Surrey's Greener Future

SURREY COUNTY COUNCIL

SURREY'S CLIMATE CHANGE STRATEGY

CONTENTS

GLOSSARY

Business as Usual (BAU)	The emissions pathway or scenario if no further mitigation action is taken to reduce emissions.
Carbon neutral pathway	The emissions pathway that will ensure achievement of net zero carbon emissions by 2050 (or otherspecific date).
Consumption-based emissions	Consumption-based greenhouse gas (GHG) emissions accounting is an alternative to the production-based approach to measuring an area's GHG emissions. It is the emissions associated with the consumption of goods and services by residents of that area.
Fuel poverty	A household is considered to be fuel poor if they have required fuel costs that are above average, or if they were to spend that amount they would be left with a residual income below the official poverty line.
Greenhouse gas emissions (GHG)	Those greenhouse gases emitted from the combustion of fossil fuels.
Local Enterprise Partnerships (LEP)	Business led partnerships between local authorities and local private sector businesses.
Net zero carbon	The amount of total emissions released on an annual basis averages to be zero or negative i.e. the amount of emitted emissions balanced with those removed or offset.
Scope 1 emissions	Those emissions coming from the fuel (e.g. petrol, diesel or gas) that is directly used within an area and from other sources such as landfill sites or industry within the area.
Scope 2 emissions	Those emissions coming from the electricity that is used within the area, even if it is generated somewhere else.

Scope 3 emissions	Those emissions associated with the goods and services that are produced elsewhere but imported and consumed within the area.
Small and medium enterprises (SME)	Non-subsidiary, independent firms which employ fewer than 250 employees typically.
TCO_2e	Tonnes of carbon dioxide equivalent (all greenhouse gas emissions emitted represented as carbon dioxide).
Territorial emissions/ production-based emissions	An approach to producing emissions inventories that focuses on activities occurring within a boundary as opposed to a population's consumption within that boundary. This methodology was developed by the Intergovernmental Panel on Climate Change for national emissions reporting.
UK Climate Change Committee (UKCCC)	Independent, statutory body established under the 2008 Climate Change Act, to advise the UK Government on progress and action to reduce emissions.

FOREWORD
SURREY'S AUTHORITIES

The shared ambition of Surrey's 12 local authorities is that our residents live in clean, safe and green communities, where people and organisations embrace their environmental responsibilities. In support of this ambition – and the UK's commitment to achieving net zero carbon emissions by 2050 – this strategy sets out our collective commitment to do our part to tackle climate change. Critically, it is an evidence-based approach to making real progress against a challenging ambition.

The Intergovernmental Panel on Climate Change has set out the likely effects of the average global temperature increasing beyond 1.5˚C, which includes more extreme weather events, rising sea levels, and significant disruptions to natural ecosystems resulting in food and water shortages.

At current rates of consumption, we predict Surrey will use up its share of the global carbon budget – the total carbon emissions that the world can "afford" if it is to avoid dangerous climate change – within eight years. To achieve our goal of net zero carbon by 2050, we must act today.

In response to this challenge, a number of authorities across Surrey have declared or recognised a climate emergency. This document establishes the approach for how Surrey's local authorities and other partners will work together to put the county on the path to net zero carbon emissions. Our success lies in us all taking action to shift our behaviour and to live more sustainable lives to help safeguard our communities and the environment.

This strategy also underlines our intention to work in partnership with national Government. We simply cannot deliver on our zero carbon target in Surrey without changes to the national policy landscape and national action. To this end, we will continue working with the Government to shape the national strategy for delivering on the UK's net zero carbon target. It will also be critical that we work alongside the business community in Surrey and other key partners to ensure we are able to secure the required innovation and investment required to undertake this work.

The scale of our ambitions must reflect the scale of the challenge. How we respond to this challenge will define our generation. All of us must take action to do our part, now and into the future. Together, we can ensure Surrey is cleaner, greener and more resilient - a place where future generations can truly thrive.

Tim Oliver
Leader Surrey County Council 2020

FOREWORD
LEEDS UNIVERSITY

Globally, the science tells us very clearly that we are perilously close to triggering dangerous or runaway climate change. Climate change is already leading to major disruptions to our weather patterns and our food and water systems, whilst also leading to major threats to our most precious habitats and species and to many areas and much of our infrastructure.

But what worries scientists more is that we are close to the point where climate change will drive itself - for example where climate change leads to a thawing of permafrost, which then leads to the release of significant amounts of methane that then drives further climate change. The science – which is beyond any reasonable doubt - tells us how much we can emit if we want to have a good chance of avoiding such dangerous or runaway climate change, and this tells us that we have to change course and to make significant and rapid reductions in our carbon emissions in the coming decade.

So why should Surrey act on this global challenge? Firstly, because it should do its bit in helping to tackle a wider problem. By being a leader and setting an example for others to follow, Surrey can be a force for good in the wider world. Secondly, acting on climate change can deliver a wide range of benefits for Surrey itself – the evidence clearly shows that climate action can help Surrey to tackle congestion, improve air quality, enhance public health, stimulate employment, provide better homes and tackle inequality. Instead of thinking why would we act, Surrey should be thinking why wouldn't we.

This strategy sets out an ambitious plan for Surrey to deliver meaningful action on climate change in the coming years. It sets out clear targets and many of the practical actions that need to be taken. Although transformative change can be catalysed by local government, government can't do it alone. All actors and organisations from across the public, private and voluntary sectors, and people and communities across the county, need to get involved so that they help to shape and help to deliver cross-cutting climate action. The newly established Surrey Climate Commission is an independent body that can play a key role in supporting and guiding the transition and in tracking progress and celebrating successes.

With a clear vision, a joined-up approach and a collective effort, this strategy shows how Surrey can be a climate leader in the years to come, thereby helping to tackle a global challenge whilst generating clear local benefits.

Professor Andy Gouldson,
Professor of Environmental Policy, Leeds University
Author of Surrey County Emissions Report

A GREENER FUTURE FOR SURREY

Surrey village of Charlwood

The United Nations and the international scientific community have made clear the potentially severe global human, environmental and economic impacts that man-made climate change poses. The Paris Climate Agreement of 2015, recognised the need to accelerate actions and investment to combat climate change and pursue efforts to limit the future global temperature increase to 1.5˚C.

The potential implications if we do nothing for communities include increased risk of flooding and extreme heat, disruption to our critical infrastructure, networks and industry, and increased risk to our health and wellbeing.

Surrey's 12 local authorities (11 District and Borough Councils and Surrey County Council) have collectively recognised the severe and imminent threat that climate change poses, and have declared or recognised the climate emergency and established their own emissions reduction targets. In July 2019, Surrey County Council, in declaring its climate emergency, committed the County to becoming net zero carbon by 2050 at the latest, in line with national ambition.

The public declaration of a net zero carbon target commits all local authorities in Surrey to tackling climate change across every aspect of our service provision and estate, in conjunction with action by Surrey residents, businesses and partners. This is not only the right thing to tackle the climate emergency for future generations, but also a significant opportunity to increase our energy efficiency, improve our resilience and deliver a greener, healthier society.

[1] As defined by the Paris Agreement a net zero goal is one in which there is a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases.

Despite our commitment to reducing our emissions we must recognise that we are already facing, and will continue, to face the impacts of climate change on a daily basis. Just earlier this year, the UK Met Office recorded the wettest February on record for the UK, with three named storms experienced – such severe weather events have been estimated to be 59% more likely as a result of climate change.[2] As part of this strategy, we are seeking to build on our existing measures to strengthen resilience down to the household level, through climate-proofing our services and infrastructure.

Surrey's Climate Change Strategy is our delivery on these ambitions. It provides a joint framework for collaborative action on climate change across Surrey's local authorities and other partners.

The strategy and its strategic priorities were developed through engaging with academic partners, residents, businesses, schools and emergency services through workshops, focus groups, resident panels, and commissioning groups.

Our strategic priorities and accompanying actions will deliver against our emissions reduction targets, identified through the creation of a science-based carbon neutral pathway. These actions have been developed to build upon existing strategies, as well as working with emerging strategies, to create a comprehensive and coordinated response to the climate emergency.

The strategic priorities within the strategy, and the accompanying emissions reduction targets, will be revisited every five years to consider potential for acceleration, with an annual progress report against our targets and key actions.

A joint framework for collaborative action on Climate Change across Surrey's local authorities.

It must be recognised that there exists major challenges to Surrey achieving its ambitions, not least as these emissions reductions will require National Government action, such as further grid decarbonisation and changes to national policy. Further risks to the achievement of the county's target include the uncertainty of technological developments, the need for increased and sustainable green finance and significant behaviour shift amongst residents and businesses in the county – risks that are largely out of our hands as local authorities. To that end, some of the actions presented in this document are for Surrey's local authorities, and other actions are for local partners and residents to engage with.

Following the publication of the strategy, costed delivery plans will be developed for each of the actions outlining the expected costs, ownership and any specific key performance indicators (KPIs) for monitoring.

[2] UK Met Office, 2020. Source.

THE CLIMATE EMERGENCY

Scientific evidence from the Intergovernmental Panel on Climate Change (IPCC) calls for rapid reductions in global carbon[3] emissions if we are to limit average levels of global warming to 1.5˚C and so avoid the risks associated with dangerous or runaway climate change.[4] Even half a degree increase above this would significantly worsen the risk of flooding and extreme weather events, drought and extreme heat, which will lead to considerable impacts on human health, natural and food systems, as well as industry.

Globally, the IPCC suggests that from 2020 we must limit total future global emissions to 344 billion tonnes of greenhouse gases, known as the global carbon budget, if we want to give ourselves a 66% chance of avoiding dangerous climate change. However, the IPCC has estimated that if we take no further action, based on current trajectories, we will have used up this global carbon budget, within a decade. The potential life-threatening impacts of climate change, coupled with the current inaction, led to the declaration of a climate emergency by the UK National Government when, in 2019, the UK became the first G7 nation to legislate for a long-term net zero carbon target.

SURREY'S CLIMATE EMERGENCY

Currently, Surrey is emitting greenhouse gas emissions (GHG) at an even faster rate than average global levels. Dividing the global carbon budget by population gives Surrey a total carbon budget of 56 million tonnes. Based only on the fuel and electricity used within its boundaries, Surrey currently emits 6.19 million tonnes of carbon dioxide emissions a year, it means that if we do nothing, at this current rate of emissions we would use up our carbon budget in just over eight years.

Although carbon emissions from Surrey have fallen by 28% between 2005 and 2017, it is recognised that this has mainly resulted from decarbonisation of the national grid from which we draw electricity. With on-going decarbonisation of electricity, and taking into account population and economic growth[5], it is projected that Surrey's 2005 level of emissions will continue to fall to a 44% reduction by 2050 (Figure 1 - right page). However, this is less than half of our 2005 emissions, and therefore significantly short of the county's target. It is clear that doing nothing, what is known as a business as usual (BAU) scenario, is not an option if we are to achieve our net zero carbon ambition.

[3] For simplicity, we use the term 'carbon' as shorthand for all greenhouse gases. All figures in this report relate to the carbon dioxide equivalent (CO_2e) of all greenhouse gases. Note that our assessment therefore differs from other assessments that focus only on CO_2.
[4] IPCC, 2018. Summary for Policymakers. Source.
[5] Economic growth assumed at 2.5% p.a. and population growth assumed at 0.1% p.a.

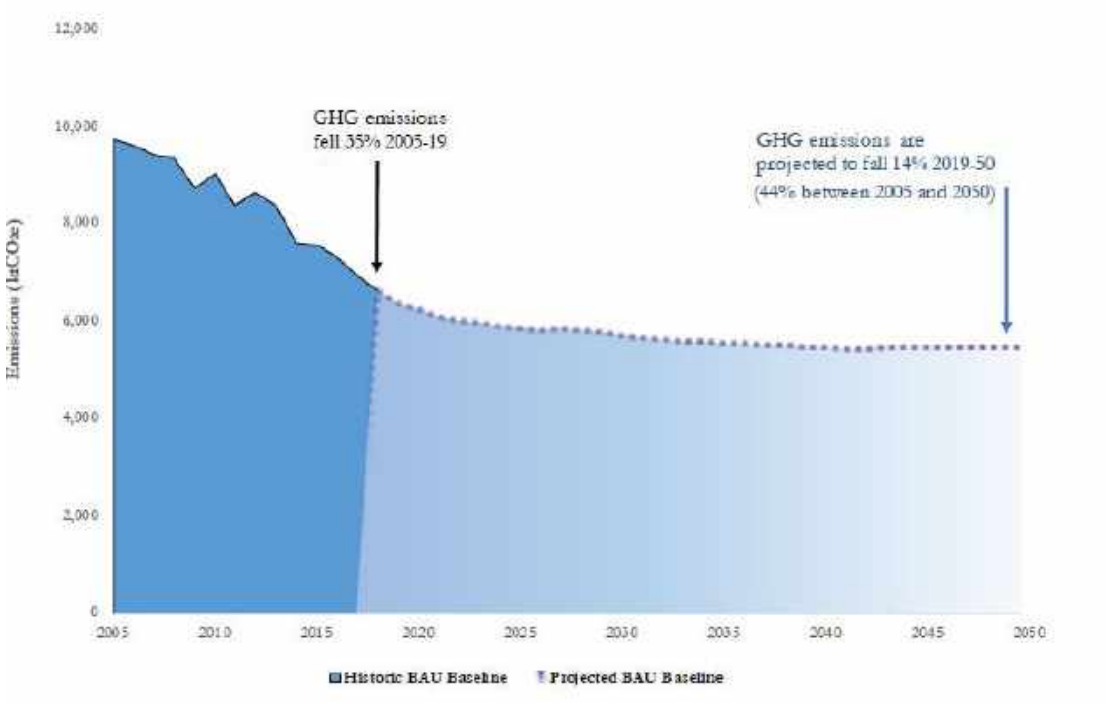

Figure 1 - Surrey's Business as Usual emissions trajectory

GHG EMISSIONS BY SECTOR

Currently, 46% of Surrey's emissions come from the transport sector, with housing responsible for 28% of emissions, public and commercial buildings for 15%, and industry 11%.

By 2050, it is projected that, under a BAU scenario, emissions from transport will increase very slightly, but that housing will see a substantial 11% increase in the proportion of emissions for which it is responsible. Decreases are forecast in the proportion of emissions from public and commercial buildings and industry, largely a result of expansion in the domestic buildings sector over this period.

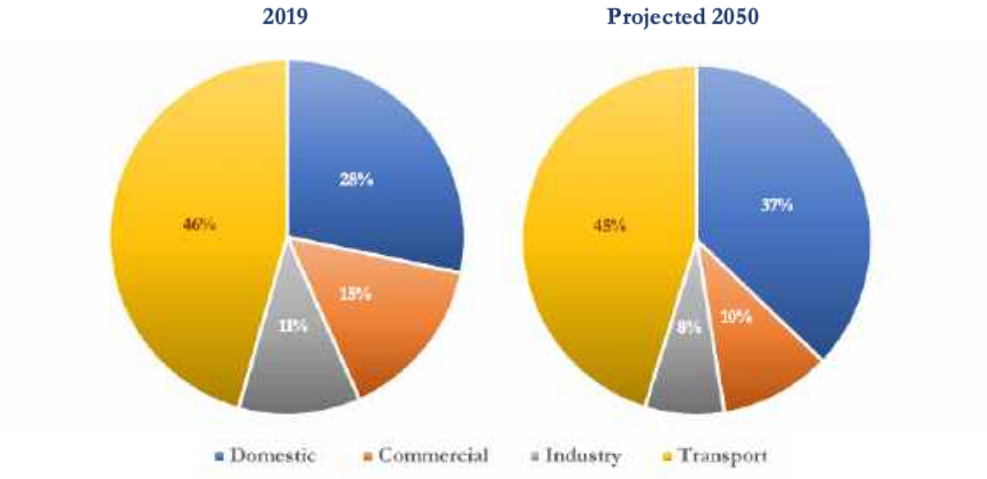

Figure 2 - Surrey's Present and Projected Emissions by Sector

SURREY'S CARBON NEUTRAL PATHWAY

We must begin to reduce our current emissions output across all areas of Surrey's activity immediately and quickly. We are committed to delivering on our net zero carbon ambition by 2050 and to achieve this we must reduce our GHG emissions against **2019 levels** by:

46%
by 2025,

67%
by 2030,

80%
by 2035,

87%
by 2040,

92%
by 2045, and

100%
by 2050.

A BAU emissions trajectory has been developed which indicates where we would be if we continued to produce emissions with no additional policy measures, see Figure 3.[6]

[6] On-going decarbonisation is assumed in line with government commitments

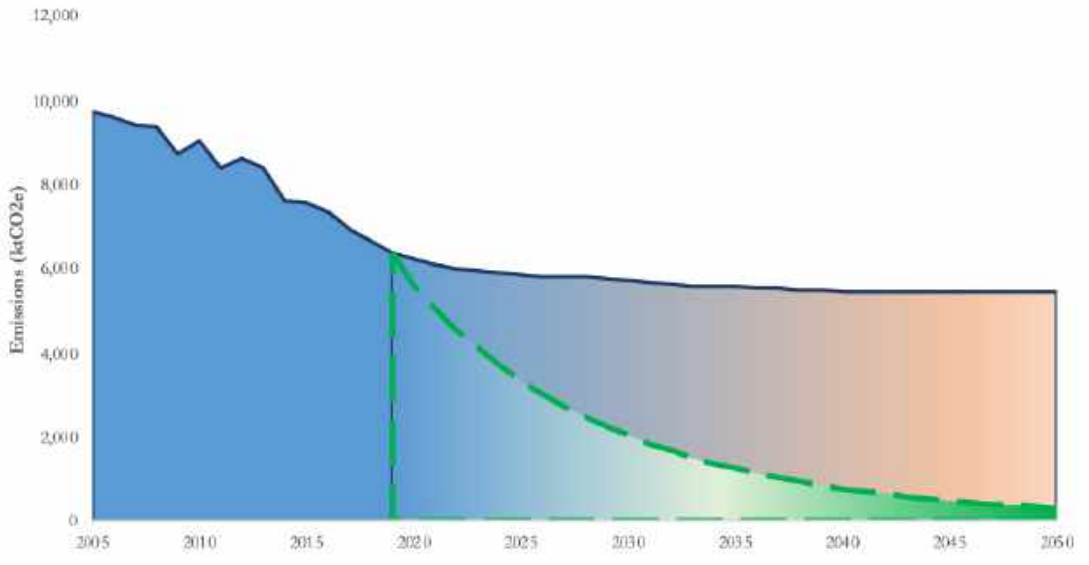

Figure 3 - Surrey's net zero carbon emissions trajectory (against business as usual)

Similar BAU trajectories have been produced for each of the sectors outlined below. For some sectors, such as industry, the BAU pathway will see a more significant drop due to existing policy measures being effective in reducing emissions, and therefore any additional action will result in a less dramatic reduction, see Appendix A: Methodology for more information.

We have also sought to establish sectoral emissions reduction targets for Transport, Housing, Buildings and Infrastructure, and Industry. These interim 2035 targets enable us to track the impact of any actions we take at a more granular level. These targets are the minimum emissions reductions we would expect to see if we were to adopt current established actions, some of which would result in direct economic benefits whilst others will have more indirect benefits e.g. improvements in air quality.

However, adopting all current cost-effective or technically viable options is unlikely to enable us to reach net-zero emissions and there is a further group of measures we will need to pursue to close an estimated ~36% gap – known as innovative or 'stretch' options. These options include low-carbon measures that are not yet widely adopted. Some of the options within this group may well be cost and carbon effective, and they may also generate significant indirect benefits, but whilst we can predict their carbon saving potential, data on their costs and benefits is not yet available. The options available to Surrey to reduce our emissions will become more challenging as we move closer to our zero carbon target. It is likely that the last 5% of emissions will need to be reduced through offsetting measures e.g. tree planting.

Furthermore, achieving our targets will be heavily dependent on support from the UK Government in changing the national policy landscape, accelerating action on climate change and supporting, where necessary, identified local initiatives. The specific actions that we would require to be taken are presented in the National Government Asks.

STRUCTURE

Surrey's Climate Change Strategy sets out the joint ambition of our local authorities across the county to address carbon emissions for eight major sectors. Seven of the sectors address the county-wide emissions, with the first sector, Organisation Emissions, focusing on the actions that can be taken to reduce emissions associated with the activities and estate of Surrey's local authorities. Each chapter follows the structure below:

1. AMBITION STATEMENT - sets out the long-term vision for the chapter for the sector

2. TARGETS - the percentage reductions in CO_2e that Surrey's authorities are looking to achieve across the county by 2035 against the BAU scenario

3. STRATEGIC PRIORITIES - two or three areas of focus to reduce emissions across the sector.

The actions that will need to be undertaken to facilitate the strategic priorities and achieve our emissions reductions targets are outlined in the **Action Plan** section.

Some of these actions can be undertaken immediately and are expected to be completed by 2022, whilst others will take longer to plan, implement and achieve – working towards a 2035 timeline.

Those actions to be implemented beyond 2035 towards 2050 have not yet been scoped in this document. It is likely that there will be continued implementation of measures already in place or, as examined above, these are likely to be stretch or innovative options, for which it is difficult at time of publication to identify their economic cost or technical potential to reduce emissions. In future iterations of this strategy, these will be scoped and included.

We have also set strategic priorities for adapting to climate change, although the corresponding actions will be integrated across the eight major themes to reflect our systems-based approach - working across agendas and services - to resilience.

The strategy also sets out our monitoring and evaluation process for tracking our progress on mitigating climate change emissions.

1. AMBITION STATEMENT

Deliver and promote an integrated, accessible, affordable and reliable public and active (walking or cycling) transport system across the County. Reducing journeys and improving local air quality for improved health and wellbeing of our residents.

2. TARGET

60%

Emissions reduction by 2035 against BAU as a minimum

3. STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Taking forward our Place-based approach[16] to development that creates well-connected communities close to high quality places, spaces and services that reduces journeys or journey length.

Strategic Priority 2 (SP2)
Promote and encourage a shift away from private transport vehicles to an increased uptake of accessible public and active transport (walking and cycling).

Strategic Priority 3 (SP3)
Encourage the uptake of zero emission vehicles amongst partners and residents for journeys that cannot be made on foot, by bicycle or public transport through innovative policy supported by adequate funding.

[16] Place-based development refers here to economic development centred upon existing assets or services within a community.

NATIONAL GOVERNMENT ASKS

Surrey's Climate Change Strategy

NATIONAL GOVERNMENT ASKS

Surrey's authorities are committed to tackling the climate emergency but, critically, we also require a coordinated national effort and the demonstration of leadership from the Government on this issue. As such, to deliver on our ambitions we ask:

That the Government publishes its Roadmap to Net Zero Carbon during 2020 in response to its declaration of a climate emergency, laying out clear funding mechanisms to finance the transition.

That the Government puts the teaching of climate change, its environment, social and economic impacts at the forefront of our education system, becoming a core component of the curriculum for all ages.

That the Government implements its policy recommendations laid out in its 'Road to Zero' document, an ambitious roadmap towards delivering zero-emission transport across the UK.

That the Government continues and expands the provisions of funding for alternative energy stations e.g. on-street residential electric vehicle charging, hydrogen stations and fast chargers at key transport hubs.

That the Government determines a consistent policy approach for decarbonising heat in the UK such that the appropriate skills can be developed in the engineering and construction sectors.

For a review of legislation changes on selling locally-generated renewable energy back to the grid, notably the removal of the export tariff in 2017, such that it can become more financially viable for communities.

For an acceleration of the decarbonisation of UK power networks and necessary supporting infrastructure as per Ofgem's Decarbonisation Action Plan.

The Government to make explicit that planning authorities have the right to reject planning applications where there are identifiable and material climate change impacts to enable local planning teams to ensure more sustainable development.

The Government to allow local governments to retain the power to set higher requirements than national standards for Part L of the Building Regulations.

The Government to further develop the Future Homes standard to set out a clear trajectory for how new buildings will achieve net zero carbon by 2030 (both regulated and unregulated energy, and in-use performance).

For the revision of current planning restrictions which potentially inhibit renewable energy development e.g. categorisation of land.

The Government to review any infrastructure of national importance moving forward, taking into account its legally-binding climate change commitments to be net zero carbon by 2050.

The Government to set out its position on reviewing the Airports National Policy Statement and its policy on the future of UK aviation, making clear its approach to airport expansion and to delivering a robust decarbonisation plan, to end any uncertainty as soon as possible.

The Government to mandate the use of future weather data in building regulations to strengthen resilience to flooding and other extreme weather events.

There is continued reform of our Producer Responsibility systems (including packaging waste regulations) to incentivise producers to take greater responsibility for the environmental impacts of their products and help develop a market for those products which are reused.

The Government to publish their National Food Strategy that outlines how we will balance the economic potential of our farming communities with the need to tackle climate change and provide localised food sources.

There is clarification on proposed funding mechanisms for fuel switching for heating and Carbon Capture and Storage (CCS).

ORGANISATIONS EMISSIONS

Surrey's Climate Change Strategy

1.1 ORGANISATION EMISSIONS

Surrey's 12 Local Authorities have baselined, or are in the process of, baselining their own operational emissions, which will help us to identify the reductions that we have to make to be net zero carbon in the coming years. These operational emissions will vary slightly across authority, but will include at a minimum, emissions arising from electricity consumed on our directly owned (not leased) estates and fuel consumed in our vehicles. For a full methodology description, refer to the Surrey's Local Authorities' Carbon Footprint in the Appendix.

SCC's total modelled net emissions from 2018/19 are 34,118 tCO2e, this comprises Scope 1 (direct emissions), Scope 2 (indirect emissions from the generation of purchased energy) and limited Scope 3 emissions (from our grey fleet) and represents a 34% decrease within the last five years.

It is important that local government organisations and authorities seek to baseline and report progress in reducing their own emissions to set an example to our residents, partners and businesses of the green future we are committed to.

We can and should have a positive influence in bringing about a positive shift in behaviour.

However, we will only be able to meet our organisation strategic priorities if we work in tandem to achieve the actions across other sectors. For example, we cannot expect to reduce emissions from our staff travel, without also investing and developing our public transport infrastructure which will meet the needs of all residents.

With direct control over our own estate and operations, we have the potential to have significant influence in driving these emissions down at a faster rate than other sectors of our economy. Through the role we have in employing, connecting and supporting our community we can and should have a positive influence in bringing about a beneficial shift in behaviour and practice towards the environment.

Following the baselining of emissions, the next step is to set ambitious milestones to reach net zero carbon, and a number of Surrey's authorities have already committed to reducing their emissions to net zero by 2030, as is the case with SCC.

[7] SCC, 2019. Source.

AMBITION STATEMENT

Achieve net zero carbon local authorities that lead by example in promoting sustainable practices across their operations, estate, and vehicles.

TARGET

Net zero carbon

For all Surrey's local authorities by 2035 or sooner

Net zero carbon

For SCC's organisational emissions by 2030 or sooner

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Use net zero carbon energy across our council-owned buildings, and in the longer term, look to transition to net-zero carbon buildings, as defined by the UK Green Building Council (UKGBC) framework.

Strategic Priority 2 (SP2)
All council-owned vehicles, including SCC-owned bus fleet, to be zero carbon by 2030 or sooner.

Strategic Priority 3 (SP3)
Use our influence across our supply chain through procurement practices to drive significant carbon emission reductions in the operations of our staff, suppliers and partners.

TRANSPORT AND AIR QUALITY

Surrey's Climate Change Strategy

1.2 TRANSPORT AND AIR QUALITY

Electric park and ride buses.

Emissions associated with Surrey's transport sector currently amount to 46% of the County's total amount (2019), equivalent to 2.3 tonnes per person annually. It is predicted that under a business as usual (BAU) scenario there would be no reduction in emissions but an approximate 1% growth by 2050.

Despite offering excellent transport connectivity for Surrey businesses into London, the county carries almost twice as much traffic than average for the South East. In fact, Surrey's A roads have 66% more traffic than the national average. It is estimated that road congestion and associated delays on Surrey roads cost the local economy £550m each year.

Whilst use of public transport has increased in recent years, Surrey residents utilise these networks significantly less than surrounding regions. In 2018/19 residents undertook an average of 22.7 journeys annually on the bus, a 13% decrease since 2010, whilst in the South-East (not including London) this figure was 38.2 journeys in the same year and in London 246.7 journeys.[8]

The most recent survey into the travel patterns of Surrey residents found that just 10.8% walk or cycle to work, with just 3.0% cycling for transport purposes at least three times a week.

About 131,000 of Surrey residents (19% of the working population) commute to London every day, and there is an expected 40% growth in passengers on the main line to London Waterloo Station by 2043.[9] There will need to be considerable infrastructure investment within Surrey to support the development of this commuter route, whilst improving local connectivity i.e. travel to and from train stations in Surrey, which is currently mostly undertaken by car.

Such expansion of our transport networks will need to take account of our changing climate and the interdependency risk of the failure of other infrastructure e.g. energy networks. The Adaptation Sub-committee of the UK Committee on Climate Change (UKCCC) identified that existing and future transport networks are at risk of embankment failure, high winds and high temperatures.

Our priorities for the transport sector, aimed at reducing emissions whilst providing a better and more comprehensive transport system, is centred on a three-pronged approach of; reducing journeys, shifting to an increase use of public and active transport modes, and developing zero emission vehicle options. Combined, these priorities will bring about significant improvements in our air quality and the health of our residents. The actions to deliver this approach will include undertaking significant improvement and investment to our public transport infrastructure.

Encouraging passengers to switch from private vehicles to public bus services has been shown to be one of the most cost-effective options per tCO_2e reduced[10]. To achieve this shift, a number of elements of the existing bus system need to be addressed including cost, journey frequency and routes, supported by introducing technological solutions e.g. shared ticketing systems. The UKCCC reported that 32% of the increase in public transport usage in London between 1990 and 2005 was attributed to the introduction of the Oystercard.[11]

The Department of Transport's Impacts of Cycling Tool found that if the proportion of the English population who cycle regularly increased from 4.8% to 100%, there would be a nearly 10% reduction in car miles and passenger related CO_2 emissions[12].

The potential impact of such an approach reaches far beyond reducing emissions. An increase in active transport e.g. walking and cycling as a regular activity, can reduce the risk of developing a new chronic condition, the progression of an existing one, and an improvement to quality of life[13]. A report by Sustrans estimated that meeting the targets to double cycling and increase walking, set out in the Government's Cycling and Walking Investment Strategy (CWIS)[14] in England would lead to savings of £567 million annually from air quality improvements alone and would prevent 8300 premature deaths each year.[15]

[8] Department for Transport, 2019. Passenger journeys on local bus services per head by local authority.
[9] SCC & Arup, 2016. Surrey Rail Strategy Position Statement 2016. Source.
[10] Gouldson, A., et al., 2020. A Net Zero Carbon Roadmap.
[11] UKCCC, 2016. Progress Report to Parliament, Technical Annex 5: Transport.
[12] Woodcock, J., et al., Development of the Impacts of Cycling Tool (ICT): A modelling study and web tool for evaluating health and environmental impacts of cycling uptake. PLoS Med, 2018. 15(7).
[13] 2018 Physical Activity Guidelines Advisory Committee, 2018 Physical Activity Guidelines Advisory Committee Scientific Report. 2018, U.S. Department of Health and Human Services: Washington DC.
[14] Cycling and Walking Investment Strategy (CWIS).
[15] Public Health England, 2018. Cycling and walking for individual, population and health system benefits: a rapid evidence review. Source.

AMBITION STATEMENT

Deliver and promote an integrated, accessible, affordable and reliable public and active (walking or cycling) transport system across the County, thereby reducing journeys and improving local air quality for improved health and wellbeing of our residents.

TARGET

60%

Emissions reduction in the Transport sector by 2035 against BAU as a minimum

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Prioritise investment in place-based development[16] that creates well-connected communities close to high quality places, spaces and services to reduce the number and length of car journeys for all residents.

Strategic Priority 2 (SP2)
Invest in initiatives and infrastructure to increase the uptake of walking, cycling and public transport, alongside schemes to reduce reliance on the car e.g. ultra-low emission zones, pedestrianisation and car-free zones.

Strategic Priority 3 (SP3)
Invest in and support the development of the infrastructure required to support the move to zero emission vehicles for journeys that cannot be made on foot, by bicycle or public transport.

[16] Place-based development refers here to economic development centred upon existing assets or services within a community.

ENERGY GENERATION

Surrey's Climate Change Strategy

1.3 ENERGY GENERATION

Energy production and its use is the largest source of global greenhouse gas emissions and therefore a key sector which will need to change if we are to meet our net zero carbon target.

The UK's low carbon policies to date and abundant natural resources, have seen renewable electricity capacity increase by more than three times since 2010, particularly within offshore wind. In 2017, renewable electricity accounted for more than a quarter (27.9%) of the UK's electricity generation. Despite these improvements, decarbonisation still remains a major challenge at the national level and, therefore, there is a need for local decarbonisation.

Currently the energy generation and transmission network is well adapted to climate change with 90% of UK substations expected to be resilient to a 1 in 1000 year flood by 2021. However, increasingly extreme heat and storm-related tree damage causing power interruptions are likely to pose a threat to the networks.[17]

With the South East region able to generate 36% more electricity from PV schemes.

If we divide the total UK installed capacity in 2019, of 45,900 MW, by population, Surrey would be expected to have an installed capacity of over 880 MW[18]. However, in 2018, Surrey's Districts and Boroughs had a combined total capacity of only 82.6 MW of renewable energy installed, from 11,271 sites, over 70% of this capacity is from solar photovoltaics (PV).

The county has great potential for expanding this generation capacity, with the Southeast region able to generate 36% more electricity from PV schemes than other areas of the UK,[19] due to greater sunlight hours amongst other factors. The Southeast also ranks third in the country for wind energy generation potential. Furthermore, the significant amount of development taking place across the county will offer the potential for the integration of new decentralised energy system models.

[17] UKCCC, 2019. Progress in preparing for climate change: Report to Parliament. Source
[18] BEIS, 2018. Renewable Energy Planning Database (REPD): December 2018. [online]
[19] RegenSW, "Renewable energy: A local progress report for England", 2016 [online]

AMBITION STATEMENT

To support the national decarbonisation ambition by leading renewable energy generation expansion and bringing low carbon heating into Surrey homes through smart, decentralised systems.

TARGET

15%

of energy from solar PV by 2032

69,000 tonnes

CO_2e per annum by 2050 saved from Solar PV on public and commercial buildings

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Expand renewable energy generation capacity across the county with a focus on solar PV installations as the greatest carbon reduction potential.

Strategic Priority 2 (SP2)
Develop localised smart energy systems that focus on providing low carbon energy to local businesses and residents, whilst reducing costs.

HOUSING AND PLANNING

Surrey's Climate Change Strategy

1.4 HOUSING AND PLANNING

Domestic CO_2e emissions within Surrey amounts to 28% of the total county-wide emissions (2019) or 1.4 tonnes per person annually, and represents a 33% reduction from 2005 to 2017/18. Half of our domestic emissions originate from heating (space and water[20]) and the remainder split between lighting and appliance use.

It is predicted that under a Business as Usual (BAU) scenario the proportion of emissions from housing would increase by 11% by 2050, due largely to projected increases in housing development.

The UK Climate Change Committee identified in their most recent report 'UK Housing: Fit for the Future' the following priorities for the UK housing sector:

1. Focusing upon designing high quality and low carbon new residential development
2. Retrofitting existing residential housing to particularly address issues of energy efficiency through passive cooling and decarbonisation of heat; and
3. Effective monitoring for compliance.

Surrey authorities fully support these ambitions, but as outlined by the UK Committee on Climate Change (UKCCC), achieving these feats will only be possible if the UK Government makes this an infrastructure priority and focuses on increasing funding to homeowners and local authorities for these measures, as well as developing skills in the construction sector.

Addressing energy consumption and efficiency in the home can not only substantially reduce the county's emissions, but will also help to reduce the occurrence of fuel poverty by reducing energy requirements in the home. Currently 7.7% of Surrey's population are classified as fuel poor households[21]. Poorly or inefficiently heated houses can lead to cold homes which have significant and demonstrable health impacts, including a lowering of life expectancy.[22]

Finally, in the future, UK housing stock faces increased risk from flooding and overheating. Therefore, further action must be taken to encourage property flood level resilience, and the introduction of passive cooling measures or green infrastructure to mitigate the most extreme impacts of climate change.[23] In the UK's 25-year Environment Plan (2019) there has been the recognition of the need for successful implementation of biodiversity net gain on developments to restore and create-high quality habitats which can also build resilience to climate change.[24]

[20] Some 89% of all emissions associated with domestic water use comes from its heating alone. CIWEM, 2013. Source.
[21] BEIS, 2019. Annual Fuel Poverty Statistics Report 2019 (2017 data). Source.
[22] Public Health England, Fuel Poverty Inequalities. Available at: https://fingertips.phe.org.uk/doucments/fuel_poverty_health_inequalities.pdf
[23] UKCCC, 2019. UK housing: Fit for the future? Source.
[24] DEFRA, 2018. Net gain: consultation proposals. Source.

AMBITION STATEMENT

To create low carbon, healthy homes for our residents that reduce emissions, have lower running costs and improve the wellbeing of our community.

TARGET

66%

Emissions reduction in the domestic housing sector by 2035 against BAU as a minimum

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Seek and support the retrofit of existing residential housing to enable alignment with more demanding energy efficiency standards, improve their adaptation qualities, whilst delivering significant savings to residents.

Strategic Priority 2 (SP2)
Review and update local planning policy frameworks, as well as seeking a stronger National Planning Policy Framework (NPPF), to facilitate the delivery of low-carbon, energy efficient new residential development that produces a minimum 10% net-gain in biodiversity.

Strategic Priority 3 (SP3)
Promote residential development that is sustainably located and allows safe and easy access for residents to existing services and transport hubs.

BUILDINGS AND INFRASTRUCTURE

Surrey's Climate Change Strategy

1.5 BUILDINGS AND INFRASTRUCTURE

'Buildings and Infrastructure' refers to our commercial buildings[25] and the infrastructure that connects them with other public and private spaces e.g. where we work.[26] Emissions associated with Surrey's municipal and commercial buildings amount to 13% of the total amount (2019)[27] or 0.65 tonnes per person, which represents a 45% reduction on the 2005 emissions.

These reductions have been due largely to improvements in energy efficiency of heating systems and efficiencies in electrical appliances and lighting. It is also reflective of the greening of the UK national grid.[28]

Decarbonisation of buildings can be achieved through improving energy efficiency.

The main challenge that remains for this sector is the persistent emissions from heating and cooling. Decarbonisation of buildings can be achieved through reduced usage, improving efficiency and switching to low and potential zero carbon heating solutions. However, average UK decarbonisation rates per person in buildings amounts to just 0.8% per year with a relatively low uptake of energy efficiency measures, and limited deployment of low-carbon heating options.[17] The potential retrofit or construction options will vary quite considerably across the non-residential building stock due to the variable typologies (e.g. retail, hospitals, and offices) and their complex patterns of energy use.

The need to retrofit existing buildings is coupled with the need to deliver the new infrastructure and housing required to support the economic and population growth predicted in coming years[29]. These schemes should be centred on the principle of 'good growth', that is, building local, equitable and inclusive growth but that is also environmentally sound.

For future buildings, there is a need to think more holistically, considering the whole building lifecycle. This includes consideration of embodied carbon, i.e. those emissions associated with the non-operational phase of the project, including manufacture, assembly, deconstruction etc., which can account for up to 70% of a buildings' total lifetime emissions.[30]

Thus, tackling the emissions associated with the built environment requires considerable coordination between different government bodies, with businesses, notably the construction industry, and with residents. There are emerging non-traditional forms of infrastructure, e.g. automation and digital infrastructure, which could also help us to achieve those ambitions.

[25] This includes those buildings that are owned by the council but leased to private sector organisations.
[26] Due to its strategic importance for the purposes of this strategy, infrastructure related to transport is contained within the 'Transport and Air Quality' section.
[27] These building types account for 32% of total emissions associated with the buildings sector (including housing). P
[28] UKCCC, 2019. Net Zero – The UK's contribution to stopping global warming. [online] P
[29] 1.3 million by 2040. ONS (2019) Sub-national Population Projections; and (2019) Mid-year Population Estimates, accessed in January 2020.
[30] UKGBC, 2015. Tackling embodied carbon in buildings. Source.

AMBITION STATEMENT

To drive forward the transition to a zero carbon built environment, through the pursuit of lower operational energy use, increased supply of renewable energy to Surrey's buildings and reduced embodied carbon – the GHG emissions associated with non-operational phases e.g. construction.

TARGET

61%[31]

Emissions reduction across commercial and public buildings by 2035 against BAU as a minimum

100%

Reduction in CO_2e from municipal buildings[32] by 2030

[31] For public and commercial buildings
[32] Owned and operated by Surrey local authorities

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Significantly improve the energy efficiency standards and practices of commercial buildings in Surrey to reduce energy consumption whilst reducing the cost for businesses.

Strategic Priority 2 (SP2)
Review and update planning policy to produce infrastructure that is better integrated, enabling the delivery of wider ambitions on local renewable energy generation and vehicle electrification.

Strategic Priority 3 (SP3)
Work with stakeholders to develop a systems-based approach to development and infrastructure that considers the whole-life cycle of construction, including water consumption, and promotes the integration of green infrastructure for climate change adaptation.

WASTE, RESOURCES AND CIRCULAR ECONOMY

Surrey's Climate Change Strategy

1.6 WASTE, RESOURCES AND CIRCULAR ECONOMY

Emissions from waste at present are 138ktCO_2e, having reduced by 79% since 2005.[33] However, due to levels of incineration, production of waste per capita, and rates of effective recycling and composting, emissions of the waste sector in Surrey are projected to grow slightly year on year before reaching c.169ktCO_2e in 2050, an increase of over 22% on present levels. Partly this is due to the concentration of non-CO_2 greenhouse gases (especially methane) in the annual output of the sector.

The waste management sector was responsible for 4% of UK GHG emissions in 2016, amounting to 19.9MtCO_2e – mainly arising from methane released from landfill sites. Emissions have reduced by a significant 70% since 1990, driven by a reduction in biological waste sent to landfill, investment in methane capture technology and improved management at landfill sites.[34]

In 2018/19 local authorities in Surrey collected 507,428 tonnes of waste, with 280,444 tonnes sent for recycling, composting or reuse, averaging at 55% across the county.[35]

This reflects efforts that have been taken in recent years to promote recycling. However, moving towards the reduction of waste (refuse in the waste hierarchy) and encouraging re-use of materials is critical to making progress in this sector as recycling rates have plateaued in recent years.

Focusing on actions that promote a circular economy which can be achieved through working with partners.

Over the last few years, Surrey has launched three relevant waste-centric policies:

- The Surrey Joint Municipal Waste Strategy which has a county-wide target to achieve a recycling and recovery rate of 70%, as well as a target to send 0% of waste to landfill by 2020. These targets, when made in 2015, were highly ambitious and it is unlikely that these will be met, therefore the Strategy has outlined further actions that need to be taken.
- The Surrey Waste Local Plan (2019-2033) sets out how and where different types of waste will be managed in the future.
- A Single Use Plastics (SUP) Strategy Policy for Surrey which includes objectives pertaining to ending the sale of SUP products and use by our suppliers and contractors through awareness raising and changes to procurement practice and policy.

However, Surrey needs to push beyond this set of policies, to look at preventing the creation of waste in the first place. This can be achieved by working with national government and industry to eliminate unnecessary packaging and ensuring that what remains is designed to be easily reused or recycled. In short, the focus needs to be on promoting a circular economy, which can be achieved through working with partners and feeding into Government consultation on the development of this sector.

[33] Waste is presented here as a discrete sector where emissions reductions pathways are compartmentalised from the three scenarios described above. This is due to the methodological imperative to maintain consistency with BEIS local authority emissions datasets, which do not include waste and are used by many local authorities for emissions reporting.
[34] UKCCC, 2018. Reducing UK Emissions: 2018 Progress Report to Parliament. [online]
[35] Defra, 2019.

Change in individual behaviour can be achieved by setting an example.

AMBITION STATEMENT

Rethink our current approach to waste, to create a system centred on circular economy principles that seeks to prioritise the reduction of waste creation, encouraging innovative approaches to waste reutilisation and recycling - throwing away will become a last resort.

TARGET

75%

Of packaging reused or recycled by 2030

70%

Of all local authority collected waste reused, composted or recycled by 2030

0%

Of waste sent to landfill by 2030

50%

Reduction in food waste generated by 2030

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Work across government authorities and businesses to strengthen producer responsibility, along with practical, innovative and effective information and guidance for consumers to reduce waste generated, particularly food.

Strategic Priority 2 (SP2)
Use education and best practice sharing to drive significant behaviour change within Surrey to encourage the adoption of more sustainable purchasing practices.

Strategic Priority 3 (SP3)
Where waste is produced, we will work with partners to develop practical, innovative and effective methods for increasing reuse and recycling rates. We will also evaluate the current carbon impact of recycling collection and disposal practices so that their impact can be lessened e.g. electrification of rubbish collection vehicles.

LAND USE AND FOOD SYSTEMS

Surrey's Climate Change Strategy

1.7 LAND USE AND FOOD SYSTEMS

In the most recent report to emerge from the UK Committee on Climate Change (UKCCC) exploring Land Use policies for a Net Zero UK, it was identified that cutting emissions from agriculture, releasing land from traditional farming practices for long term carbon sequestration, and promoting demand for low carbon food, could reduce the UK's land use emissions by nearly 60 per cent.[36] The Rural Surrey LEADER programme has been working over the past few years to support local farmers and rural food producing business in sustainable and diversified farming practices. Part of their support includes providing 40% funding for precision farming technology which improves the soil structure and reduces the need for pesticides and other chemicals.

According to research by the International Agricultural Research Center's Research Program on Climate Change, Agriculture and Food Security, food system emissions could account for as much as a quarter of all human emissions.[37] Broken down that includes 12% from agricultural production, another 9% from farming induced deforestation, and a further 3% from processes such as refrigeration and freight. Local food systems can reduce the emissions associated with the food supply chain, and potentially make it more resilient as weather-related shocks to global food production are increasingly likely.[9] In addition to the emissions that can be reduced from the agriculture industry, changes to land use approaches can help to tackle emissions from other areas of our economy by increasing the volume of carbon stored in forests and land.

In its report, the UKCCC further suggests that the Government must increase net tree-planting from 9,000 hectares per year on average to 20,000 hectares by 2020 and 27,000 hectares by 2030, alongside planting energy crops on low quality land.

Angela Richardson, MP for Guildford, planted a tree in Stoke Recreation Ground, Guildford. (Picture: Matt Furniss, Cabinet Member for Highways, SCC; Cllr Pauline Searle, Guildford Borough Council (GBC); Cllr Angela Goodwin, GBC; Angela Richardson MP, Cllr Caroline Reeves, Leader of GBC and Cllr Mike Goodman, Cabinet Member for Environment and Waste, SCC).

Surrey is the most wooded county in England with 23% coverage compared to a national average of 10%[38]. This means it already makes a significant contribution to mitigating the effects of CO_2e emissions, as well as mitigating flood risk across catchment areas. However, SCC has recently committed to facilitate the planting of an additional 1.2 million trees , as part of its New Tree Strategy. This could equate to 900 hectares of additional woodland.[39] However, climate change impacts may pose significant threats to existing and future woodland with the county, as some of the present-day species found in the South East are less suitable for warmer and drier conditions.[40] Further, trees are just one element of habitat development that can help to sequester carbon – correctly managed soil through rotation, intercropping and other methods can develop the ability of the soil to act as a carbon sink. SCC's New Tree Strategy recognises the importance of different land use approaches, championing the 'right tree in the right place' approach, noting the need to identify the most appropriate habitat and landscape changes for Surrey.

Pursuing local food production in particular can help to reconnect people to their food system.

To this end, the value of our natural capital needs to be better understood, as well as the risks and opportunities associated with it. Over the coming year officers will work with key partners from the Boroughs and Districts, Surrey Nature Partnership, Surrey Wildlife Trust, Surrey Hills AONB, as well as the Forestry Commission and Natural England to develop a wider Land Use Framework. The framework will inform decisions on how land is used, managed and protected as well as the role of planning policy framework across all 12 local authorities in achieving this and maximising biodiversity net gain from future developments.

In order to achieve our ambitions for land use and food systems in Surrey sustainable farming practices will be critical. These practices could include reduction in use of pesticides, crop rotation and shared land use (e.g. reforestation).

[36] UKCCC, 2020. Land Use Policies for a Net Zero UK. [online]
[37] Vermuelen, Campbell, Ingram, 2012. Climate Change and Food Systems. Annual Review of Environment and Resources, **37**, 195 – 222.
[38] Forestry Commission, 2017.
[39] Assuming an average grid planting pattern of 9x9 ft.
[40] ASC, 2016. UK Climate Change Risk Assessment 2017 Evidence Report- Summary for England. [online]

Pursuing local food production, in particular, can help to reconnect people to their local food systems. Currently, UK households throw away £12billion worth of food, whilst an increasing number of people are relying on food banks.[41] Every £1 invested in local food is shown to return between £6-8 to society in the form of co-benefits including training and skills.[42] A number of local organisations, including the Surrey County Agricultural Society and Local Food Britain, have been working to deliver engagement programmes across all authorities including Farm and Food Week, which connects families with the local food supply chain.

Local, sustainable food practices must also respond to the potential threats from climate change, with the most recent UK Climate Change Risk Assessment identifying "a higher drought risk is likely to have increasingly adverse implications for the viability of cereal and potato production in many parts of southern and eastern England"[27]. Flash flooding also creates risk for food production; however, healthy soils, which are dense in organic matter, can slow water flow rates which can help to mitigate the risk of flooding to agricultural land – an example of natural flood risk management.

[41] Town County and Planning Association, 2019. Guide 10: Edible Garden Cities. Source
[42] National Trusts, 2014. Local Food Programme.

AMBITION STATEMENT

Develop a land use framework for Surrey focused on increasing accessible green spaces, woodland cover in appropriate locations in line with national targets and sustainable farming practices.

TARGET

1.2 million trees

planted by 2030

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Work with the agricultural industries, partners and research groups to promote sustainable localised food systems within Surrey.

Strategic Priority 2 (SP2)
Increase the potential of Surrey's land, biodiversity, current and future woodland to sequester and capture carbon, and help to reduce the impacts of climate change.

Strategic Priority 3 (SP3)
Greater learning and sharing of approaches to reduce carbon in our food consumption patterns through our procurement practices and within our communities.

INDUSTRY AND GREEN ECONOMY

Surrey's Climate Change Strategy

1.8 INDUSTRY AND GREEN ECONOMY

Emissions associated with industry in Surrey amount to 11% of the total county-wide emissions (2019) or 0.6 tonnes per person annually. It is predicted that under a BAU scenario the share of emissions associated with industry would fall by 3% by 2050.

In 2018, carbon emissions from UK industry were 104 $MtCO_2e$ - 52% below 1990 levels - and accounted for 21% of all UK emissions. In addition to these direct emissions, industry consumed almost a third of UK grid electricity.[17] UK territorial emissions from industry have fallen significantly since 1990, while UK industrial output has remained fairly constant, reflecting a switch to lower-carbon fuels and improving energy intensity.

Achieving a net zero carbon future requires the decoupling of emissions from economic growth, pursuing a green economy that cuts emissions whilst generating jobs for all in new industries and improved health and wellbeing. Surrey is well positioned to undertake this transition with a strong economic base[43], a high proportion of SMEs and range of sectors, and high-levels of education attainment rates. However, greater work is needed to develop an appropriately skilled workforce, increase digital connectivity and greater support for innovation and entrepreneurship.

Industrial decarbonisation, is one element of the transition to a green economy, and can be achieved through improvements in energy and water efficiency, as well as energy reuse methods and decarbonisation of electricity. The scaling-up of carbon capture and storage (CCS) will be required to address those industries where reducing emissions is particularly challenging. CCS has recently been supported by the UK National Government through the funding of nine pilot-projects in 2019.[44]

Finally, addressing unsustainable trends in water consumption will be important to not only reduce emissions but also to increase resilience to climate change. Beverage and food production, and manufacturing are water-intense industries which place high demand on available resources. Modelling high population growth and a medium climate change scenario (2.6 - 4.2˚C global temperature rise by 2100), has indicated that there would be demand of more than 150% of the available water resources in the south of England by 2050s.[9] Finding effective ways of working with these industries to reduce demand for water will therefore be important to meeting our net zero carbon target.

[43] Surrey's economic activity rate was 83.8% in 2019 according to ONS (2019) Annual Population Survey.
[44] BEIS, 2020. Source.

AMBITION STATEMENT

Pursue the transition to clean growth, through the decarbonisation of all major sectors and investment in the development of clean technologies and industries that create jobs and improve the quality of life for our residents.

TARGET

56%

Emissions reduction across industry by 2035 against BAU as a minimum

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
Expand research and development activities and the development of relevant skills amongst our workforce to support the creation of green technologies and products to decarbonise our industry.

Strategic Priority 2 (SP2)
Pursue energy efficiency improvements in local industry and businesses that reduce consumption and decarbonise energy usage.

Strategic Priority 3 (SP3)
Utilise innovation in digital technology to unlock a green transformation of our economy.

ADAPTATION

Surrey's Climate Change Strategy

ADAPTATION

In the most recent UK Climate Change Risk Assessment report, published in 2017 (the next one is expected in 2022), the Adaptation Sub-Committee of the Committee on Climate Change, commissioned regional assessments of climate change risk. The following risks were identified for the South East of England region out to 2050[45].

AREA	RISK
Businesses	• Increase in the frequency and severity of flooding causing damage and affecting business continuity. • Overheating of buildings affecting staff productivity.
Health and Wellbeing	• Disruption to health, social care and emergency management services and school provision, from flooding, heatwaves and storms. • Excess deaths and illness from overheating.
Buildings and Infrastructure	• Increased disruption, given that even minor incidents test the capacity of our infrastructure today and climate change is likely to exacerbate this.
Agriculture and Forestry	• Stresses on woodlands and forest resources, via water stress and pests and diseases. • Changes in growing conditions such as warmer, drier and longer growing seasons may make new crops more viable, as well as making existing ones less viable.
Natural Environment	• Impact on biodiversity of habitats and species which are valued for the services they provide such as water and air purification, as well as their intrinsic value.

[45] UKCCC, 2017. UK Climate Change Risk Assessment 2017. Source.

Flood risk protection in Blackdown Close Rain Garden

EXISTING WORK

It has been recognised that the County faces an increased frequency and severity of adverse weather events, notably flooding and heatwaves. These severe weather events have the potential to have a significant impact on local services and infrastructure such as highways, and to the health and wellbeing of local residents, particularly those in vulnerable groups.

In 2016, Surrey's Local Resilience Forum produced Strategic Climate Change Guidance[46] based on the most recent UK Climate Change Risk Assessment[47]. There are a number of partnerships and initiatives working to monitor and update these identified risks and work alongside the community to develop adaptation measures that build greater resilience amongst residents and partners. These include:

- Surrey Prepared
- Surrey Community Resilience Partnership
- Surrey Community Risk Register

[46] Surrey's Local Resilience Forum, 2016. Source.
[47] DEFRA, 2012. UK climate change risk assessment: Government report 2012. Source.

SCC works closely with the District and Borough councils, the Local Resilience Forum and the Environment Agency to increase the resilience of the county to flood risk, through reducing the impacts and frequency of flooding. New development and capital investment in infrastructure may be able to take into account the impacts of climate change, but much of the existing built estate, infrastructure and communities will still be adversely affected, where not already adapted to climate change effects, like increases in the frequency and intensity of rainfall.[17]

Through this partnership working Surrey's authorities are always looking to strengthen local resilience. As part of its Local Flood Risk Management Strategy SCC are intending to carry out an UKCP18 assessment for flooding across the county to take account of future climate scenarios. Surrey authorities and partners are seeking to respond to the increased risk of flooding from more extreme and erratic weather patterns through our £237M flood alleviation scheme for the Thames from Datchet to Teddington, as well as our wider programme of actions to deliver the Local Flood Risk Management Strategy, which has been allocated £33M over the next ten years.

STRATEGIC PRIORITIES

Strategic Priority 1 (SP1)
We will work with partners, employees, and our supply chain to increase the resilience of our estate(s) to climate change impacts, in particular flooding and extreme heat.

Strategic Priority 2 (SP2)
Take a proactive approach to working with planners and developers to strengthen the integration of climate change adaptation and holistic thinking into development proposals to build long-term resilience to climate change.

Strategic Priority 3 (SP3)
Increase understanding amongst staff, residents and businesses of the potential threats of climate change under different IPCC climate scenarios and how this can be integrated into our activities and estates as preventative measures and through the management of risk.

The actions to achieve these priorities have been written into the action plans of all the sectors as our approach to adaptation needs to be integrated where we act to build resilience.

MONITORING AND EVALUATION

It will be crucial that we monitor and evaluate our progress if we are to achieve the targets we have set ourselves across each of the sectors and our own operational emissions. We will ensure our staff have the skills and capacity to provide this robust monitoring across our partners and, where possible, extend to undertake data collection and monitoring of other relevant key performance indicators. This will allow us to set more specific milestone targets and climate change ambitions, as outlined below:

1. Commit to set long-term sector-specific targets (five-year intervals) to reduce both the County's Scope 1 and 2 emissions, and measure and report on these annually.

2. Commit to measure and report Scope 1 and 2 emissions from local authorities' own estates and activities annually.

3. Commit to measure and report Scope 3 emissions annually from local authorities' own estates and activities from 2021, with an ambition to consider approaches to reduce or offset these emissions.

4. Publish our performance and progress against our county-wide targets annually, disaggregated to district and borough level.

5. Continue to monitor localised air quality total mass emission of key pollutants across Surrey as according to the air quality management areas (AQMAs).

6. In the next year, establish targets for reducing emissions of key air pollutants in the most poorly performing areas.

7. Continue to develop our climate change actions and their associated delivery plans through engagement across local authorities and in conjunction with SCC's Project Board.

8. Publish a major update to our Climate Change Strategy every five years to align with our key target years.

The detailed methodology of our county-wide emissions baseline and targets is set out in Appendix A.

CLIMATE CHANGE ACTIONS

1.1 ORGANISATION EMISSIONS

By 2022		
Estate (SP1)	**Vehicles (SP2)**	**Strategic and Supply Chain (SP3)**
Establish a Property Working Group on Climate Change to help deliver actions relating to local authority estates.	Continue to monitor the emissions associated with local authorities' grey fleet and consider setting a reduction target.	We will use our procurement practices and influence across our supply chain to require and incentivise environmentally responsible commissioning.
Review the delivery of planned schools maintenance (where maintenance is expected to be made to more than 10% of the property area), school expansion programmes and new developments for potential for energy efficiency savings.	Review travel plans for all existing and new developments to promote agile working and sustainable commuting practices.	We will establish a target for the procurement of local organic and/or plant-based food to be used on Council-owned and run sites.
Monitor energy consumption, costs, and carbon emission sources to inform our energy management programmes. Publish performance and progress against emissions targets, within the council and to the public and government.	Review SCC's fleet leasing arrangements at the next renewal cycle in order to begin replacing our vehicles with ultra-low emission vehicles, where possible.	SCC supports Surrey Pension Fund's commitment to establish a Committee sub-group to develop the Fund's Responsible Investment Approach. Their role will include exploring the analysis of scenario mapping The Fund's portfolio in line with the United Nations' (UN) Sustainable Development Goals (SDGs), in particular Goal 13 Climate Action, carried out by an independent provider.

Require energy efficiency and carbon reduction potential to be considered for all projects on our estates.	Improve fuel efficiency and emissions reduction of fleet vehicles through specification of vehicles, route planning and driving techniques.	Develop climate change guidance training for members and officers. Guidance will be embedded in the decision-making process across service areas.
Promote energy efficiency awareness and responsibilities to all staff as building users.		Support schools to embed climate change and sustainability in learning, including teaching focused on food production, nutrition, and the environmental impacts associated with the food system.
Replace SCC's street lighting estate with LED luminaires.		Review Surrey's Greener Futures Design Challenge to deliver more collaborative working on climate change solutions with residents.
Install daylight-sensors in all local authority buildings.		Develop a digital carbon footprint for Surrey residents to allow them to visualise and understand their personal carbon impact.
Look to connect all Surrey CC buildings to CHP or other forms of DHN's or cooling systems where appropriate.		Work with Surrey's network of Eco-schools to promote the education of energy and water efficiency in the home. This will enable students to become energy advisers to their own families.

All new buildings funded by SCC to be considered for solar panels.	
All new authority buildings to be considered for low carbon heating solutions such as air source heat pumps.	
Ensure all local authority properties have flood resilience action plans and extreme heat is embedded in their risk register.	

1.1 ORGANISATION EMISSIONS

By 2035		
Estate (SP1)	**Vehicles (SP2)**	**Strategic and Supply Chain (SP3)**
All SCC properties' electricity delivered through a green energy supplier by 2030.	Review and implement policies and initiatives that support the reduction of the carbon emissions associated with business mileage.	Climate change is to be considered a priority in decision making across all authority services.
Explore the commercial and technical viability of installing renewable energy on local authority-owned sites which will provide revenue payback on loans.	Review our tender specifications with an ambition to make local authority fleets 100% electric or hydrogen by 2030, including Surrey Fire and Rescue Service.	Support schools to reduce emissions associated with operations e.g. energy efficiency and solar panels. Learnings will be taken from existing projects such as Wey Valley Solar Schools Energy Co-op on how to make local energy generation projects financially viable.
Explore low-carbon heating options to reduce reliance on natural gas, including the use of the anaerobic digester plant at the Eco Park, Surrey.		Full life cycle energy and carbon implications of major projects and strategic decisions will be considered within key scrutiny and decision-making processes.

Ensuring that all development is high quality and well-designed, that contributes positively to the value of Surrey's places. Local authorities will look to increase the design and place-making skills of planners across the County and will develop strategies and guidance to positively influence design. These developments will be resilient and adaptable, to meet current and future needs.
Review SCC's own operations and practices in line with The UK Plastics Pact target – 100% recyclable, compostable or reusable plastic packaging.
All authority buildings to be considered for solar PV with the intention of selling excess electricity back to the grid.

1.2 TRANSPORT AND AIR QUALITY

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Continue to implement and develop our local authority agile working practices to reduce employee journeys and act as an example to businesses.	SP1	Encourage employers to offer a cycle to work salary sacrifice scheme, increasing funding for e-bikes and secure cycle storage.	SP2
SCC to work with partners to undertake a fundamental review of the county's Local Transport Plan, which will detail further specific actions to mitigate the carbon emissions of transport and travel.	All	Significantly increase and diversify our communications and engagement on climate change, to support residents to make sustainable travel choices.	All
Update parking standards for new developments in urban centres, through future local plan refresh processes, which will remove the provision of new parking spaces and reduce journeys.	SP1	Further support residents applying for Playing Out and other forms of temporary street closure to improve safety and reduce car use in local communities.	SP2
Assess first and last mile travel patterns across the county and work with regional transport authorities and partners to improve connectivity and provide more low-carbon options.	SP1		
Continue to support and promote our policy of shared travel for students.	SP2		

Implement the county-wide Cycling Strategy and work to develop the Local Cycling and Walking Infrastructure Plans (LCWIPs) for each district and borough. This will promote a shift to walking and cycling through identifying current barriers and levers.	SP2
Pilot schemes across Surrey that seek to reduce car use through approaches that are relevant to local contexts and remain considerate of accessibility e.g. ultra-low emission areas, car free zones and pedestrianised streets.	SP2
Register, promote and further invest in Surrey's public right of way network to increase the number of well-signed and well-maintained multi-user routes.	SP2
Evaluate the current bus service contracts across all authorities with a view to changing journey routes and reintroducing lost routes. This will improve connectivity between villages, urban centres and key services.	SP2
Provide more accurate arrival information for bus journeys and investing in route planning to enable more sustainable travel.	SP2
SCC to invest in bus priority measures at highway pinch points on identified services from 20/21	SP2

Develop a county-wide Electric Vehicle (EV) strategy by 2021 with an ambition to provide a network of town centre / key location charging points. Charging points will span the 12 local authorities and include fast chargers.	SP3
County-wide sustainability training delivered to officers working in transport and infrastructure service areas, making climate change a priority in future service delivery.	All

1.2 TRANSPORT AND AIR QUALITY

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Prioritise the delivery of strategic infrastructure to be located near key transport hubs, reducing the demand for travelling by private car and improving overall mobility and accessibility, in and between urban areas.	SP1	Encourage businesses to incentivise more sustainable modes of travel for their staff e.g. only allowing work travel claims for public transport.	SP2
We will review how we can promote the option of using sustainable modes of transport for all students. This will be facilitated by funding measures at the earliest opportunity.	SP2	We will work with the county's car club operator to expand its network of electric vehicle provisions, with a view to making 50% of vehicles electric by 2025.	SP3
SCC to co-invest in the acceleration of Ultra low emissions buses and community transport vehicles with an initial programme to be delivered by 25/26	SP3		
Leading by example, local authorities will ensure that public transport and taxis are 100% electric or converted to hydrogen at the earliest opportunity.	SP3		
Work with Surrey Police to share with others service areas, such as Surrey Fire and Rescue Service, best practice on transitioning emergency vehicles to ultra-low/zero emissions.	SP3		

Review our tendering specifications with an ambition to make local authority fleets 100% electric or hydrogen by 2030, including Surrey Fire and Rescue Service vehicles.	SP3

1.3 ENERGY GENERATION

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Carry out a Surrey-wide feasibility study to identify land and buildings where solar PV could be installed.	SP1	Work with the Local Enterprise Partnerships (LEPs) to help implement the key actions outlined in the EnergySouth2East Local Energy Strategy.	All
Undertake partnership working with districts and boroughs to evaluate the potential to produce low or zero carbon energy focused projects, e.g. low-head hydropower.	SP1	Continue to contribute and grow Surrey Energy Partnership, a forum of leading organisations engaged in the energy sector.	All
Look to connect all Surrey CC buildings to CHP or other forms of DHN's or cooling systems where possible.	SP2	Engage with rail operators to identify areas of land for renewable energy.	SP1
Develop a Surrey-wide Renewable Energy Strategy that explores potential opportunities for renewable energy, decentralised systems and low carbon heating systems e.g. heat pumps and Combined Heat and Power.	All		

1.3 ENERGY GENERATION

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Identify potential sites for other types of renewable energy installations e.g. wind turbines.	SP1	Support small and medium enterprises (SMEs) specialising in decentralised energy networks to access Central Government funding through the Local Enterprise Partnerships.	SP2
All authority buildings will be considered for solar PV panels with the intention of selling excess electricity back to the National grid.	SP1	Work with Surrey Energy Partnership to leverage increased funding for clean energy activity in Surrey.	All
Work with Surrey Environment Partnership to scope the potential to develop more energy from anaerobic digestion.	SP1	Explore the use of group buying schemes for solar PV panels to reduce the direct costs to residents through economies of scale.	SP1
Conduct a county-wide analysis for the potential for district heating networks.	SP1		
Scope the potential for establishing low cost capital finance such as community revolving funds.	SP1		
Develop local requirements for decentralised energy supply in local plans which new developments will be required to comply with.	SP2		
Work with local planning officers and building control to encourage and facilitate zero carbon heating systems for new build development.	SP2		

1.4 HOUSING AND PLANNING

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Monitor energy use within social housing to identify measures that can be deployed to tackle low energy efficiency.	SP1	Develop an effective communication plan to help residents understand energy efficiency and to empower residents to take action in their own homes e.g. cavity wall insulation.	SP1/2
Bring social housing providers together across the local authorities to develop the options for a Surrey-wide retrofit programme.	SP1	Continue to support partners such as Action Surrey to distribute impartial information and advice on energy efficiency measures to residents. Our most vulnerable residents will be supported through grant funding for efficiency measures.	SP1
Continue to provide support through our Flood Risk Planning teams to businesses so property flood resilience measures can be implemented.	SP1	District and boroughs to work with their tenant's panels to drive behaviour change in energy consumption.	SP1
Work with the Centre for Sustainable Energy and other organisations to identify, baseline and analyse the typologies of Surrey's residential building stock. In doing this, the most appropriate retrofit options can be identified.	SP1/2	Work with Enterprise M3 and Coast to Capital Local Enterprise Partnerships to identify private and national government funding sources for retrofitting existing housing stock.	SP1/2

Develop funding mechanism that maximise on-site carbon reductions in new developments and facilitate retrofitting in existing housing stock – achievable by working with economic development, planning and environment officers across all authorities.	SP1/2
Develop cross-authority supplementary Climate Change, Sustainable Design, Construction and Energy Supplementary Planning Document (SPD) guidance which seeks to embed climate change consideration into local development – to be updated regularly in line with our ambitions.	SP2

1.4 HOUSING AND PLANNING

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Research the use whole-house retrofit methods to improve energy efficiency and alternative heating methods within existing private and social housing stock e.g. Energiesprong.	SP1	Explore the development of a private landlords' registration scheme that would enable us to work with them to undertake energy efficiency improvements in their properties.	SP1
Explore introducing, through planning guidance, energy efficiency improvement requirements at the point of renovation.	SP1	Work with the Local Enterprise Partnerships to identify funding sources that residents can access to undertake energy efficiency and adaptive measures in their homes.	SP1
Review planning policy to strengthen the requirement of new development to consider adaptation to different climate scenarios, which goes beyond a proactive approach.	SP2		
Consider expanding commitments made by some districts and boroughs to have all major residential developments (10+ dwellings) 30 minutes from health, education, retail and employment facilities, when travelling by public transport.	SP3		

1.5 BUILDINGS AND INFRASTRUCTURE

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Set a target date for all new developments to be net zero carbon and also to achieve a 10% increase in biodiversity as a minimum to strengthen climate resilience.	SP1	Support small and medium enterprises to increase the uptake of energy efficiency measures e.g. luminary upgrades through innovative funding mechanisms e.g. Low Carbon Across the South East (LoCASE).	SP1
Work with the Centre for Sustainable Energy and other partners identify, baseline and analyse the typologies of Surrey's non-residential building stock.	SP1/3	Increase engagement with businesses and existing partners e.g. Chamber of Commerce and Surrey Hills Enterprises, so information can be shared on key energy efficiency measures.	SP1
Develop a localised Renovation Impact Framework to identify and coordinate renovation/retrofit initiatives. This should include a database of indicators to measure impact e.g. the number of companies with organisational commitments.	SP1	Continue to offer support and advice to health and care organisations (Surrey Heartlands) to help reduce the emissions associated with their estate.	SP3
Consider the development of Supplementary Planning Guidance which requires 20% of parking bays in all new non-residential properties to have active electric vehicle charging infrastructure (if not progressed by National Government).	SP2	Provide greater support through our Flood Risk Planning teams to businesses so property flood resilience measures can be implemented.	SP1/3

1.5 BUILDINGS AND INFRASTRUCTURE

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Develop a database of common energy efficiency measures to align with Surrey's building typologies.	All	Through working with Surrey Energy Partnership, Enterprise M3 and Coast to Capital develop soft loan mechanisms for encouraging the uptake of heat pumps. The mechanisms will encourage the uptake of heat pumps in non-residential buildings to drive deployment at scale.	SP1/3
Evaluate the use of business rates to drive more rapid adoption of energy efficiency measures within non-residential buildings.	SP1	Work with organisations such as The Royal Institute of British Architects (RIBA) to better understand whole life carbon in the construction of municipal buildings.	SP3
Encourage larger housing and commercial schemes to provide at least 10% of the development's energy from on-site renewable sources.	SP2		
By 2030, all new development will contribute to achieving place-based resilience to flooding.	SP3		
Expand all existing district and borough regulations to increase integration of green infrastructure which can both contribute to carbon sequestration and adaptation to increased flood risk and overheating risks.	SP3		

- Consider requiring new non-residential developments of a certain size to report on the potential embodied carbon within planning applications. SP3

1.6 WASTE, RESOURCES AND CIRCULAR ECONOMY

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Promote and dedicate continued funding and resource to delivering 'A Single-use Plastics Strategy' for Surrey, which will help reduce waste generation and promote recycling.	SP1	Provide additional support for community-led innovation through programmes such as the Design Challenge to reduce waste.	SP1
Using local authorities' own commissioning and procurement processes, increase producer responsibility amongst local SMEs.	SP1	Consider a programme of funding for charities or other local initiatives who redistribute surplus food from food businesses and allotments to those in need.	SP1
Partner with the University of Surrey on a research funding bid to develop smart, sustainable plastic packaging.	SP1	Continue to regularly engage with residents on the waste service i.e. customer service surveys, and increased communications to achieve behaviour change.	SP2
Explore opportunities potential for our new Community Recycling Centre network to contribute towards the circular economy by expanding the reuse offering and working with producers on take- back schemes across Surrey.	SP3	Support water companies, high street retailers, coffee shops and transport hubs to offer new refill points for people to top-up water bottles for free.	SP2
Explore the procurement of electric/low-emission rubbish collection trucks.	SP3	A new phase of campaigns and marketing to focus on reduce and re-use.	SP2
		Engage with specific residents and businesses that do not present recyclables for collection, or present contaminated recyclables for collection to understand their barriers to recycling and help overcome them.	SP2

1.6 WASTE, RESOURCES AND CIRCULAR ECONOMY

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Use local economic data to provide a clearer picture of ongoing reuse activities, to identify circular economy opportunities and assets.	SP1	Working with partners in education, businesses and social enterprises and health sectors to push Single Use Plastics policy, waste minimisation, reuse and repair/upcycling schemes.	SP1
Research and, where appropriate, establish a programme of investment in reuse alternatives for products and deposit return schemes to support producer responsibility.	SP1	Engage with organisations such as the Ellen McArthur Foundation to increase our collective knowledge of waste minimisation best practice approaches for education.	SP1
Consider introducing a local eco-labelling initiative for local retailers to encourage residents to buy more sustainable products.	SP1	Develop circular economy networks with SMEs, residents and partners to encourage eco-design.	SP1/2
Re-thinking the way we manage waste (Joint Waste Authority and re-commissioning of the waste contract 2024).	SP2/3		
Explore opportunities for SCC to build its own materials recovery facility (MRF).	SP3		
Work with Surrey Environment Partnership to develop local markets for reusing or recycling material that has been created by Surrey residents and businesses.	SP3		

1.7 LAND USE AND FOOD SYSTEMS

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Explore best practice policies that highlight the importance of including food growing spaces in new developments and on vacant or under-used sites.	SP1	Continue to work with Tenant farmers and Surrey Hills Enterprises to share best practice on sustainable farming.	SP1
Establish a baseline and further develop targets for new tree cover, and its wider benefits e.g. ecosystem services accreditation as recognised in the Landscapes Review report.[2]	SP2	We will continue to work with SCC's management partners and Surrey Wildlife Trust to ensure that the quality of the biodiversity and nature conservation value is maintained. This will ensure the estate can continue to build our local resilience.	SP1/2
Identify Transformation funding to review SCC's policy and planning framework - re-thinking how land owned and managed by the county council is used, in order to adapt to and mitigate against, a changing climate.	SP2	Work with university partners to further evaluate of the role of land management in reducing carbon emissions.	SP2
Strengthen the monitoring of sustainable drainage systems (SuDS) installation and quality in new developments.	SP2	We will establish a target for the procurement of local organic and/or plant-based food to be used on Council-owned and run sites.	SP3

[1] DEFRA, 2019. Landscapes Review. Source.

Set a target date for no municipal food waste to be sent to landfill through the re-evaluation of Surrey's existing Waste Strategy.	SP3	Use our public-facing platforms to share information on low-carbon dietary choices.	SP3
Conduct a land use characteristics assessment to track the current and potential land uses.	All		
Create a clearly defined land use framework to inform decisions on how land is used, managed and protected as well as the role of planning policy framework across all 12 local authorities in achieving this and maximising biodiversity net gain from future developments.	All		

1.7 LAND USE AND FOOD SYSTEMS

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Create guidelines for local authority procurement of food in schools, hospitals and prisons to be sustainable by default.	SP1	Work alongside community groups with training programmes to support people to set up food-growing enterprises.	SP1
Identify potential policies to support the development of urban agriculture sites and organic farming practices. The policies will shorten supply chains, reduce GHG emission and increase community cohesion.	SP1	Work with national government to promote a shift towards lower meat and dairy consumption, to achieve the net zero target.	SP3
Encourage provision of space for community gardens in new developments, and protect existing allotment sites.	SP1		
Integrate support for agroecological farms and local supply chains into local development plans and new development site plans.	SP1		
Facilitate the planting of new trees in Surrey to meet the council's pledge of 1.2m new trees county-wide by 2030. This will increase the drawdown of CO_2 from the atmosphere whilst improving air quality .	SP2		

Develop guidance for land managers on the use of land for carbon sequestration in conjunction with partners such as SWT, FSC and the Forestry Commissions, including the use of hedgerows which can achieve wider air quality benefits.	SP2
Ensure school meals are healthy and sustainable, using the Soil Association's gold award as a guide.	SP3

1.8 INDUSTRY AND GREEN ECONOMY

By 2022			
Local Authority Action		**Engagement with Residents and Partners**	
Develop SCC's economic strategy which identifies potential opportunities for generating green jobs and supporting specialist skills e.g. in low carbon heating and retrofitting.	SP1	Identify and engage with those businesses operating in Surrey that are exploring electrification technologies.	SP2
Evaluate the potential for business rate relief for retailers that promote sustainable practices e.g. refill shops.	SP1	Continue to work with Surrey Climate Commission to identify businesses contributing to the green economy, and new ways of support e.g. technical, financial etc.	SP1/3
Begin the review of the County's Minerals Planning Policy, taking into account climate change.	SP2	Support businesses to access BEIS' Industrial Heat Recovery and Support Programme (IHRS) that provide grants to any business looking to pursue heat recovery.	SP2
Consider Department for Business, Energy and Industrial Strategy's (BEIS) industrial decarbonisation and energy efficiency action plans and its relevance to Surrey's industries.	SP2	Work closely with the Local Enterprise Partnerships (Coast to Capital and Enterprise M3) to identify funding opportunities for local low carbon energy projects.	All
Use cross-service working to identify potential unintended consequences of a digital revolution e.g. social isolation.	SP3		

1.8 INDUSTRY AND GREEN ECONOMY

By 2035			
Local Authority Action		**Engagement with Residents and Partners**	
Support the increase of community food growing to develop key transferable skills and apprenticeships, as part of a green economy.	SP1	Establish a network of digital champions to support and advocate digital services and promote a programme of digital skills training.	SP1/3
Scope potential heat network projects for application to national funding mechanisms e.g. Heat Network Investment Programme (HNIP).	SP1	Develop more information and advice to SMEs to encourage the uptake of energy efficiency technologies.	SP2
Explore finance mechanisms to encourage small and medium enterprises (SMEs) to cut their bills and emissions through increased energy efficiency measures.	SP1	Partner with commercial and/or public organisations to improve county-wide digital infrastructure, taking an inclusive approach to ensure we do not leave rural areas behind.	SP3
Explore use of new technologies to create a smart county and help to address our environmental challenges, e.g. developing sustainable transport approaches, smart mobility and energy efficiency.	SP1		

APPENDIX
APPENDIX A: METHODOLOGY

SURREY COUNTY'S CARBON FOOTPRINT

Any area's carbon footprint – measured in terms of the total impact of all of its greenhouse gas emissions - can be divided into three types of greenhouse gas emissions.

- Those coming from the fuel (e.g. petrol, diesel or gas) that is directly used within an area and from other sources such as landfill sites or industry within the area. These are known as Scope 1 emissions.

- Those coming from the electricity that is used within the area, even if it is generated somewhere else. These are known as Scope 2 emissions. Together scope 1 and 2 emissions are sometimes referred to as territorial emissions.

- Those associated with the goods and services that are produced elsewhere but imported and consumed within the area. After taking into account the carbon footprint of any goods and services produced in the area but that are exported and consumed elsewhere, these are known as Scope 3 or consumption-based emissions.

In setting Surrey's CO_2e emissions targets we focus on Scope 1 and 2 emissions and exclude consideration of long-distance travel and of Scope 3, or consumption-based, emissions. This reflects a territory-based approach to emissions monitoring as the carbon accounting and management options for these emissions are better developed. However, we recognise that the emissions from consumption-based emissions are very significant, and also need to be addressed, and have begun to do so on our own estates.

SURREY'S LOCAL AUTHORITIES' CARBON FOOTPRINT

For Surrey's Local Authorities' own operational practices, emissions have been reported in accordance with the Department for Business, Energy and Industrial Strategy's (BEIS) 'Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance' (previously National Indicator 185).

The scope of emissions are in-line with the definitions given above the 'area' for a local authorities' operations which will define which Scope 1 and 2 emissions are measured, is defined by an individual authority, but is generally what is under their financial control (other boundary types include operational or equity share).[48]

[48] BEIS, 2019. Source.

DEVELOPING A BASELINE OF PAST, PRESENT AND FUTURE EMISSIONS

Having a baseline of carbon emissions is key to Surrey's authorities tracking our progress over time. We have used local authority emissions data, availably publicly from BEIS, to chart changes in emissions from 2005 to the 2018. This data is also broken down to show the share of emissions that can be attributed to households, public and commercial buildings, transport and industry.

Our current emissions levels are then projected forward for the period to 2050. To do this, we have assumed on-going decarbonisation of electricity in line with Government commitments and a continuation of background trends in **a)** economic growth (assumed at 2.5% p.a.), **b)** population growth (assumed at 0.1% p.a.) and **c)** energy use and energy efficiency. As with all forecasts, the level of uncertainty increases as the time period in question extends. Even so, it is useful to look into the future to gauge the scale of the challenge to be addressed in each area, especially as it relates to the projected gap between the forecasted emissions levels and those that are required if Surrey's emissions are to be consistent with a global strategy to limit average warming to 1.5 degrees.

SETTING SCIENCE-BASED CARBON REDUCTION TARGETS

To set science-based carbon reduction targets for Surrey, this strategy uses as a reference point the total global level of emissions that the IPCC suggests gives us a 66% chance of limiting average levels of warming to 1.5 degrees. This global carbon budget is divided according to the share of the global population living in Surrey. This has enabled us to set the total carbon budget for our county that is consistent with the IPCC methodology. To set targets for carbon reduction, we have then calculated the annual percentage reductions from the current level that are required to enable an area to stay within its overall carbon budget.

SURREY'S LOCAL AUTHORITIES OWN EMISSIONS

The methodology followed by local authorities to report their operational and estate emission is in accordance with the Government guidance on measuring and reporting greenhouse gas emissions (GHG).[49]

Standard UK conversion factors for the relevant reporting period are used in units of tonnes of carbon dioxide (CO_2) equivalent (CO_2e).[50] Carbon dioxide is the main, but not the only, greenhouse gas emitted by council operations. Burning fossil fuels also releases other gases, including methane (CH4) and nitrous oxide (N20) and air conditioning units leak hydro fluorocarbons. All these are greenhouse gases. Surrey's local authorities will publish their most recently reported emissions figures on their respective websites.

[49] BEIS, 2019. Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance (March 2019). Source.
[50] BEIS, 2019. Government emission conversion factors for greenhouse gas company reporting. Source.

ACKNOWLEDGEMENTS

Many thanks to the numerous people and organisations who worked tirelessly to develop and shape Surrey's Climate Change Strategy.

Surrey's Officers, Members and Councillors

Tim Oliver | Mike Goodman | Rachel Crossley | Katie Stewart | Simon Griffin | Katie Sargent | Esme Stallard | John O'Reilly | Jonathan Essex | Nikki Barton | Andrew Macleod | Caroline Reeves | Stephen Cooksey | Ray Morgan | Daniel Mouawad | Matt Furniss | Denise Turner Stewart | Colin Kemp | Tracey Haskins | Caroline Smith | Anna D'Alessandro | Jane Winterbone | Anna Kwiatkowska | Rachel Gill | Jane Last | Patricia Barry | Paul Millin | Beth Stewart | Chris Tisdall | Cat Porter | Matthew Smyth | John Mackintosh | Glen Westmore | Nikki Nicholson | David Greenwood | Cathy Miles | Louise Morton | Candace Grigsby | Helen Treasure | Mairead Rooney | Grace Cox | Oliver Harrison | Elvia Sciullo

Partners and Stakeholders

Surrey Police | Surrey Fire and Rescue Service | Surrey Climate Commission | Georges Abbot School | Heathside School | Surrey Energy Partnership | Surrey Air Alliance | Action Surrey | Surrey Planning Officers Association | Heat Surrey | Surrey Environment Partnership | Focus Group Resident Participants | Surrey County Council Resident Panel | Enterprise M3 Local Enterprise Partnership | Coast to Capital Local Economic Partnership | Surrey Wildlife Trust | Enterprise | Local Government Association

Special Thanks

Professor Andy Gouldson, Leeds University
Andrew Sudmant, Leeds University
Robert Fraser Williamson

For their work on the development of Surrey's emissions baseline and carbon neutral pathways.

Designers

Camila Avilés Ilama | Dawn Chilvers

Surrey's Greener Future

SURREY COUNTY COUNCIL

SURREY'S CLIMATE CHANGE STRATEGY