



Climate Change Resilience and Adaptation Strategy

Draft for consultation

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Executive Summary

The climate emergency remains the challenge of our time, and time is running out. Since declaring a climate emergency in 2019, Southwark has developed and is now delivering a climate strategy and action plan with an ambition to be a carbon neutral borough by 2030.

But, even if global greenhouse gas emissions stopped tomorrow, the climate will continue to change. We need to improve our resilience to the impacts of climate change and adapt to meet the challenges. Making changes now will help prepare Southwark for the future. Ensuring these changes are made the right way will also contribute to living more sustainably and reducing our impact on climate change.

Extremes of weather, flooding, water scarcity, food insecurity and new pests and disease which threaten our biodiversity are all impacts of climate change that we are experiencing in Southwark. This strategy forms a new section of our climate strategy and sets out our ambitions for tackling each of these. To achieve a carbon neutral borough which has adapted and is more resilient to climate change we will:

1. Build resilience to overheating by cooling buildings, providing respite from heat and preparing for extreme temperatures.
2. Reduce the risk of flooding by improving drainage, reducing the demand on the sewer system and improving our flood defences.
3. Conserve more water and adapt our green spaces to be drought-resistant.
4. Improve food security by reducing wastage and increasing local supply.
5. Protect our biodiversity from new pests and diseases.

We cannot achieve this alone and will only do so working with partners in London such as the GLA, London Councils and other boroughs. We will need to work with major organisations in the borough such as universities, schools and NHS trusts. We will partner with the UK Government through DEFRA, the Environment Agency and others, and we will also work with local businesses, residents and all those committed to building a fairer and more sustainable Southwark.

This strategy outlines our five ambitions, which will inform the goals we set and the actions that we take. They will sit alongside the actions in the climate strategy, working together to tackle climate change and build our borough's resilience.

Introduction

The climate emergency remains the challenge of our time, and time is running out. Since declaring a climate emergency in 2019, we have developed and are now delivering a climate strategy and action plan with an ambition to be a carbon neutral borough by 2030.

Working with our communities, we have already made progress decarbonising buildings, making walking and cycling easier and delivering projects across the borough to reduce carbon and invest in a more sustainable future. It is right that our top priority remains to reduce carbon to slow and eventually stop the warming of the planet and the catastrophic effects of climate change.

However, too much damage has already been done. Even if the world stopped producing carbon and other greenhouse gases tomorrow, the increased carbon already in the atmosphere means the planet will continue to warm and it will take many thousands of years to return to pre-industrial temperatures.ⁱ

While we need to redouble our efforts to reduce carbon and move to a net zero future, we also need to adapt for a warmer world and ensure we are resilient to the changes that are already happening. We also expect those changes to continue to intensify in the coming years.

According to the Climate Change Committee (CCC), no single sector in England is prepared for the impacts of climate change, with the last ten years being a “lost decade” for government action.ⁱⁱ

With this in mind, we have developed this resilience and adaptation strategy. It should be viewed alongside our climate strategy and shows how we plan to create a more resilient borough that can overcome the current and future impacts of climate change in a just, equal and fair manner. It formalises our approach through a list of clear and defined actions that will focus on how we best prepare the borough and its residents for a changing climate. It builds on work already taking place to adapt the borough in the face of a changing climate, through work on flooding, overheating, biodiversity and many other areas.

Our aim is to create a borough that does not passively endure climate change but acts to limit its impacts and do so in a way that contributes to carbon reduction. Our aim is to do this working with our residents, businesses, schools, institutions and everyone who lives, works and cares about Southwark and its future.

This strategy appends Southwark Climate Change Strategy “Tackling the Climate Emergency Together”. It contains new actions for our climate action plan and builds on the work we are doing to reduce carbon, to also ensure the borough is prepared and resilient for the effects of climate change. This strategy sets out a new dimension to our climate work, but does not change our overall approach or the values that drive us. We intend for this to be viewed alongside the Climate Change Strategy to give a complete picture of our ambition and plan to tackle the climate emergency together and build a more resilient future for Southwark.

What is resilience and adaptation?

According to the London City Resilience Strategy,ⁱⁱⁱ resilience is defined as the capacity of communities and systems to survive, adapt, and thrive no matter what kinds of chronic stresses and acute shocks they experience. A recent example of where resilience was tested would be the COVID-19 pandemic, where communities and systems were under considerable pressure in the face of unprecedented changes.

Adaptation refers to communities and systems adjusting how they operate in response to actual or expected impacts of change. Both resilience and adaptation are important in relation to climate change. Our borough will have to be resilient to unexpected and unpredictable environmental conditions and will also have to adapt how it behaves and operates to ensure that Southwark can continue to thrive. There is also an opportunity to change in a way that creates a more just and equal Southwark.

The impacts of climate change do not impact all people proportionately. Existing economic and social inequalities are exacerbated, and sometimes even caused, by our changing climate. It is therefore necessary to implement preventative adaptation strategies in a way that is fair and proportionate to the impacts felt. In no way should adaptation to the way we live further impact communities already affected by climate change.

Why do we need this strategy?

As set out in our climate strategy, Southwark is already seeing the impact of climate change. All ten of our warmest years have occurred since 2002, whereas none of the ten coldest years has occurred since 1963. Summer heatwaves are now 30 times more likely than they would be typically.^{iv} Climate change means UK temperatures are set to become more volatile with more extremes of both heat and cold.

We are already experiencing the impacts of climate change in Southwark and this is set to worsen. Adapting the borough and strengthening our resilience is a crucial part of our response to the climate emergency.

Deaths due to heat are expected to rise by two thirds in a decade, as well as increased death rate with extreme cold. Burning fossil fuels in cars, heating and industry is also polluting the air we breathe as well as contributing to climate change. In Southwark, already around 72 deaths occur due to air pollution every year.^v

60% of Southwark's residents live on land less than ten meters above sea level, any changes in sea levels will therefore have a direct effect on Southwark. Current flood defences will need to be renewed in the future.

An estimated 75,000 of Southwark's residents are food insecure.^{vi} Climate change will increase food insecurity and we can expect this to impact on prices and greater food inequality in Southwark.

Southwark is a proudly global borough. This means many of our residents are connected to friends and families around the world who are impacted by conflict and migration caused by food shortages, water shortages and extreme weather. Climate change and ecological damage will increase this forced migration that will impact on residents here in Southwark.

Southwark's approach

Climate resilience and adaptation can cover a huge breadth of issues, from flooding to the impact of global migration. To ensure that this strategy is focused and actions can be delivered, it will consider resilience and adaptation where the actions that we take make the borough more resilient. It will also ensure these actions tackle factors which contribute to climate change. The strategy will also focus on solutions that as a borough we can deliver or influence and the partners we can work with. For example, the strategy will not try to tackle global food supply chains but will look at what we can do to ensure a greater use of locally sourced food.

The strategy considers five risks, which originate from the CCC's 2017 Climate Change Risk Assessment (CCRA): overheating, flooding, water scarcity, pests and diseases and loss of natural capital. The sixth theme from this report, 'Thriving Natural Environment', has a dedicated section in the Climate Change Strategy and action plan, so is not covered here.

Taking action

Our vision is for a borough resilient to climate impact. To achieve this, we have considered the issues identified by the CCC and built our resilience and adaptation strategy around this.

Overheating

Southwark has a high risk of excessive heating, particularly in the middle of the borough. High heats are felt more significantly in areas with less tree canopy and a lower level of access to green open spaces. It is also felt more strongly in urban areas, due to the Urban Heat Island effect. Our borough is also warmed by waste heat from energy sources, housing and transport.

Heatwaves

The average summer temperatures in London are predicted to keep rising. Dense urban areas also retain more heat, which can result in the centre of London being up to 10°C warmer than rural areas.^{vii}

Wildfires

Wildfires are becoming a far more prevalent risk as temperatures soar during summer. The London Fire Brigade saw a 128% increase in grass fires in 2022 compared to 2021.^{viii} Southwark had an 'exceptional' chance of fire risk during June and July of last year and this is expected to occur again.^{ix} As well as negatively impacting health, large wildfires also release carbon dioxide which exacerbates climate change.

Health impacts

Higher temperatures have resulted in adverse mental health outcomes, increased dehydration, pregnancy complications, kidney function loss, skin malignancies, and tropical infections. These health impacts all disproportionately affect the most vulnerable in society.^x

Increased temperatures may put additional stress on local health services, which in turn could lead to worse health conditions for Southwark residents.

We will build resilience to overheating, by cooling buildings, providing respite from heat and preparing for extreme temperatures.

Flooding

60% of Southwark residents live on land less than ten meters above sea level, and any changes in sea levels will have a direct effect on Southwark. Southwark is protected from tidal and river flooding by various flood defences including the Thames Barrier, but with increased sea levels these may no longer be effective and stakeholders in the borough must do more to reduce the future impact of flooding on our residents.

Surface water flooding

In July 2021, Southwark was directly affected by two serious flash floods in two weeks. Across London, some areas received more than twice the average monthly rainfall in just two hours.^{xi} Surface water flooding occurs after heavy rainfall, when water cannot drain away or soak into the ground. This is a particular problem in urban areas.

Tidal surges

Tidal surges occur when river levels rise, creating increased wind and low atmospheric pressure. London is currently protected from tidal surges by the Thames Barrier, but additional stress could weaken these defences.

Sewer flooding

Southwark has a mostly Victorian sewer network. This network was designed to serve four million people, but London's population is estimated to increase to 16 million by 2160.^{xii} Currently, even light rain causes untreated sewage to enter the Thames and into surrounding streets and more intense rainfall will put further pressure on our sewage system.

Groundwater flooding

Flooding from groundwater happens when the level of water within the rock or soil making up the land surface rises significantly. Groundwater levels typically peak in Southwark during March, and if there is extremely heavy rainfall groundwater, basements and low-lying land can be flooded.

Action is already being taken, for example the council have planning conditions that developments must not increase flood risk on or off site by incorporating designs that are safe and resilient to flooding. Southwark Council is continuing to implement strategic sustainable urban drainage systems (SuDs) on highways and in parks. We have plans to increase the replacement of hard

surfaced areas with permeable & green space, as well as increasing irrigation frequencies of newly planted trees to ensure their successful establishment.

We will reduce the risk of flooding by improving drainage, reducing the demand on the sewer system and improving our flood defences.

Water scarcity

Water is an essential resource for our borough, however, extremes of weather and an ageing sewer system threatens water security. The Environment Agency has warned that within just 25 years, the Southeast of England, including Southwark, could run out of water. Without protecting our water sources, we would experience severe economic, social and environmental consequences. The Environment Agency produced its Water Stress Areas Classification in 2021, in which Thames Water was highlighted as having a 'serious' level of water stress. To remain sustainable, Southwark needs to reduce its level of water consumption.

Drought

Droughts are when there is a prolonged period of below average rainfall, which leads to low levels of groundwater and reduced river flows. These impact both people and wildlife, and in London can build over period of months and years. Despite increased understanding of how they work, they are often hard to predict. The London Risk Register ranks drought as a 'high' risk.

Aquifer depletion

An aquifer is an underground layer of permeable rock, which can hold and transport water to and from rivers and other water sources. In London, we have a large chalk basin aquifer. A key challenge for Southwark and across London is the impact of over-abstraction of water from aquifers. 'Over-abstraction', taking water faster than it can be replaced, risks not leaving enough water for wildlife. When there are water shortages, due to low rainfall or leaky pipes, water companies may increase abstraction to compensate which can lead to aquifer depletion.

It is essential that people in Southwark and across the country treat water as a valuable asset, reducing consumption and reducing waste. We need to find new ways to capture rainwater and other grey water for non-drinking purposes. This not only ensures our water is maintained, but also reduces the energy and carbon emissions associated with managing wastewater and supplying fresh water.

We will conserve more water and adapt our green spaces to be drought-resistant.

Trade and food security

75,000 of Southwark's residents are food insecure, which means they do not have enough money to buy food, must skip meals or cut down on quantities due to money, or do not have the money for a balanced diet. Climate change will increase food insecurity. The UK imports around 40% of its food,^{xiii} so we will be affected by the changes happening in other countries. As food insecurity increases globally, we would expect to see price increases and increasing inequality in Southwark. Climate changes such as increased heats and flood risk will also impact businesses, so plans will need to be in place to protect our economy from the worst impacts of this.

Infrastructure failure

Extreme weather events will mean that our built infrastructure will be directly affected by the physical impacts of climate change. This will effect business and trade in the borough and could impact the ability of our residents to access their places of work.

Supply chain disruption

Supply chains both within Southwark and globally are being impacted by our changing climate. Floods, heatwaves, droughts and windstorms trigger cascading impacts that can be felt locally, but also far away from where the actual event is taking place.

Reduced food production

Climate change can impact on crops globally, which can affect food supply and cost in the UK. In 2020 weather patterns impacted on wheat production impacting on supply and cost.

Social vulnerability

Climate change is expected to exacerbate existing economic, social, and environmental challenges across the globe. Many of Southwark's residents have links to and come directly from these communities. Adaptation measures we undertake will need to take these experiences into account and support vulnerable residents who have been directly impacted by climate change overseas.

Social vulnerability is also likely to be exacerbated as our climate changes in Southwark. Already vulnerable communities, such as older people and children, are likely to be impacted. For example, hotter temperatures and increased levels of flooding are likely to put additional pressure on our health service, which means less support provided to those who need it.

We will improve food security by reducing wastage and increasing local supply.

Pests and diseases

London is experiencing an increase in pests and diseases as a result of a changing climate. This can affect human, animal and plant health. As temperatures rise and weather patterns become more unpredictable, pests and diseases can thrive in new and unexpected ways. This will also directly impact our borough.

Invasive non-native species

Species who are not usually found in the borough but are now found here can have a direct impact on our biodiversity. One of the most notable examples of invasive non-native species in London is the spread of the oak processionary moth. This moth, which is native to southern Europe, is now able to survive and reproduce in the warmer temperatures found in the UK. They can cause severe allergic reactions which we are already seeing increase across London.

Climate-sensitive diseases

Diseases for pests and diseases are also likely to rise. Warmer temperatures are allowing species such as the Asian tiger mosquito to survive and reproduce in the UK. This mosquito can transmit diseases such as dengue fever and chikungunya, which were once rare in the UK but are now becoming more common.

Plants pests and diseases

The changing climate is also affecting the spread of plant diseases in London. For example, the warmer temperatures and increased rainfall in recent years have led to an increase in the incidence of sudden oak death, a disease that can kill a wide range of trees and shrubs. The disease is caused by a fungus-like organism that thrives in moist conditions and can be spread by wind and rain.

We will protect our biodiversity from new pests and diseases.

Wider benefits

Making a more resilient borough not only mitigates against the main impacts of climate change, it also potentially enables us to further reduce our carbon emissions and deliver other benefits to our residents.

Greener buildings

Improvements to buildings are needed to protect against extremes of hot and cold. Greater energy efficiency to enable people to stay warm will make our homes and residents more resilient but also reduce energy demand and positively impact on fuel poverty.

Biodiversity and air quality

Through implementing greening measures to manage climate risks such as improved shade and canopy coverage, we also support our local ecology and wildlife. Air quality can also be improved through greening our borough, which impacts on health and wellbeing.

Water scarcity

Taking steps to reduce demand for water and preventing flooding, we reduce water run-off and risk of water pollution. We also reduce energy demands by using less water which reduces our overall carbon emissions.

Cost reduction and risk limitation

Steps to protect the borough from extremes of weather and flooding reduces risk for businesses to operate making the borough a more attractive place to do business. This benefits the local economy and jobs and helps Southwark to thrive.

Health

Lessening the impact of climate change can improve health outcomes for Southwark. The shocks that climate change causes are a risk to mental and physical health that is reduced as we become more resilient. We are also better prepared to deal with new diseases that are introduced due to climate change.

Policy Context

To deliver this plan, we will work with national and regional government and their plans for climate resilience. This includes understanding and working in the context of the National Adaptation Programme and also the London Environment Strategy (LES) and the London Resilience Strategy.

Within Southwark, this strategy as part of the wider climate strategy. We are currently working to ensure that all Southwark policies and strategies are aligned with the climate strategy. This will continue with the addition of this resilience and adaptation work. This will include:

- Fuel poverty action plan (upcoming)
- Southwark Heatwave Delivery framework
- Southwark Plan
- Waste Strategy
- Winter Preparedness Plan (upcoming)
- Cold Weather Plan
- Flood Risk Management Strategy
- Sustainable Food Strategy (upcoming)
- Winter Preparedness Plan (upcoming)
- Cold Weather Plan
- Joint Health and Wellbeing Strategy
- Partnership Southwark Health and Care Plan
- Outbreak Prevention and Control Plan
- Tree Management Policy
- Tree Risk Management Strategy

Action Plan

Work is already underway to deliver this priority area. The themes and goals below show what we need to achieve to reach our vision together with the immediate actions that we need to take. Alongside this work, we will continue to develop new actions to ensure we stay on track to reach our goals and make the carbon saving.

Actions

We will build resilience to overheating, by cooling buildings, providing respite from heat and preparing for extreme temperatures.

To tackle climate change and be a better adapted and more resilient borough, our goals are that:

- Residents can get respite from the heat at times of excessive temperatures.
- Buildings stay cool while minimising their carbon emissions.
- The borough's infrastructure is adapted to cope with extremes of heat.

We will reduce the risk of flooding by improving drainage, reducing the demand on the sewer system and improving our flood defences.

To tackle climate change and be a better adapted and more resilient borough, our goals are that:

- Reduce surface run off and increase the amount of land which drains water.
- Reduce demand on the sewer system.
- Improve flood defences with more sustainable drainage systems.

We will conserve more water and adapt our green spaces to be drought-resistant.

To tackle climate change and be a better adapted and more resilient borough, our goals are that:

- Improved water conservation, including greater use of rainwater and grey water
- Parks, gardens and green spaces are adapted to be drought resistant

We will improve food security by reducing wastage and increasing local supply.

To tackle climate change and be a better adapted and more resilient borough, our goals are that:

- Strengthened local economy, with an increase in local trade reinvesting in our local economy
- Local food suppliers and local food production is maximised
- Capacity for communities to share food and reduce food waste is increased

We will protect our biodiversity from new pests and diseases.

To tackle climate change and be a better adapted and more resilient borough, our goal is that:

- Existing biodiversity from new pests and diseases is protected

Partnership

We cannot tackle the climate emergency alone and need to work with residents, businesses and other partners to reduce carbon and deliver a more resilient future.

Business

Southwark has a thriving local economy, from small businesses to major global corporations, all of which contribute to Southwark and our future. We will work with businesses to encourage them to diversify their supply chains to be more resilient to shocks, but also to decarbonise their supply chains. Businesses will manage buildings throughout the borough, and we can work with them to help make them cooler and more resilient and find sustainable solutions to cooling.

Residents

We will continue to work with our residents when planning changes to the borough to make it more resilient. Our residents have an important role to play in how we implement changes from increased tree coverage to changing surfaces to aid drainage. As part of our overall engagement approach, we will ensure residents are central to the work we do.

Institutions

Southwark is home to many large, world leading institutions from major hospitals, to global universities. We have over one hundred schools and many other public and private institutions, as major employers and managers of large buildings and sites in the borough, they are key to tackling the climate emergency. As they develop their own climate and resilience plans, we will work with them to encourage alignment and find opportunities where working together we can have greater impact. We will explore how we can use public buildings differently to increase our resilience and how the activities in these institutions can contribute to tackling climate change.

Next Steps

The list of goals above will be used to develop actions. These will be developed incrementally, but there will also be further new actions that may become a focus in the future and will be considered accordingly. We will report on progress as part of our reporting on the Climate Change Action Plan.

Beyond the council's own actions, there must also be a focus on what other partners and stakeholders can action themselves, from a central government to resident level. This highlights how important collective action will be. Central government need to significantly increase the level of funding available, and businesses need to help identify and maximise opportunities in this area.

ⁱ The Royal Society, "If emissions of greenhouse gases were stopped, would the climate return to the conditions of 200 years ago?"

ⁱⁱ The CCC, [Progress in Adapting to Climate Change 2023 Report to Parliament](#)

ⁱⁱⁱ [London City Resilience Strategy](#)

^{iv} The Met Office, "[Chance of summer heatwaves now thirty times more likely](#)"

^v [Air Quality JSNA 2022](#)

^{vi} [Annual Report JSNA 2022](#)

^{vii} Greater London Authority, [Heat](#)

^{viii} London Fire Brigade, "[Mayor joins the Brigade in urging the public to take extra measures as the impact of extreme weather conditions continue](#)"

^{ix} The Met Office, [England and Wales Fire Severity Index](#)

^x UCL, "[Feeling the heat? How climate changes affect our health and working lives](#)"

^{xi} "[Mayor warns Londoners in basements about flooding risk](#)"

^{xii} Tideway London, "[Why London needs a super sewer](#)"

^{xiii} [United Kingdom Food Security Report 2021: Theme 2: UK Food Supply Sources](#)