting 2,181 eco-heating systems every year

### Objectives

All new buildings in Swale are to achieve at least a 50% improvement based on the current building regulations, and this will increase to 75% improvement by 2025 and a 100% improvement by 2028 in order that all new buildings are zero net carbon by 2030.

### Opportunities and benefits

There are significant benefits for local developers to build new homes and other buildings in Swale and the council will work with these businesses to support them in the journey to achieving zero net carbon on their new developments.

## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
	The council is committed to making Swale House and all other council owned properties carbon neutral by 2025 by retrofitting efficient and renewable solutions.	Medium
New idea	Ensure the Council's own estate's energy efficiency is maximised through invest to save practices, such as using SALIX financing	Short
New idea	Ensure low cost technologies such as LED lighting are rolled out across the council estate, including parks and open spaces, as well as included in new developments, to reduce energy use.	Medium
New idea	Provide information and materials to educate and engage with citizens and businesses across the city on energy saving measures, which will also help to reduce fuel poverty across the borough	Short
New idea	Provide information and engage with citizens and organisations to encourage switching to renewable energy tariffs,	Short
	Encouraging high-quality, medium-high density dwellings near to transport nodes is vital, and could be supplemented by restricted/ zero parking, and EV pool-cars.	Medium
	Prior to the adoption of the new Local Plan (based on the Local Plan Review), develop and use Planning Conditions based on a 50% improvement on Building Regulations presently and ratcheting to 75% and 100% improvements by 2025 and 2028 respectively.	Short
	The Local Plan Review will investigate the potential to increase energy efficient standards in new homes and conversions/renovations. There are opportunities (regardless of the outcome	Short

	of the current Future Homes Standard) for the council to require that new domestic/ non-domestic buildings meet far higher standards regarding thermal transmission, air permeability, on-site renewables and favour full electric heating. These could be linked to specific requirements using assessment tools such as Home Quality Mark and BREEAM. This action is supported by the potential development of a Low & Zero Carbon Financial Viability Toolkit.	
	The council are considering the development of a financial viability model to ensure that the (rapidly changing) cost of low and zero-carbon technologies and techniques is accurately assessed (links to energy generation). This may include a range of actions developers can consider/incorporate into development plans to reduce their carbon impact (covering building materials, design and orientation, natural ventilation, landscaping and off-setting).	Short
New idea	Investigate setting up a pre-application advice service in regards to carbon standards and statements for future developments	Medium
New idea	Investigate the potential to set up an offset fund (106 Agreements) or allowable solutions mechanism for developers to pay into if a certain energy efficiency of buildings is not able to be, or best met, in the development and use this money for carbon saving projects	Medium
	Review Local Plan and incorporate recommended actions on Spatial land use strategy and integrated transport strategy, including focusing development in Swale's conurbations, in particular Sittingbourne, to utilise existing vacant sites and under-utilised sites within the settlement confines.	Short
	Provide information and materials to educate and engage citizens and businesses with low carbon sources of heating	Medium
New idea (service models)	Signpost householders to grant schemes for insulation and energy improvements, such as the Renewable Heat Incentive (RHI) and look into additional finances/funding opportunities for low carbon heating, including Heat or Energy as a Service models	Short



	Adequately insulate all homes in Swale by 2030 (3,604 homes per year), currently only 39% of Swale's homes are well insulated.	Long
	Bid for government and utility companies for retrofit funding	Medium
	Deliver fuel and water poverty advice service	Short
Clean Air	Develop an Air Quality Planning Technical Guidance document, including that for all developments all gas-fired boilers to meet a minimum standard of <40mgNOx/kWh	Short
Clean Air	Through the Local Plan Review, require that there is at least one Electric Vehicle charging point (best technology available at the time of planning approval) per dwelling with dedicated parking or 1 charging point per 10 spaces (unallocated parking)	Short
	Where standards or conditions exist for previous developments Swale Borough Council will consider checking, testing and enforcing these, for example, the performance gap between buildings designed energy use and actual energy use. This may also include reviewing past development's planning conditions, S106 Agreements (and other planning) commitments to scrutinize compliance (via Building Control Officers).	Medium
New idea	Enforce private rented and non-domestic Minimum Energy Efficiency Standards regulations	Medium
	Actions we can take in partnership with others	
	Retrofit 2,181 eco-heating (e.g. heat-pumps) systems every year to existing dwellings	Long
	Encourage data sharing of energy use by businesses (e.g. annually) - create league tables of improvement performance	Medium
New idea	Develop a package (e.g. Salix) to improve the efficiency of schools' (including items such as catering equipment), and switch to electric sources to allow for carbon neutral schools	Medium

New idea	Engage and collaborate with the private sector to improve the energy efficiency of privately owned buildings	Medium
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## Transport and air quality

In Swale CO<sub>2</sub> emissions from the transport sector have risen by 6% since 2014. Between 2005-2014 transport emissions had fallen by 7%. Between 2016 and 2017 Swale has seen a 0.21% increase in transport CO<sub>2</sub> emissions.

Currently only 24% of commuter journeys are made by public transport, walking or cycling – this needs to increase to 40% by 2030.

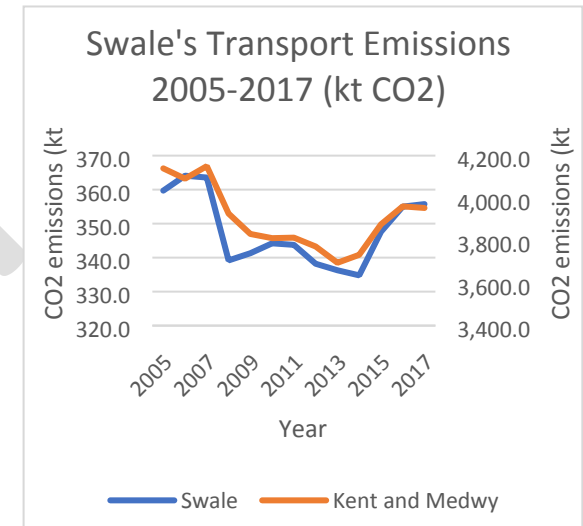
Much more is possible. Research shows that 22% of commuter journeys in Swale could be by bike (assuming good cycling infrastructure, such as segregated cycleways and the uptake of E-bikes<sup>12</sup>), better walking routes can encourage more journeys on foot and improve health, and 6 in 10 drivers would shift to public transport if its quality improved

According to research published in April 2019, the Swale area has 10 electric vehicle charging points (EV chargers). This puts Swale at mid-range across Kent. The Committee on Climate Change, which advises the government, says there should be 1 EV charger for every thousand cars by 2030. **This suggests that in Swale there should be at least 75 EV chargers. But we need a much faster transition to electric cars, which means many more EV chargers than this - Is there a SBC target for EV chargers across the borough? What is reasonable? 750 (1/100 cars)? 7500 (1/10 cars)?**

Swale Borough Council's own fleet transport emissions are 40 tonnes CO<sub>2</sub>e (<1.5% of the council's total carbon emissions). The furthest a fleet vehicle drives in a year is 17,000 miles, assuming operation 200 days of the year, yields a typical daily mileage of 85 miles. This is well within the range of a typical electric vehicle.

### Current activities, actions and programmes

Swale Borough Council's 2018 Air Quality Action Plan (AQAP), was approved by the Department for Environment, Food and Rural Affairs (Defra) in September 2019 and identifies key measures to improve air quality within all five of its declared AQMAs. Another example of positive engagement and outcomes is at Perry Court, Faversham where the SBC Planning Committee has successfully requested more renewable energy and energy-efficiency measures to be included in new developments. This includes



2 x 50Kw rapid chargers, a number of fast chargers, solar PV and the use of air-source heat pumps to heat a care home, hotel and supermarket.

## Objectives

We are seeking to make sustainable transport more attractive than any alternative, based on speed, cost, convenience and safety. The council seeks to develop an integrated transport strategy, favouring public transport and active transport. This could include interconnectivity and permeability to (existing and new) residential developments, pedestrianisation of the high street, interconnectivity between the high street and other retail areas, improving mass-transit, provision of bikeshare scheme (including electric), improved pedestrian and cycle routes and 20mph speed limits in key areas.

## Opportunities and benefits

- Improved air quality
- Reduction in carbon emissions
- More active local population
- Healthier local population
- Improved road and pedestrian safety

## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
	Purchase electric vehicles for Swale Borough Council's own fleet.	Short
	Amend council policy to reduce business travel emissions.	Short
New idea (home working)	Reduce the councils own commuting emissions through raising staff awareness, behaviour change smarter working practices and further encourage employers to implement home working or smarter working initiatives in order to reduce employees' travel time and distance travelled	Ongoing
	Encourage council employees to use technology, such as video conferencing, to reduce the need to travel,	Ongoing
40% of commuters walking, cycling or using public transport by 2030	Review Local Plan and incorporate recommended actions on Spatial land use strategy and integrated transport strategy, including favouring public transport and active transport	Short
	Promote work-place car chargers (Government funding available).	Medium
	Through the Local Plan Review, require that 10% of parking spaces in new developments are provided with Electric Vehicle charge points (best technology available at the time of planning approval) which may be phased with 5% initial provision and the remainder at an agreed trigger level	Short

60% of drivers to switch to public transport for commuting	<p>Use the Local Plan Review to require that where a development is for more than 50 residential units the following will be required -</p> <ul style="list-style-type: none"> <li>• Travel plan including mechanisms for discouraging high emission vehicle use and encouraging the uptake of low emission fuels and technologies</li> <li>• A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers</li> <li>• Car club provision within development or support given to local car club/EV car clubs</li> <li>• Designation of parking spaces for low emission vehicles</li> <li>• Improved cycle paths to link cycle network</li> <li>• Adequate provision of secure cycle storage</li> <li>• Using green infrastructure, in particular trees to absorb dust and other pollutants</li> </ul>	Medium
Major employers should aim to have 40% of their staff who travel to work by car, doing so by lift-sharing.	<p>Implement borough-wide differential parking charges depending on vehicle emissions</p> <ul style="list-style-type: none"> <li>• Public transport subsidy for employees</li> <li>• All commercial vehicles should comply with current European Emission Standards</li> <li>• Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies</li> <li>• Use of ultra-low emission service vehicles</li> <li>• Support local walking and cycling initiatives</li> <li>• On-street EV recharging</li> <li>• Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new developments</li> </ul>	Medium
	<ul style="list-style-type: none"> <li>• Contribution to low emission vehicle refuelling infrastructure</li> <li>• Low emission waste collection services</li> <li>• Bike/e-bike hire schemes</li> <li>• Contribution to renewable fuel and energy generation projects</li> <li>• Incentives for the take-up of low emission technologies and fuels</li> </ul>	Medium
	Incorporate a policy on Air Quality in the Local Plan Review	Short

	Work with KCC to develop the Swale Local Transport Strategy (to run in parallel to the Local Plan Review) and the promotion and facilitation of a major shift in priorities to public transport and active travel.	Short
Clean Air	Establish an anti-idling campaign, initially around school sites from which it can be expanded.	Short
	Develop and promote alternative sustainable transport solutions and health benefits of cycling and walking in both urban and rural landscapes	Short
	<b>Actions we can take in partnership with others</b>	
	Promote Business Fleet decarbonisation, including the potential cost and reputational benefits	Medium
	Improve the quality of public transport and make it more affordable, so that more people commute by public transport	Medium
Achieve 22% of all commuter journeys in Swale by bike	Work with KCC and others to improve cycleways, provide better walking routes, encourage the uptake of e-bikes.	Medium
	Work with KCC to implement 20mph limit across built up areas of borough as a cost effective and swift way to improve air quality, reduce health inequalities, lower carbon footprint and encourage active travel (following the implementation of a comprehensive 20mph zone in Faversham)	Medium
	Encourage the uptake of electric vehicle for journeys, that must be made by car, by providing the infrastructure for charging.	Long
	Undertake a feasibility study on implementing a Clean Air Zone along the length of the A2 from Brenley Corner to the western boundary with Medway.	Short

Clean Air	ECO Stars fleet recognition scheme - business case is for engaging and inviting new operators with key information on benefits to business, fuel savings and environment. At present Swale has 22 operators signed up.	Short
Clean Air	Working with other providers to provide low emissions bus services	Medium
Clean Air	Apply to Defra's Air Quality Grant Scheme for an electric bus (joint bid with Arriva our main local bus company).	Short
Clean Air	Local school and business travel plans – at present we have been working closely with schools to encourage them to sign up to the Kent Smarter Travel plans run by KCC. SBC is liaising with KCC departments to support adoption and improvement, and this links with the SBC Clean Air for Schools scheme.	Short
	Establish a tree planting strategy for schools (links with biodiversity)	Medium

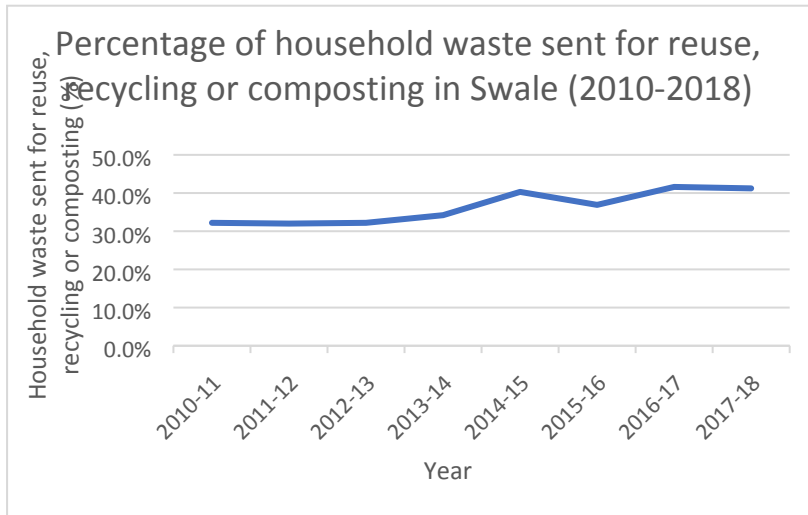
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# Resource consumption and waste

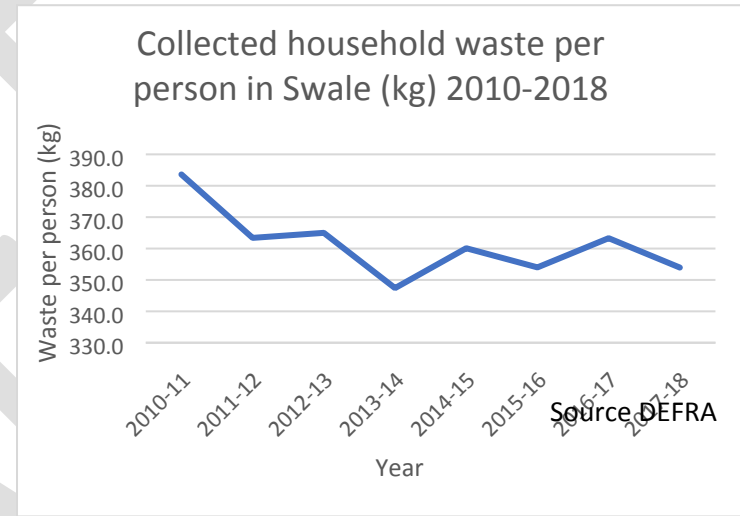
Domestic waste collection has fallen, and while recycling rates have risen, they are lower than our partners in the waste partnership.

A council wide Steering Group of key councillors and officers has been set up and meets regularly to progress actions.



## Domestic Waste

Swale Borough Council's own operations produced 54 tonnes of waste per year. Contracts for procured goods and services produce 78% of Swale Borough Council's own direct carbon emissions (2,017 tCO<sub>2</sub>e) annually. Of this, **the waste contract accounts for 59% of emissions.**



## Current activities, actions and programmes

Baselines of performance have commenced. Initial progress is being made, for example as part of the council's commitment to eliminate single use plastic, by substituting plastic envelopes with compostable envelopes.

## Objectives

41% of household waste is reused, recycled, or composted. When waste is not reused, recycled or composted, it may end up burnt, in landfill or even in our waterways and seas. **Swale should aim to be on the path to zero waste.**

## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
Eliminate single-use plastics from the Council's operations by 2021	Audit of the council's own plastic use explore replacement products.	Short
	Swale Borough Council is working with Plastic Free Faversham regarding reduced plastic use at events, for example the Faversham Hop Festival.	Short
New idea	Reduce food waste at source and increase food waste recycling rate.	Medium
New idea	Investigate options for additional food waste collections in alignment with the national waste strategy.	Medium
New idea	Increase range of edible fruits, flowers and vegetables in Council owned parks, rooftops, and open spaces (links with biodiversity).	Medium
Water	Work towards setting challenging and ambitious goals to reduce water leakage (links to resource consumption and waste).	Short
	Actions we can take in partnership with others	
New idea	Reduce consumption of high carbon foods. Develop education and outreach programmes to reduce meat consumption/increase plant-based diets, including at schools, business canteens and wider.	Medium

New idea	Work with partners to reduce the carbon impact and overall sustainability of food choices, for example meat and dairy.	Medium
New idea	Explore carbon reduction opportunities in the procurement of food items, by getting suppliers to present lifecycle/carbon assessments and look to adopt appropriate standards.	Medium
New idea	Explore the opportunities for Anaerobic Digestion to produce clean energy, deal with waste, and produce resources. This may include the opportunity for commercial food waste collection and potential for Anaerobic Digestion.	Medium
New idea	Research a business plan to move towards a near-to closed-loop service in which food waste can create compost (maybe power through Anaerobic Digestion eventually) to grow veg locally.	Short
New idea	Enable more citizens and businesses to understand how to reduce their food waste through buying, storing, preparation and cooking.	Short
New idea	Work with partners to develop and support sharing platforms and libraries to reduce the need for individual ownership of goods that have occasional usage e.g. garden equipment and power tools.	Medium

## Ecology and biodiversity

Biodiversity net gain is now a requirement within the National Planning Policy Framework (NPPF), and new development will need to demonstrate how this has been achieved.

Existing policies on landscape and biodiversity in the local plan are robust, nevertheless these will be reviewed in light of updated policy, guidance and best practice. A recent review of AONBs suggests they are well situated to be the focus for nature recovery and climate change mitigation and form the backbone of the Nature Recovery Networks. With part of the North Downs AONB within Swale we are well placed to work with the AONB unit on this.

Kent Nature Partnership (KNP) Biodiversity Strategy 2019-2044 – Swale has a representative on the countrywide environmental steering group. The strategy is nearing completion. The review commenced in May 2018 through KNP and in February 2019 the initial draft underwent information consultation with the wider KNP network. Public consultation ran from 24 June to 1 September 2019. The aim of the strategy is to deliver over 25 years the restoration and creation of habitats that are thriving (wildlife and plants) ensuring Kent's terrestrial, freshwater, intertidal and marine environments regain and retain good health. Key goals are: Terrestrial Habitats, Ecosystems and Species; Marine Habitats, Eco systems and Species; Freshwater and Intertidal Ecosystems and Species and Connecting People with the Natural Environment

Swale needs to more than double our tree cover by 2030. According to the Government's National Forest Inventory (NFI) 8% of the Swale area is woodland. Trees play an important role in sucking the main greenhouse gas carbon dioxide from the atmosphere and storing it as carbon. They also provide a home for nature, clean up air pollution and reduce flood risk.

### Current activities, actions and programmes

There are many existing networks working on the ecological and biodiversity agendas within Swale and these groups, such as the Green Grid Network are highly active and engaged in Kent-wide initiatives and those further afield.

### Objectives

To improve development outcomes which support and improve people and places, access and recreation, connectivity and green spaces and the natural and built environment. This includes that Swale needs to more than double our tree cover by 2030. According to the Government's National Forest Inventory (NFI) 8% of the Swale area is woodland. Trees play an important role in

sucking the main greenhouse gas carbon dioxide from the atmosphere and storing it as carbon. They also provide a home for nature, clean up air pollution and reduce flood risk.

### Opportunities and benefits

Ecology, biodiversity and green space are vital to both mitigating climate change and to helping us to adapt to the inevitable climate change that is built-in due to historic carbon emissions. We rely on these assets for our quality of life, provision of food and water and our very survival. Protecting and enhancing these assets is vital.

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## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
New idea (SPD)	To use planning policy to improve development outcomes which support and improve people and places, access and recreation, connectivity and green spaces and the natural and built environment, including the use of supplementary planning document to ensure a consistent approach for developers to take up protection and enhancement measures of key biodiverse areas	Short
	Lobby and engage KCC to support place shaping - highways network and urban streetscape schemes - to mitigate for climate change by increasing tree and hedge planting supported by appropriate management which measures and promotes sequestration	Medium
	Establish a baseline of Council owned trees and woodland across Swale and deliver a funded action plan to support implementation of the Council's Tree Strategy increasing tree cover in Swale and promoting the benefits of sequestration. - According to the Government's National Forest Inventory (NFI) 8% of the Swale area is woodland. Trees play an important role in sucking the main greenhouse gas carbon dioxide from the atmosphere and storing it as carbon. They also provide a home for nature, clean up air pollution and reduce flood risk.	Medium
	Ensure the installation and maintenance of Green Infrastructure via the Local Plan and suitable conditions or Section 106 agreements in subsequent developments	Short
	Ensure the Local Plan provides for linking habitat restoration and creation to improved access, flood protection and water quality	Short
	Protect the most productive agricultural land to allow conversation to production of crops for local consumption	Short

	Support development of horticultural business	Medium
	Support glass houses and poly tunnels for growing of crops for local production	Medium
	Ensure appropriate housing for agricultural and horticultural workers	Medium
	Through the Environment Health function, work to prevent importation of pest, diseases and non-native species through Sheerness Docks	Short
	Ensure eradication of non-native plants on council owned or council managed land	Short
New idea	Increase range of edible fruits, flowers and vegetables in Council owned parks, rooftops, and open spaces (links with consumption)	Medium
New idea	Reduce use of fertilizers by increased use of locally produced compost and local allotment growing (links with consumption)	Medium
	<b>Actions we can take in partnership with others</b>	
New idea	Utilise the Green Grid Network as a catalyst for communicating and implementing climate action in local communities.	Short
	Develop new community groups for public spaces to support community conservation and destination development	Medium
	Work with partners to promote forest and beach schools to, but not exclusively, local schools	Medium
	Work with partners, where possible, to support Clean Up campaigns in urban and rural locations	Medium

	Support Swale in Bloom working with community groups, voluntary groups and Town and Parish Councils to enhance local habitats and wildlife corridors improving biodiversity conditions across Swale	Medium
	Continue to work closely with and share best practice with our Green Grid partners, with the Medway Swale Estuary Partnership, Kent County Council and others.	Short
New idea	Investigate the potential for using Supplementary Planning Documents to maximise carbon sink potentials	Medium
New idea	Investigate the use of parks and open spaces to offset carbon for individuals and local businesses emissions	Medium
New idea	Use offsetting practices (e.g. tree planting) as an educational opportunity for local residents and schools about the issues we face and the available solutions	Medium
	Establish a tree planting strategy for schools (links with air quality)	Medium



## Energy generation and storage

The renewable energy generated by the London Array comes ashore in the borough of Swale, which generates over 2,000,000MWh of electricity per year, although this does not contribute towards the borough's renewable energy generation as it is already accounted for as part of decarbonising the grid.

In Swale at the end of 2017 there were 1,628 installation sites producing renewable electricity in Swale, 99.3% of these installations were photovoltaic. The majority of these were domestic roof top installations. In terms of the actual renewable energy generated across the borough (and excluding the London Array), photovoltaics produced around 27%, onshore wind produced 11%, sewage gas and landfill gas produced around 1% each and by far the largest producer was plant biomass, which produced 61% from the plant located on the Isle of Sheppey.

As of September 2019, logged on the public database (BEIS Regional Renewable Statistics) there are the general facility details for 12 operating renewable energy sites – seven are solar PV sites, four are onshore wind and one is a dedicated biomass site. Swale also has two domestic wind installations.

The Smart (electricity) Export Guarantee came into force in January 2020 enabling domestic and small-scale renewable energy generators to be paid for energy fed into the grid. This includes the following technology types up to a capacity of 5MW, or up to 50kW for Micro-CHP:

- Solar photovoltaic (solar PV)
- Wind
- Micro combined heat and power (CHP)
- Hydro
- Anaerobic digestion (AD)

The Renewable Heat Incentive (RHI) is a government scheme that aims to encourage the uptake of renewable heat technologies amongst householders, communities and businesses through financial incentives. Between April 2014 and April 2019, 128 domestic installations have been accredited in Swale – 11% of Kent and Medway's total.

## Current activities, actions and programmes

Swale Borough Council is committing to installing micro generation on it's own buildings and is proactive in communicating the benefits of similar installations to local businesses and residents.

## Objectives

Swale Borough Council seeks to encourage developments which utilise renewable and low carbon energy sources, and as stated in the Local Plan 2017, give priority to development on previously developed land or buildings and proposals which incorporate renewable, decentralised and low carbon energy as integral to new commercial or residential schemes

## Opportunities and benefits

Renewable energy generation within the borough is a key component of how Swale will achieve zero net carbon emissions by 2030.

## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
	Sign up to Solar Together Kent	Short
New idea	Consider establishing a council owned energy company	Medium
	Use the Local Plan Review to investigate the potential to introduce minimum requirements for on-site renewables on new developments.	Short
New idea	Perform a viability survey at all existing council owned sites (structures under parks remit) to potentially accommodate further solar PV wherever possible with shared surplus income towards sustaining parks and open spaces.	Medium
New idea	Increase local renewable electricity generation and map out the potential across buildings and sites (for example Google maps provides this ability but is not yet available in the UK - <a href="https://www.google.com/get/sunroof">https://www.google.com/get/sunroof</a> )	Medium
	Actions we can take in partnership with others	
New idea	Increase electricity storage locally, through communicating benefits, understanding financial and business cases	Long
New idea	Increase thermal storage (e.g. hot water and ground inter-seasonal storage) for greater maximisation of local energy generation	Long
New idea	Create a roadmap and platform for private, municipal, co-operative and community developments to align in one energy system	Medium

New idea	Investigate a pilot programme to use new technology such as virtual private wire technology to balance between energy generation, storage and use within the borough as part of achieving net zero carbon.	Medium
New idea	Develop Swale as an area where innovative new technologies can be tested e.g. micro-wind, fuel cell, pumped storage. This could link with the retrofit of Swale House and the establishment of a incubator for innovative local green and low carbon companies.	Medium
New idea	Increase in community and cooperative energy projects	Medium

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## Resilience, adaptation and offsetting

The effects of the changing climate are already impacting on Swale and adaptation measures are already being implemented. Many of these are considered in the existing Local Plan (2017) and will be further considered in the going review.

Climate change brings many impacts to the borough of Swale. The UK Climate Impacts Programme (UKCIP) 2018 projections are that by 2080 we are likely to have

- Hotter summers with an increase in average summer temperature of 2-3°C by 2040 and 5-6°C
- Warmer winters with an increase in average winter temperature of 1-2°C by 2040 and 3-4°C
- Drier summers with a reduction in average precipitation of 20-30% by 2040 and 30-50%
- Wetter winters with an increase in average precipitation of 10-20% by 2040 and 20-30%
- Sea level is projected to rise by up to 0.3m by 2040 and 0.8m

These in turn present a number of risks, including

- Risks to health, wellbeing, productivity and infrastructure from high temperatures
- Flooding and coastal change risks to communities, businesses and infrastructure
- Risk of storm events/ intense rainfall impacting productivity and transport infrastructure
- Risks of shortages in the public water supply and for agriculture, energy generation and industry
- Overheating, flooding, drought and coastal change risks for natural capital
- Soil erosion and slope destabilisation as a result of flooding and drought, impacting infrastructure, natural environment and productivity
- Risk of new and emerging pests and disasters and invasive non-native species affecting people and biodiversity, and likely to affect Kent (first in the UK) in the future

Researchers have identified over 10,000 neighbourhoods across the UK where people are particularly vulnerable to flooding due to their location and factors such as income. Swale has 52 of these neighbourhoods with high social flood risk for surface flooding,

taking account a range of vulnerability factors. The local authority needs to target these areas for support in order to help people living there prepare for extreme weather and respond and recover when it occurs.

### Current activities, actions and programmes

The planning for adaptation that is already taking place in the borough should be extended by encouraging and enabling local communities to discuss local impacts and adaptation measures. The most effective way of doing this requires further consideration. One option may be to organise a workshop for local community groups, and Parish and Town Councils, focusing on local resilience building. Thought will need to be given to how this sort of initiative links with actions to mobilise stakeholders to engage with carbon reduction measures.

### Objectives

Ensure that the borough is robustly prepared for a changing climate and that robust adaptation measures are implemented to ensure resilience for all.

### Opportunity and benefits

Adapting to the changing climate is a dynamic policy area for government. Plans and strategies to deal with the changing climate are being developed by several government agencies and are brought together in The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting: Making the country resilient to a changing climate (Defra July 2018).

## Action Plan

Objective	Action	Timescale
	Actions Swale Borough Council can take	
	Incorporate a policy on Climate Change Adaptation in the Local Plan Review	Short
New idea	Determine an indicative price for offsetting carbon (the majority of Local Planning Authorities are currently using a price of £60 per tonne).	Short
	Regularly update the Emergency Plan for the borough and in partnership with the County Council	Short
	Ensure the Local Plan reflects the level of current and future flood risk	Short
	Continue to implement measures through the borough to moderate water flows and support recharge of aquifers	Short
	Make sure that decisions on land use, including development, reflect the level of current and future flood risk;	Medium
	Boost the long- term resilience of our homes, businesses and infrastructure;	Medium
	Take action to reduce the risk of harm from flooding and coastal erosion including	Medium
	Greater use of natural flood management solutions;	Medium
	Include flood risk as a key feature of adaptation reporting from infrastructure	Medium
	Regularly update the Emergency Plan for the borough and in partnership with the County Council	Short

	Ensure the Local Plan reflects the level of current and future flood risk	Short
	Deliver more, better quality and well -maintained local Green Infrastructure	Medium
	Ensure the Local Plan provides for linking habitat restoration and creation to improved access, flood protection and water quality	Short
	Ensure the installation and maintenance of Green Infrastructure via the Local Pan and suitable conditions or Section 106 agreements in subsequent developments	Short
Water	Work to restore natural processes within river systems to enhance water storage capacity;	Medium
Water	Continue to implement measures through the borough to moderate water flows and support recharge of aquifers	Short
Land management	Introduce a new Environmental Land Management scheme which will deliver environmental outcomes	Medium
Land management	Develop and start to implement a Nature Recovery Network, linking habitat restoration and creation to improved access, flood protection and water quality	Medium
Land management	Incentivise good soil management practices that enhance soil's ability to deliver environmental benefits through future environmental land management schemes	Medium
Land management	Introduce a sustainable fisheries policy as we leave the Common Fisheries Policy and prepare marine plans that include policies for climate adaptation	Short
Land management	Build ecological resilience on land, in our rivers and lakes and at sea	Long
Land management	Protect soils and natural carbon stores.	Medium



Food supply & security	Ensure a food supply chain which is resilient to the effects of a changing climate	Medium
Food supply & security	Review and publish the updated UK Food Security Assessment	Short
Food supply & security	Protect the most productive agricultural land to allow conversation to production of crops for local consumption	Short
Food supply & security	Support development of horticultural business	Short
Food supply & security	Support glass houses and poly tunnels for growing of crops for local production	Short
Food supply & security	Ensure appropriate housing for agricultural and horticultural workers	Medium
Invasive species	Manage existing plant and animal diseases and lower the risk of new ones; Tackle invasive non-native species.	Medium
	Through the Environment Health function, work to prevent importation of pest, diseases and non-native species through Sheerness Docks, and ensure eradication of non-native plants on council owned or council managed land	Medium
	<b>Actions we can take in partnership with others</b>	
Flood risk reduction	Work with the Environment Agency to increase leverage of national funds available to manage flood risk in communities across Swale.	Medium
Flood risk reduction	Continue to work with the Environment Agency and Internal Drainage Board to minimize the long-term risk of flooding	Short
Flood risk reduction	Work with the Environment Agency to increase leverage of national funds available to manage flood risk in communities across Swale.	Medium
	A Fuel and Water poverty outreach service giving tailored advice to households in fuel and water poverty is in March 2020	Medium

	Continue to work with the Environment Agency and Internal Drainage Board to minimize the long-term risk of flooding	Short
	Work with infrastructure operators included in the third cycle of adaptation reporting to outline risks posed to their productivity from climate impacts	Medium
	make sure everyone is able to access the information they need to assess any risk to their lives, livelihoods, health and prosperity posed by flooding and coastal erosion;	Medium
	Bring the public, private and third sectors together to work with communities and individuals to reduce the risk of harm – particularly those in vulnerable areas;	Medium
	Adapt our health systems to protect people against the impacts of climate change, such as ensuring all clinical areas in NHS Trusts have appropriate thermal monitoring in place	Medium

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# Appendix I- Swale Borough Council's Declaration of Climate and Ecological Emergency

A Climate and Ecological Emergency was unanimously declared by Swale Borough Council on 26 June 2019 which committed:

1. To declare a 'Climate and Ecological Emergency'.
2. To draw up an action plan with improvement in energy efficiency and making space for nature as key priorities in all strategies and plans.
3. Pursue the Swale Strategic Air Quality Action Plan 2018-22 and to actively lobby all responsible authorities to improve air quality within Swale.
4. To provide leadership by taking all measures within our control to make Swale Borough Council's own operations carbon neutral by 2025, taking into account both production and consumption emissions (scope 1, 2 and 3).
5. To engage with businesses, organisations and residents to facilitate the action required to make the Borough of Swale carbon neutral by 2030, taking into account both production and consumption emissions (scope 1, 2 and 3).
6. To undertake actions including, but not be limited to, spatial and transport planning to make fewer journeys necessary, improvement to the energy efficiency of new and existing housing and buildings, improved public transport especially in rural areas; encouraging active transport, developing the infrastructure for EVs; deploying renewable energy at every opportunity, while continuing to safeguard our wild places, ancient woodlands and hedgerows
7. To call on Westminster to provide the powers and resources to make the 2030 target possible.
8. To call upon the MPs for Sittingbourne & Sheppey and for Faversham & Mid Kent to support this motion.
9. To work with other governments (both within the UK and internationally) to determine and implement best practice methods to limit global warming to less than 1.5°C.
10. To work with partners across the Borough to deliver these new goals through all relevant strategies and plans.
11. To become a 'Plastic-Free Council' by eliminating single-use plastics from the Council's operations, whenever possible, by 2021.
12. To request the Cabinet, working through the Policy Development and Review Committee, to report the actions the Council will take to address

- this emergency to Full Council by the end of the 2019/20 municipal year.
13. In meeting this pledge, the Council will take steps to avoid any adverse impacts on our most vulnerable residents.
  14. This Council pledges to produce in January of each year, between now and 2030, an annual report detailing the council's progress against Swale's carbon neutral action plan, enabling members, residents and other stakeholders to hold the council to account for the delivery of this pledge.

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## Appendix II - Adopted Local Plan and Local Plan review

The 2017 adopted Local Plan, Bearing Fruits 2031's no. 1 Core Objective is to 'Adapt to climate change with innovation, reduced use of resources, managed risk to our communities and opportunities for biodiversity to thrive'. Furthermore, policy ST 1, Delivering sustainable development in Swale, sets out that 'to deliver sustainable development in Swale, all development proposals will, as appropriate .... Meet the challenge of climate change, flooding and coastal change through a) the promotion of sustainable design and construction, the expansion of renewable energy, the efficient use of natural resources and the management of emissions b) the management and expansion of green infrastructure and c) applying planning policies to manage flood risk and coastal change. A range of other policies across the plan also seek to mitigation and adapt to the challenges of climate change.

The 2019 National Planning Policy Framework (NPPF) defines the purpose of the planning system as to contribute to the achievement of sustainable development with three overarching objectives – economic, social and environmental. The environmental objective includes mitigation and adaptation to climate change, including moving to a low carbon economy. As such climate change is an important element running through the adopted local plan and through national planning policy.

The Local Plan is currently being reviewed and the Local Plan Review is due to be adopted in April 2023. In order to reflect the increased importance of climate change in the public, governments and Swale Borough Council's priorities (i.e. as reflected in the declaration of a Climate and Ecological Emergency) its importance will need to be elevated in the Local Plan Review. As such Climate Change and the Ecological Emergency will be a golden thread running through the Local Plan Review.

The key action is for Swale Borough Council to review and update all adopted Local Plan policies, with particular reference to:

- a) ST 1 – Delivering sustainable development
- b) ST 3 – The Swale settlement strategy (Strategic Housing Land Availability Assessment and Settlement Hierarchy study already underway)
- c) CP 2 – Promoting sustainable transport (see reference below to Swale Local Transport Strategy and major shift to promotion of public transport and active travel)

- d) CP 4 - Requiring good design (update likely to include reference to Building for Life standard and best urban design requirements – with cross referencing to policy DM 19)
- e) CP 7 – Conserving and enhancing the natural environment – providing for green infrastructure (update likely to include specification of new blue and green infrastructure to improve habitat connectivity objectives and the Nature Recovery Network)
- f) DM 6 – Managing transport demand and impact (see CP 2)
- g) DM 7 – Vehicle parking (SPD on vehicle parking in preparation)
- h) DM 19 – Sustainable design and construction (update likely to include specification of Home Quality Mark and BREEAM standards. Furthermore, a Supplementary Planning Document on Sustainable design and construction is likely to be prepared alongside the Local Plan Review)
- i) DM 20 – Renewable and low carbon energy (update likely to include renewable energy requirement for development (including retrofitting) and specific energy standards for new buildings)
- j) DM 21 – Water, flooding and drainage (Strategic Flood Risk Assessment near complete and Planning Policy team will continue to work with KCC on best practice sustainable drainage)
- k) DM 28 – Biodiversity and geological (update will include requirement for measurable biodiversity net gain)
- l) DM29 – Woodlands, trees and hedges (Supplementary Planning Document on Woodlands, trees and hedges to be prepared alongside Local Plan Review)
- m) DM 31 – Agricultural land

## Appendix III - Glossary

Abatement	Refers to reducing the degree or intensity of greenhouse-gas emissions.
Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities
Afforestation	Planting of new forests on lands that historically have not contained forests.
Anaerobic digestion (AD)	AD is a sequence of processes by which microorganisms break down biodegradable material in the absence of oxygen. The process is used for industrial or domestic purposes to manage waste or to produce fuels
Anthropogenic greenhouse emissions	Greenhouse-gas emissions resulting from human activities.
BAU	Business as Usual. Future emissions trend if the current state of affairs continue as they are today
BEIS	UK government department of Business, Energy and Industrial Strategy
Biodiversity	The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.
CO <sub>2</sub>	Carbon dioxide, which is the most significant long-lived greenhouse gas in Earth's atmosphere. Since the industrial revolution anthropogenic emissions – primarily from use of fossil fuels and deforestation– have rapidly increased from pre-industrial levels of 280ppm to a concentration of about 410ppm by volume. Carbon dioxide also causes ocean acidification because it dissolves in water to form carbonic acid.
CO <sub>2</sub> e	Carbon dioxide equivalent. measures for estimating how much global warming a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration of carbon dioxide as the reference. For the purposes of this report we refer to carbon dioxide equivalent simply as 'carbon'.
Carbon Budget	The maximum amount of carbon dioxide that can be emitted to be in line with keeping temperatures well below 2oC and pursue a 1.5oC limit to rising temperatures

Carbon neutrality	Achieving net zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount sequestered or offset
Carbon sequestration	The process of removing carbon from the atmosphere and depositing it in a reservoir
Climate	Climate is typically defined as the average weather (or more rigorously a statistical description of the average in terms of the mean and variability) over a period of time, usually 30 years. These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.
Climate change	The long-term change of climate, typically measured over decades or longer. This is different to weather, which is now.
Climate extreme (extreme weather or climate event)	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use
Climate Change	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.
Climate change risk	Additional risk to investments (such as buildings and infrastructure) and actions from potential climate change impacts.
Committee on Climate Change	The Committee on Climate Change is an independent body established under the Climate Change Act (2008) that advises the UK Government on setting and meeting carbon budgets and on preparing for the impacts of climate change.



Climate scenario	A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed current climate.
Ecosystem	Community of living organisms and the natural environment
Emissions scenario	A plausible representation of the future development of emissions of substances that are potentially radiatively active (e.g., greenhouse gases, aerosols), based on a coherent and internally consistent set of assumptions about driving forces (such as technological change, demographic and Socio economic development) and their key relationships. Concentration scenarios, derived from emissions scenarios, are used as input to a climate model to compute climate projections.
Flood	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods, and glacial lake outburst floods.
Global Warming	Increase in temperature of the Earth's atmosphere over long timescales, caused by increased levels of greenhouse gasses
Greenhouse gasses (GHGs)	The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ) and nitrous oxide (N <sub>2</sub> O). Less prevalent --but very powerful -- greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF <sub>6</sub> ).
IPCC	The Intergovernmental Panel on Climate Change. The IPCC is the United Nations body for assessing the science related to climate change. The objective of the IPCC is to provide governments at all levels with

	scientific information that they can use to develop climate policies
Mitigation	In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere
Protocol	An international agreement linked to an existing convention, but as a separate and additional agreement, which must be signed and ratified by the Parties to the convention concerned. Protocols typically strengthen a convention by adding new, more detailed commitments.
Resilience	The ability of a social or natural system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organisation and the capacity to adapt to stress and change.
Scope 1 (carbon emissions)	Greenhouse gas emissions from using owned or controlled sources (mainly energy related)
Scope 2 (carbon emissions)	Greenhouse gas emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling
Scope 3 (carbon emissions)	All other greenhouse gas emissions that occur as a result of activities taking place within wider operations, supply chains, investments etc
Sink	Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. Forests and other vegetation are considered sinks because they remove carbon dioxide through photosynthesis.
Vulnerability	The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.

WMO	World Meteorological Organization. The WMO is a specialized agency of the United Nations (UN) with 193 Member States and Territories. It is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the land and oceans, the weather and climate it produces and the resulting distribution of water resources.
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