Hot Weather & Health

Southwark's Joint Strategic Needs Assessment

Southwark Public Health Division

May 2025

Southwark Council

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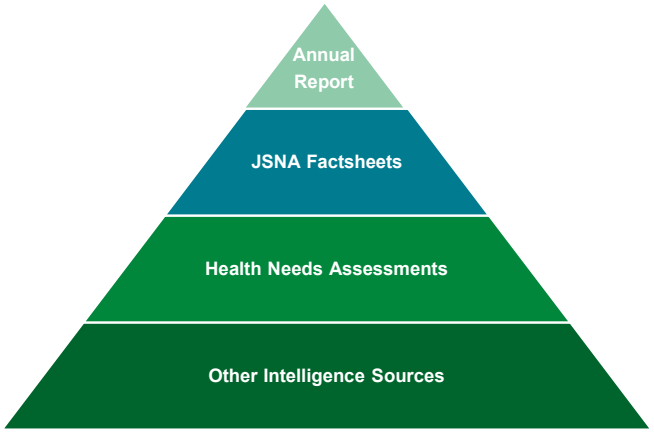
Health Needs Assessments form part of Southwark's Joint Strategic Needs Assessment process

The Joint Strategic Needs Assessment (JSNA) is the ongoing process through which we seek to identify the current and future health and wellbeing needs of our local population.

- The purpose of the JSNA is to inform and underpin the Joint Health and Wellbeing Strategy and other local plans that seek to improve the health of our residents.
- The JSNA is built from a range of resources that contribute to our understanding of need. In Southwark we have structured these resources around 4 tiers:



Tier I: The JSNA Annual Report provides an overview of health and wellbeing in the borough.

Tier II: JSNA Factsheets provide a short overview of health issues in the borough.

Tier III: Health Needs Assessments provide an in-depth review of specific issues.

Tier IV: Other sources of intelligence include Local Health Profiles and national Outcome Frameworks.

- This document forms part of those resources.
- All our resources are available via: https://www.southwark.gov.uk/insight-hub

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Section 1: Executive summary

Southwark Council

Hot weather poses a significant risk to health in Southwark, with impacts distributed unequally across the population

Under the most likely scenario of 2°C of warming by 2050, Southwark will see 50% more very hot days (>30°C) by 2050

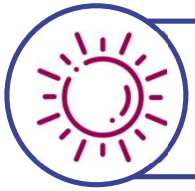
Up to 123,000 Southwark residents are at higher risk from heat due to underlying health conditions including mental health conditions, cardiovascular disease & respiratory disease

28% of Southwark residents worry about keeping their homes cool often or all the time during summer months, with those who are more vulnerable more likely to do so

Evidence suggests hot weather-related excess deaths in Southwark (14 in July 2022) will increase sixfold by 2050, given projected warming trends

Over 50% of Southwark is estimated to be at risk from regular overheating with just 1.5°C of warming, many of these areas among the most disadvantaged in Southwark

All of Southwark is in the highest heat risk area for buildings according to Part O of the building regulations, because Southwark's built environment is an urban heat island



Rough sleepers are at very high risk from heat, with more deaths in summer than in winter and even a 1.5°C increase in temperature will significantly increase admissions in over 75s and those living in more disadvantaged areas

There are significant gaps in evidence around the impacts of heat on health in Southwark, and effective strategies to improve the resilience of communities to heat

We can reduce the impact of hot weather by adapting buildings, improving resilience and reducing emissions

This needs assessment has identified five themes for recommendations. These have been outlined to further guide the development of a heat & health action plan, sitting under the climate resilience & adaptation action plan, in collaboration with the community, stakeholders, and wider cross-sectoral partners. Specific actions under each theme are outlined at the end of this report.

1. **Investing in evidence-based measures to adapt the built environment to heat** such as green and reflective roofs, shutters and green infrastructure and planting. Housing and the built environment are key contributors to overheating risk, so adaptation here will be crucial to protecting residents from hot weather as the climate warms
2. **Improving support for those most vulnerable to heat** provided by the council, NHS and voluntary sector. Health & social care supports individuals most vulnerable to heat – these recommendations aim to accelerate progress around adaptation and equip staff to better support patients at risk from heat.
3. **Develop robust approaches to monitoring overheating across Southwark,** including in existing council housing, new developments and within health & care settings, and co-produced with community groups and other stakeholders to effectively manage the risk.
4. **Working with frontline staff and community groups** to raise awareness of the health risks of heat, and how to respond to them. Hot weather has the potential to exacerbate pre-existing health inequalities, but evidence suggests that targeted support and communications can improve outcomes for health inclusion groups and those with underlying conditions.
5. **Carry out further research to better understand the impact of heat on health & wellbeing in Southwark,** drawing on expertise from across the system. Significant evidence gaps around heat impacts on health remain, but as climate change makes hot weather more likely, it is crucial that we better understand issues such as the extent of indoor overheating and the impact of heat on hospitalisations.

Section 2: Introduction

Southwark Council

Climate change is making hot weather increasingly likely in Southwark, with significant implications for health & wellbeing

The UK is likely to see growing numbers of heat related deaths, and other health impacts over the coming decades due to climate change.

International and national predictions:

- Based on existing international commitments around decarbonisation, a global temperature rise of at least 2.5-2.9°C is predicted by the United Nations during the 21st century, more than the 1.5°C target in Paris Climate Agreement.
- The Third UK Climate Change Risk Assessment (2022) recommends planning for 2°C rise in temperatures by 2050 and a 4°C rise in temperatures by 2100.
- The UK Health Security Agency (UKHSA) predict that heat-related deaths in England, with no additional adaptation and limited global decarbonisation, could increase nearly 6-fold from the 2007-2018 baseline of 1,602 deaths per year, to 10,889 per year in the 2050s.
- Heat-related illness and other health impacts are harder to measure but will likely also see significant increases.

The local context:

- Temperatures in London are increasing more rapidly than previously predicted. As late as January 2022, the UK Climate Change Committee predicted the UK would not see summer temperatures of 40°C until the 2040s.
- 40°C was reached in London in July 2022 and led to at least 387 heat related deaths in London, and disrupted critical infrastructure, causing an IT failure at Guy's and St Thomas' NHS trust which affected patient care.
- Southwark and other inner London boroughs are at particularly high risk, as they sit at the centre of the UK's largest urban heat island.
- While reducing carbon emissions and taking other measures to mitigate the impact of global heating is crucial to protecting the health of Southwark residents, we are already seeing, and likely will continue to see significant health & wellbeing impacts from extreme heat in Southwark and across London.

Source: (1) (2)

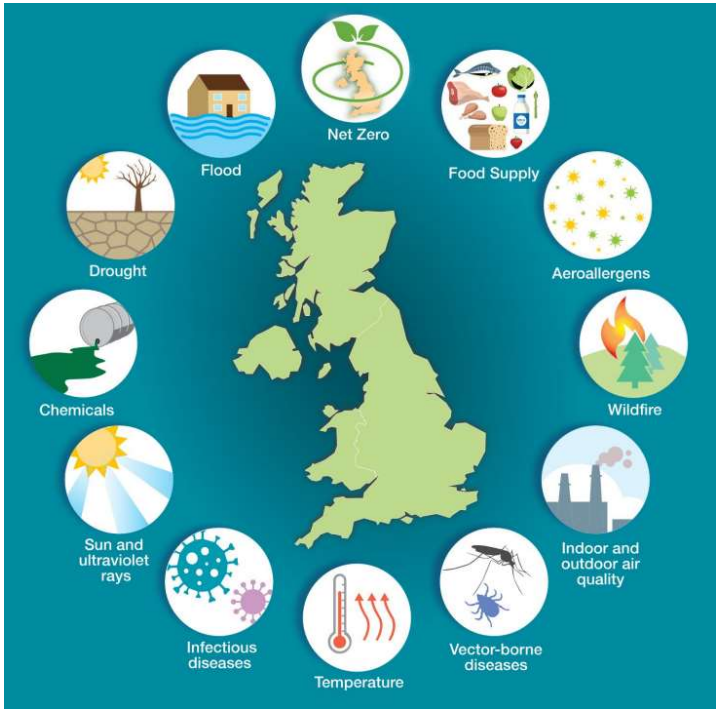
This report focuses on the health impacts of hot weather, but there are also concurrent and secondary impacts

There are associations between air pollution, temperature and summer health impacts, but the relationship is complex.

- Heatwaves make episodes of high air pollution more likely with concentrations of ozone (O3), inhalable particulate matter (PM10) and nitrogen dioxide (NO2) found to increase with increasing temperatures in the UK. This means that rising temperatures in the UK will likely lead to increased air pollution, although the scale of this increase is still unclear.
- Some evidence suggests that high temperatures modify the health effects of O3 pollution and PM10 particulate pollution, making them more severe than on colder days, however UKHSA analysis suggests that the evidence is currently inconclusive.

Higher summer temperatures can also contribute to a range of cascading climate impacts, including:

- A higher risk of wildfires. During the 2022 July heatwave, London Fire Brigade had one of their busiest days ever, with 740 calls relating to wildfires.
- Disruption to transport, leading railway tracks to buckle and road surfaces to melt, with knock on effects for the economy and healthcare due to staffing and logistics challenges.
- Drought and other factors which can impact agriculture – these may have knock on effects on food prices, and thus food security and inequality.



Potential health effects of climate change in the UK

Source: (1)

This needs assessment collates evidence about hot weather risks, adaptation and response, to inform local action

This report explores the health, wellbeing and broader impacts of heat (e.g. on the economy), both now and in various scenarios based on modelling of the possible temperature increases in Southwark by the end of the century.

Specific project objectives are to:

- Collate and generate evidence on the vulnerability of the local built environment, local services and the Southwark population to hot weather-related health impacts.
- Review the effectiveness of existing local hot weather response plans and approaches to climate adaptation and identify potential gaps and areas for improvement.
- Identify recommendations for evidence based novel approaches to hot weather adaptation, preparedness and response that could feed into local strategies around climate adaptation and resilience.

It will explore evidence from Southwark, although where local data does not exist, this report will include evidence from London and beyond.

Source: (1)

Section 3: Policy Context

Southwark Council

A range of national and international policies govern climate adaptation and decarbonisation

International framework

United Nations Framework Convention on Climate Change (1992)
154 countries agreed to reduce greenhouse gas emissions

COP meetings (annual)

Paris climate agreement (2016)
Countries agreed to aim to limit warming to no more than 2°C

Reviewed every 5 years

International climate agreements set targets that in turn help determine national government targets around CO2 reduction. However, there are no international targets around adaptation.

UK framework

Climate Change Act (2008)
Established the Climate Change Committee and 5 yearly Climate Change Risk Assessment & National Adaptation Programme

Third National Adaptation Programme (2023)
Set out government plans for adaptation to 2028, but criticised for lack of ambition by GLA

The Climate Change Committee provides independent scientific advice around climate adaptation & mitigation. The government is obliged to respond to the advice but does not have to follow policy prescriptions.

Source: (3)

Recent national planning guidelines and building regulations aim to limit overheating, overlooked in previous iterations

Building regulations and planning policy have historically prioritised insulation over ventilation and other means of preventing overheating.

- In 2021 in the CCRA3 (Climate Change Risk Assessment 3), the Climate Change Committee said: “Since [the previous report] was published [2017], over 570,000 new homes have been built in England alone that are not resilient to future high temperatures. These will require costly retrofit to make them safe, habitable and water efficient in the future. In the next five years, at least another 1.5 million homes are due to be built across the UK; these will also lock in increased climate vulnerability unless planning and building policy is changed now.”
- CCRA4 is due to be laid before Parliament in January 2027 and work is underway to make the new risk assessment delivery focussed.
- School building design guidelines also did not include guidance around summer overheating until 2018.
- Healthcare building guidance and health technical memoranda do not focus on risks of summer overheating.
- The London Plan does include measures to reduce the urban heat island and overheating, but there is limited evidence of the impact these have had on developments or the built environment since they were introduced.

The new Part O building regulations in England have been called ‘world leading’ in their approach to reducing overheating:

- The new regulations identify the whole of Southwark, along with much of inner London, as the highest risk area in the UK for overheating.
- They require buildings to have adequate cross ventilation, and limit excessive heat gain through glazing.
- They also follow the Mayor’s cooling hierarchy, calling for passive cooling wherever possible, and only using air conditioning as a last resort.
- However, the regulations only came into force in 2023, and there is no provision in the regulations for the retrofit of existing buildings or even for the implementation of new buildings during refurbishment.

Source:; (4), (5), (6)

The NHS has committed to net zero and climate adaptation, with local and national adaptation plans developed

The NHS and partners across the local health and social care system have a range of strategies which focus on net zero, as well as health & care adaptation plans.

Table 1. Net zero strategies and health & care adaptation plans for local NHS partners in London

NHS organisation	Strategy	Key details
NHS England	Delivering a Net Zero Health Service (2022)	Targets net zero by 2040 for directly controlled emissions – limited focus on adaptation.
	Health & Care Adaptation Plan (2021)	Sets out actions to support adaptation of estates, and improve resilience of services
South East London ICS	ICS Green Plan (2022)	Key focus is on net zero, but also includes aspirations on adaptation (primarily around further planning and estates)
	ICS Primary Care Green Plan (2022)	Focus is on net zero, but there is also consideration of adapting estates and service delivery to hot weather, and hot weather impacts on health inequalities
Guy's & St Thomas' NHS Trust	Sustainability Strategy (2021)	Focus is on net zero, but with a consideration of adaptation of estates to hotter weather conditions
King's College Hospital NHS Trust	Climate Change Adaptation Plan (2023)	King's have developed a robust adaptation plan, which includes consideration of the impact of heat on estates, services and inequalities
South London & Maudsley NHS Trust	South London & Maudsley Green Plan (2022)	Focus is on net zero, but the report commits to developing a climate adaptation plan and avoiding locking in overheating risk in new building design

Source: (4), (7)

Southwark declared a climate emergency in 2019, and in 2024 adopted a climate resilience & adaptation strategy

Southwark Council was one of the first boroughs in London to declare a climate emergency.

- It has since developed an ambitious Climate Change Strategy.
- In 2024 Southwark Council adopted its Climate Resilience and Adaptation Strategy.

Southwark Climate Change Strategy (2021)

- Southwark Council aims to do all it can to make the borough carbon neutral by 2030.
- The council is only responsible for 12% of carbon emissions locally, although it does have influence over at least 60%, so the support of partners would be crucial to implementation.
- The strategy does not focus on adaptation.

Southwark Climate Resilience & Adaptation Strategy (2024)

- This strategy focuses on adapting the built environment to the impacts of climate change and improving population resilience and was developed in partnership with relevant teams across the council, and in the wider borough.
- The key focus areas for the strategy are overheating; flooding; water scarcity; food insecurity and new pests & diseases.
- £1 million has been allocated to support the implementation of the strategy.

Source: (8)

The UK Health Security Agency have produced an Adverse Weather & Health Plan focused on hot weather resilience

The national Adverse Weather & Health Plan (AWHP) does mention long term adaptation work, but it's focus is more on emergency planning and response to hot weather.

- The AWHP is the successor to the hot weather plan for England, which was developed following the 2003 heatwave. Improvements around the robustness of the plan, and its communication, were made.
- International evidence suggests that alert systems are a cost effective mitigator of hot weather mortality, but there is limited evidence on UK effectiveness.
- The cornerstone of the AWHP is the alert system consisting of yellow, amber and red alerts, which are determined based on the likelihood of a hot weather event, and the predicted scale of its impact.
- The risk matrix (see image on right) determines whether a hot weather alert is issued – high impact, high likelihood weather events trigger an amber or red alert, while lower impact or lower likelihood of hot weather might trigger a yellow alert.
- The first ever red heat health alert was issued in July 2022, as temperatures reached 40°C in London.
- The alert system is accompanied by a set of action cards which outline actions for different stakeholders at different alert levels.
- In addition to the alert system & action cards, the AWHP contains a supporting evidence pack with up-to-date evidence around adverse weather & health.

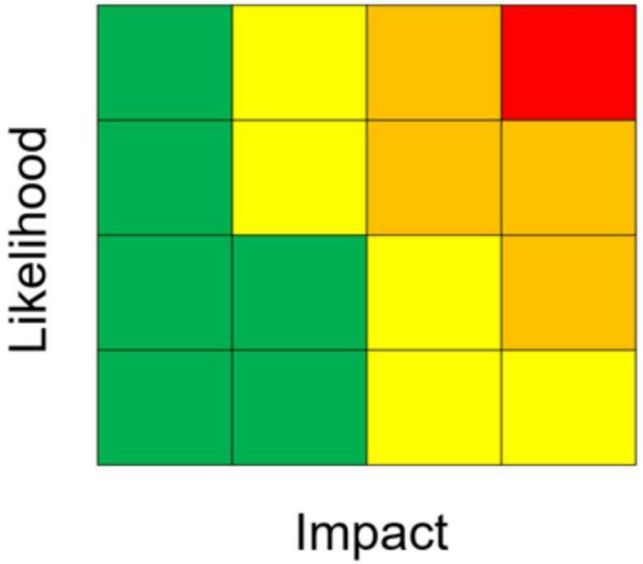


Figure 1. Impact and likelihood risk matrix for hot weather

Source: (9)

Section 4: Local Picture – Risk

Southwark Council

London is already seeing significant health & wellbeing impacts of hot weather due to global heating

The London Climate Resilience Review and other research has shown that London is at very high risk from hot weather health & wellbeing impacts now and in the future.

Current impacts:

- Heat mortality is higher in London than elsewhere in the UK, despite London having a significantly younger population. Heat related deaths in London are higher in younger age groups than they are elsewhere in the UK.
- Hot weather is already having a significant impact on health services in London. For example, on one day in June 2023, the London Ambulance service received 7,751 999 calls, because of hot weather & air pollution.
- Hot weather is also affecting productivity, learning and wider wellbeing. For example, London schools are the highest risk in the country from overheating, with many closing temporarily in July 2022. In Southwark, a number of libraries had to close in July 2022 due to unbearable indoor temperatures.

Projected impacts later in the 21st century if temperatures increase in line with predicted reasonable worst-case scenarios:

- Heat mortality in London doubling by the 2030s and reaching six times the 2000-2018 baseline by the 2070s.
- Heat related hospitalisations would also increase significantly, although are more challenging to predict precisely.
- Increased household energy spending (and summer fuel poverty) due to need for air conditioning in up to 32% of properties.
- Dangerously high temperatures on London Underground affecting business continuity and service delivery during the summer months.

Source: (1), (2)

Projected warming scenarios indicate Southwark is likely to see significant increases in hot days

Climate forecasts suggest that an increase in global temperatures of 2 to 4°C is likely to result in significant temperature rises in Southwark, leading to far more hot days than were experienced prior to 2000, or even in the last 20 years.

Table 2. The number of days per year in Southwark that meets thresholds for heat impacts on health, wellbeing & infrastructure, according to the Met Office, under global warming levels (GWL).

	0.6°C GWL Baseline 1981-2000	**1.0°C GWL** Recent 2001-2020	**1.5°C GWL** Paris agreement	**2°C GWL** Likely by 2050	**4°C GWL** Possible by 2100
Summer Days Daily maximum temperature >25°C High daytime temperatures with health impacts for people at risk	**22** 22 to 23	**36** 32 to 44	**40** 35 to 48	**49** 40 to 58	**88** 78 to 97
Hot summer days Daily maximum temperature >30°C Increased heat related illness; damage to infrastructure	**2** 2 to 2	**6** 4 to 8	**6** 5 to 10	**9** 6 to 12	**28** 23 to 38
Extreme summer days Daily maximum temperature >35°C Increased heat related illness not just affecting the vulnerable; further infrastructure disruption	**0** 0 to 0	**0** 0 to 1	**0** 0 to 1	**0** 0 to 2	**4** 3 to 7
Tropical nights Daily minimum temperature >20°C More heat stress due to high nighttime temperatures	**0** 0 to 0	**1** 0 to 3	**2** 1 to 3	**2** 1 to 4	**15** 8 to 20

Source: (10)

Southwark is home to large number of people vulnerable to the health impacts of hot weather

A range of population groups have been found to be at higher risk from heat related illness, due to either constitutional (physical factors or long-term conditions) or social factors.

- While these groups face higher risk, heat can have a significant impact on anyone's health.

Table 3. Population groups have been found to be at higher risk from heat related illness

Population group	Reasons for risk	No. in Southwark (low estimate)
Rough sleepers	Unable to avoid warm environments; lack of knowledge of heat risk	678 (2023/24)
65+ living alone	Older adults at risk due to decline in physical ability to cool down; living alone risk factor for delayed treatment. UKHSA found awareness of heat risks low in this cohort. In Athens, 83% of people who died in a 2023 heatwave were older adults living alone.	9,500 (2021)
People with dementia & Parkinson's	Unable to adapt behaviour to cool down/seek help	1,800 (2024) *Data unavailable for Parkinson's*
People with mental health conditions	Struggle to adapt behaviour (for serious mental illness); higher temperature associated with increased suicide risk	~50,000 (2023)
People with respiratory conditions	Heat can exacerbate asthma and COPD	~20,000 (2024) *Asthma & COPD*
People with cardiovascular conditions	Cardiovascular illness can be exacerbated by heat	46,600 (2024) *Hypertension; heart disease; stroke*
Pregnancy & babies	Risk of miscarriage in hot weather; babies unable to regulate temperature	5,333 (2024) *Live births per annum*

Source: (11), (12)

Southwark's built environment is particularly vulnerable, due to high density housing and the urban heat island effect

The GLA's 2024 London climate risk map shows heat risk score by lower super output area, based on a combination of socioeconomic factors and built environment risk factors including average air temperature, tree canopy cover and level of access to public space.

- Northern and central parts of Southwark, including Walworth, Camberwell, Peckham and South Bermondsey are at highest risk from hot weather.
- These areas have high density housing, less green space than the southern part of the borough, and higher rates of deprivation, all of which increase their heat risk.
- 2022 University of Manchester research found that Southwark was the 6th highest risk local authority from heat in England, with 91 neighbourhoods at high risk from heat under 1.5°C of warming.

Urban Heat Island Effect (UHI)

UHI are densely built up areas where cooling from green & open space does not occur, and waste energy from buildings raises temperatures. This leads to higher temperatures than in rural areas, particularly at night, with significant health impacts. Southwark (and inner London) is an UHI, with temperatures an estimated 4.5°C than in rural areas on summer days. Increasing vegetation cover mitigates against UHIs – an estimate by Arup suggests 30% increase in vegetation cover could reduce excess deaths by 2,500 across 6 major global cities.

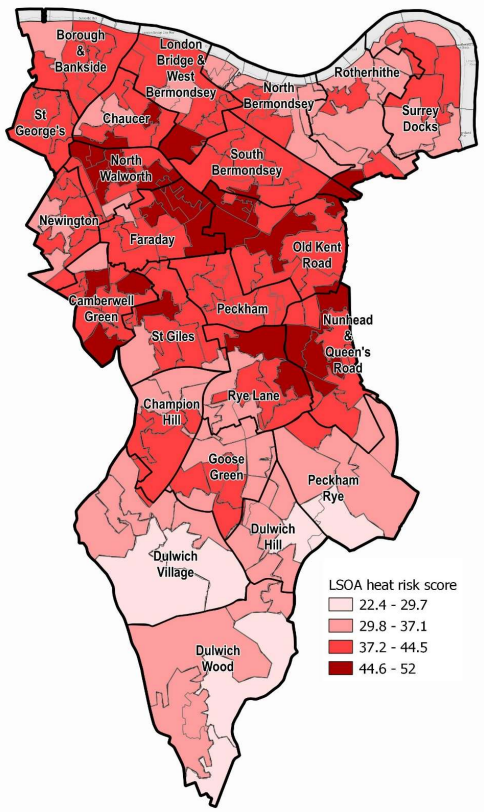


Figure 2. Southwark LSOAs by GLA overall heat risk score, with ward names

Source: (13), (14), (15)

Low public concern around the health effects of heat is also driving high levels of heat vulnerability

Failure to adapt behaviour or the environment to heat risks is a major driver of heat related mortality and morbidity.

National and London level evidence suggests that sizeable numbers of people are not concerned about current risks of heat to health:

- 37% of respondents to national British Red Cross research felt that hot weather would be a risk to health in the future but was not having an impact now.
- 29% of Londoners surveyed in 2023 reported not being concerned about the impact of hot weather on their health.

Those who are most at risk from hot weather are particularly likely to not consider themselves at risk:

- In the British Red Cross research, around 1 in 3 people in some of the groups most vulnerable to hot weather ill health did not consider themselves at risk:
  - adults aged over 75,
  - people working outside for 30+ hours per week,
  - people living in top floor flats.
- These findings have been echoed by UKHSA focus groups. Older adults and people with long term health conditions did not see themselves as at risk from heat related illness.

This lack of concern appears to translate into a lack of action in response to hot weather:

- In the British Red Cross survey, other than staying hydrated, 43% of respondents reported taking no other actions to reduce the impact of heat on their health during hot weather.
- It may also be a contributor to the finding that only 59% of people have a good understanding of who in their community might be most at risk from hot weather.

Source: (16), (20)

Section 4: Local Picture – Impact

Southwark Council

Hot weather is already contributing to excess mortality in Southwark, as seen in July 2022

During July 2022, the month of the record-breaking heatwave in London, significantly more people died in Southwark than would be expected.

- In July 2022, Southwark had 15.6 more deaths than expected, compared with 2017-21 monthly average death occurrences.
- July 2022 was the month in which London experienced temperatures of 40°C, and the first ever red heat health alert was issued.
- In every other month of 2022, Southwark had fewer than expected deaths compared with the 2017-21 average (probably related to premature, COVID19-related deaths of those in poor health during 2020 and 2021).

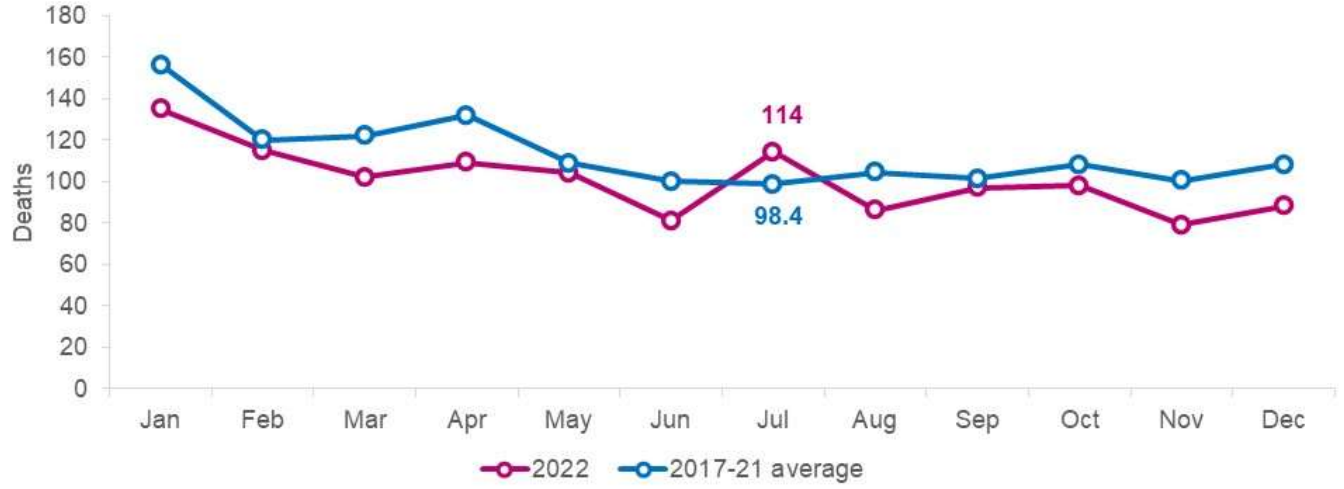


Figure 3. Southwark resident monthly death occurrences in 2022, and 2017–21 5-year average monthly death occurrences

Source: (18)

There is strong evidence that mental health conditions are associated with death & illness during hot weather

UKHSA carried out a systematic literature review looking at the impacts of heat on a range of mental health conditions & outcomes.

Table 4. Literature highlighting the impacts of heat on mental ill health

Condition/outcome	Findings
Suicide	▪ 88% of studies reviewed found a significant association between increasing temperature and suicide frequency ▪ 4 studies showed an association between increasing temperature and violent suicides
Bipolar disorder	▪ 5 studies showed a positive and significant association between admissions due to bipolar disorder and increasing temperature
Schizophrenia	▪ 5 studies showed a positive and significant correlation between temperature and exacerbation of schizophrenic symptoms ▪ Risk of mortality more than doubled during heat wave episodes
Organic mental disorders & dementia	▪ Risk of admission increased significantly; agitation with dementia in nursing home residents increased significantly
Substance misuse	▪ Risk of mortality due to alcohol and substance misuse increased significantly
Other mental health outcomes and service use	▪ Mortality of those with mental health illness increased during heatwaves, as did risk of admission to psychiatric hospital

Spotlight on mortality

2024 research found that depression, severe mental health conditions and psychosis were the **biggest risk factors** for heat related mortality among English GP patients.

Source: (12), (19)

Hot weather can exacerbate a range of long-term health conditions which are prevalent in Southwark

Southwark residents are increasingly being diagnosed with long-term conditions (LTCs), some of which are linked with greater risk of mortality or illness due to hot weather.

Cardiovascular disease (highest prevalence LTC)

- International studies suggest people with CVD are significantly more likely to die or require treatment during hot weather, but a recent UK study found no clear association with heat related mortality – this may be due to protective effects of treatment.

Depression (2nd highest prevalence LTC in Southwark)

- Recent UK research suggests heat mortality risk is 15% higher among people with depression than the general population. Possible reasons for this include association of depression with older age, increased suicide risk during heatwaves and overlap with social risk factors for heat related mortality such as deprivation

COPD & asthma (6th and 8th highest prevalence LTC in Southwark)

- Both respiratory conditions are associated with a significantly elevated risk of mortality during periods of hot weather.
- A study in Berlin found outdoor temperatures above 18.3 were associated with increased COPD admissions.

Source: (11), (12)

There is a relationship between use of certain medications and heat related illness

Those taking certain medications, including diuretics and medications that affect thermoregulation, can be vulnerable to heat.

Table 5. Association with heat related illness by certain medications

Medication	Mechanism	Association with heat related mortality in English primary care patients
Anti-cholinergics	Affect thermoregulation; reduce sweating	~5% increase in risk of heat related mortality
Beta blockers	Prevent dilation of blood vessels	~5% increase in risk of heat related mortality
Cardiac glycosides	Affect kidney function	~10% increase in risk in heat related mortality
Diuretics	Increase risk of dehydration	~5% increase in risk of heat related mortality
NSAIDs	Affect thermoregulation	~10% increase in risk of heat related mortality
Vasoconstrictors	Affect thermoregulation	~75% increase in risk of heat related mortality

Source: (11), (12)

Hot weather is linked to harm during pregnancy, and is also a health risk for babies and children

Hot weather is linked to poor health outcomes for pregnant people, and increased risk of hospital admissions for babies and children.

Heat & pregnancy:

- Both hot and cold temperature extremes pose risks to pregnant people, and can contribute to preterm birth, low birth weight, stillbirth, congenital anomalies, gestational diabetes, hypertension disorders and maternal stress.
- Pregnant people were particularly likely to report negative health & wellbeing effects of heat in the Bureau of Investigative Journalism's *Hot Homes* research project in Southwark.
- 84% of pregnant people interviewed as part of British Red Cross research into heat said that hot weather had negatively impacted their health.
- Research in Southern California found that exposure to extreme heat days during pregnancy and third trimester was associated with a 27% increase in risk of severe maternal morbidity (near miss mortality).

Heat & young children:

- International evidence suggests that infant exposure to higher temperatures is associated with increased mortality and hospital admissions among children.
- There is an association between heat and sudden infant death syndrome. Research in Canada suggests that temperatures above 29°C were associated with nearly 3x higher odds of sudden infant death compared to temperatures of 20°C.

Source: (20), (21), (22)

Evidence at London and national level suggests hot weather is associated with increases in emergency admissions

Hot weather is a key driver of emergency admissions in vulnerable populations, both on hot summer days and also at closer to summer temperature averages.

- A study analysing links between hospital admissions and temperature in Greater London found that 1°C increases in temperature above 16°C were associated in significant increases in overall accident & emergency admissions.
- This effect was most pronounced in admissions for people aged under 16 and between 64 and 75.
- A Lancet study found that each hot summer day (defined as 30°C or above) was increased with 786 hospital admissions across England. Over 75s were most likely to be admitted, while people living in income and employment socioeconomically disadvantaged areas were between 2 and 10 times more likely to be admitted.
- ONS analysis of hospital admissions between 2010 and 2018 in England showed that warm days (above 15.4 degrees) were associated with an average of 8,000 extra hospital admissions per year. Hot summer days will be at least 1.5x more likely in Southwark under just 2°C of warming.

London and international evidence suggests increases in hospital admissions are principally driven by the following:

Injuries
Over 10,000 temperature related admissions for injuries between 2010 & 2018 in England

Mental health
>2 days over 35°C associated with 10% increase in mental health admissions in London

Cardiovascular conditions
At least 3,500 temperature related admissions for CVD between 2010 & 2018 in London

Source: (23), (24), (25), (26)

Section 4: Local Picture – Heat in the Home

Southwark Council

Homes in Southwark are at high risk of overheating, which puts residents at risk of heat-related illness

Temperatures at home are a key driver of heat related illness and homes in Southwark are among those at highest risk in the country for overheating.

- People in the UK spend 95% of their time in indoor environments, and 66% of their time in their own homes.
- 90% of homes in the UK built before 2022 are expected to overheat if global temperatures do increase by 2°C.
- The NHS recommend that indoor temperatures do not regularly exceed 25°C to avoid heat stress.
- 55% of homes in London were estimated to be at risk of overheating in 2023.

In Southwark:

- Temperature monitoring in 38 Southwark homes found that all exceeded 25°C during hot weather.
- A survey of 1,000s of Southwark residents found that 28% worried about keeping their home cool.
- Research in Southwark by the Bureau of Investigative journalism demonstrates the impact of hot homes on health & wellbeing and found that 1 in 8 of the temperature monitoring research participants had to seek medical care as a direct result of their hot home.

Resident voice: Urszula

Urszula lives with her 11-year-old son in a flat she rents from a housing association in Southwark. In the summer, she says the heat triggers her son's asthma attacks and aggravates Urszula's fibromyalgia, a long-term condition that causes pain all over her body. She describes pain and fatigue that affect her ability to walk. "I cannot breathe," she says.

Source: (1), (27), (28), (29)

The design of homes is a key determinant of overheating risk and certain types of dwelling are more likely to overheat

Certain types of dwelling are more at risk from overheating, including some which the council owns in large numbers.

Type of dwelling	Reason for risk	Number in Southwark (*council owned if known)*
High rise flats	Flats on higher floors more at risk of overheating	Unknown (*9,307)*
Purpose built flats	Generally limited aspect; smaller flats less likely to have cool room	84,235 (*32,844)*
New build flats	Flats built in the last 30 years but prior to updated building regulations may be energy efficient but not well ventilated	Unknown

The following design features of dwellings also contribute to increased risk from heat:

Design feature	Impact on heat risk
Aspect	Windows (particularly large windows) facing South through West increase solar heat gain. Single aspect properties lack sufficient cross ventilation for cooling
Albedo (reflectivity)	Buildings with roofs made of or painted with reflective material overheat less than those with less reflective materials
Insulation	Poorly insulated homes may allow significant heat gain. However, very well insulated homes with insufficient ventilation are also prone to overheating.
Shading	Homes with limited internal (e.g. blinds) or external (e.g.. trees) shading are at risk. In the TBIJ *Hot Homes* report, 80% of Southwark residents who took part reported their homes had no external shading.

Source: (1), (30)

People who are more vulnerable to high home temperatures are more likely to live in hot homes

People with long-term health conditions, who identify as disabled, who live in social housing or who are from ethnic minority backgrounds have been identified as at higher risk from heat related illness.

In Southwark, more people from these groups report worrying about keeping cool at home than the general population:

- The chart to the right shows data from the Southwark & Lambeth Health & Wellbeing study, which asked nearly 2,000 Southwark residents whether they ever worried about keeping their home cool on hot days.
- The research also looked at answers by area and found that people living in more socioeconomically disadvantaged wards such as St Giles, St George's, and Faraday were nearly 3 times more worried about keeping cool at home than people living in the least socioeconomically disadvantaged wards (e.g. Dulwich Village).
- The *Hot Homes* research project found that all participating Southwark households with a baby had indoor temperatures in excess of the threshold recommended to prevent sudden infant death.
- The *Hot Homes* project also found that people living in social housing with a communal heating system experienced temperatures 1°C hotter than the average. Council research echoed these findings, suggesting 15% of tenants on estates with communal heating systems found their homes too hot in summer.

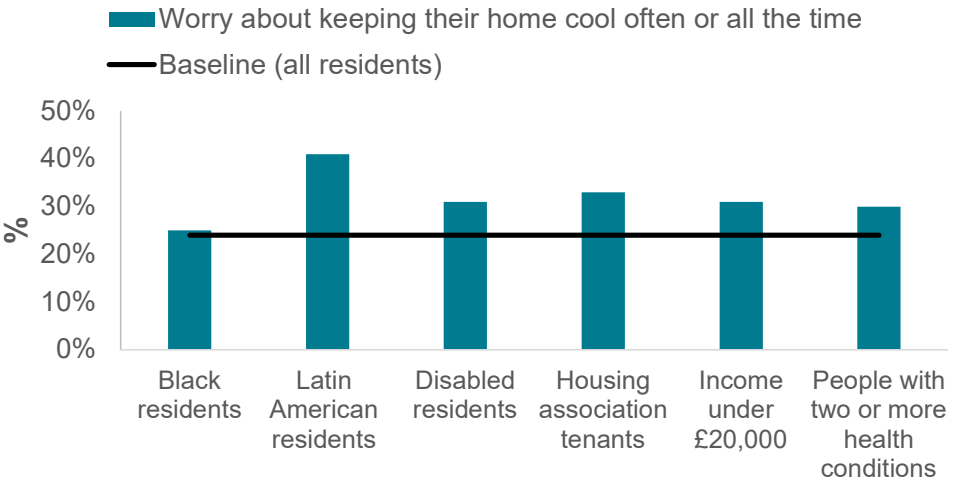


Figure 4. Southwark residents who reported worrying about keeping their home cool during hot weather, by demographic

Source: (1), (27), (29)

Residents face a range of barriers to being able to keep their homes cool during hot weather

Occupant behaviour is a key determinant of whether homes overheat during hot weather.

- Opening windows when it is cooler outside than inside, ensuring cross ventilation, and closing blinds or shutters during the hottest parts of the day to reduce solar gain can all have a significant impact on overheating.
- However, residents are not always aware of how to keep their homes cool.
- A British Red Cross survey in 2023 found that 33% of UK respondents had never seen information on how to protect themselves during hot weather, and that only 25% had ever closed windows during the day to reduce the heat in their homes.

Cost, design and external factors can limit occupant ability to carry out cooling behaviours:

- Research has shown a gap between ventilation design intentions and occupant ventilation behaviours, highlighting the importance of education around the use of passive cooling strategies.
- 70% of Londoners interviewed for a 2017 study said that they only opened one or two windows at night for security reasons.

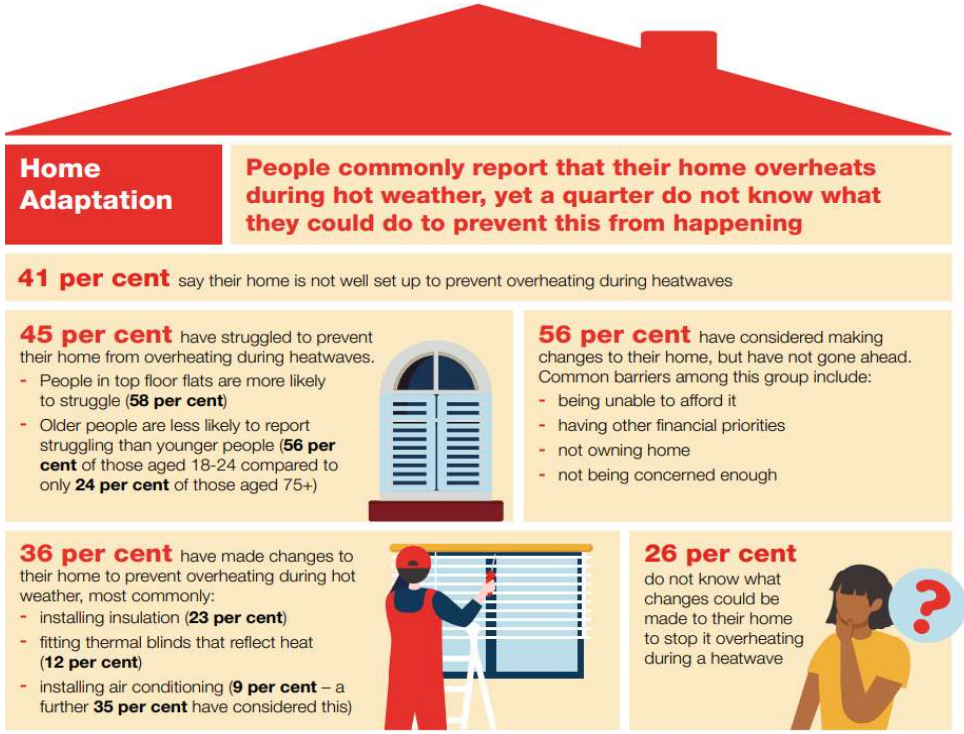


Figure 5. Proportion of UK residents who report being aware of and able to adapt their home to hot weather

Source: (16), (31)

Section 4: Local Picture – Inclusion Groups

Southwark Council

People sleeping rough are at significant risk from heat related ill health

Southwark has the 6th largest rough sleeper population in London, with 549 recorded in 2023/24.

People sleeping rough are at elevated risk of hospital admission and mortality during hot weather:

- A 2023 study found that in London when temperatures were 25°C, people with no fixed abode or who were listed as homeless in their health records were 35% more likely to be hospitalised than at 6°C
- Given that the number of hot days is projected to increase by around a third with 2°C of warming, in coming decades we can expect to see significant growth in hospital admissions among rough sleepers.
- Stakeholders in Southwark rough sleeper services report higher numbers of deaths during hot weather.
- The Museum of Homelessness found a similar pattern in deaths amongst rough sleepers during 2022.
- Stakeholders suggest this may be due to low awareness of the risks of heat to health among rough sleepers and service providers, and links between drugs & alcohol and heat related deaths (49% of Southwark rough sleepers have needs around substance misuse)

Stakeholders reported higher rates of skin cancer in rough sleepers in Southwark than the population average:

- International evidence around the risk of skin cancer for rough sleeper populations is mixed, however.

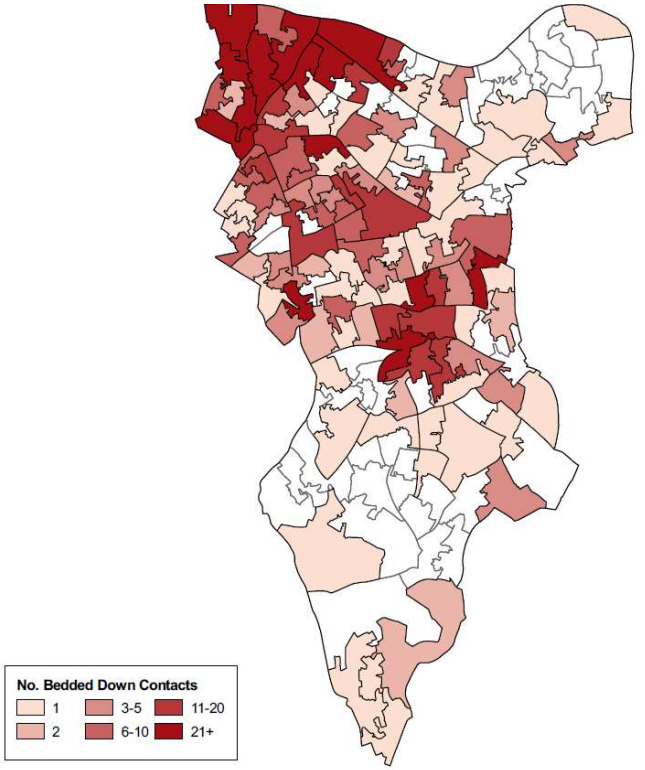


Figure 6. Number of rough sleepers identified by outreach teams in Southwark by lower super output area, 2023-24

Source: (32), (33), (34)

Improving homeless hostel heat resilience may help protect some people experiencing homelessness

People experiencing homelessness are particularly at risk from heat, primarily due to underlying health conditions which increase their vulnerability.

Homeless adults are:

- **1.8x more likely to have cardiovascular disease**
- **30% more likely to develop kidney failure than the general population**
- **4x more likely to have a drug or alcohol problem**
- **2.5x to have asthma**

A 2024 audit of four of Southwark's homeless hostels found that:

- Half of the hostels had a formal heatwave plan.
- Some of the hostels provided fans to residents, but supply was a problem in two of them.
- Staff were generally unaware of the increased risk of acute psychosis, suicidal ideation and drug poisoning during hot weather.
- It was a challenge for hostels to support residents, particularly those with alcohol dependence, to hydrate sufficiently.
- No hostels provided sun protection to residents.
- Hostels had robust means of identifying vulnerable residents, including those with HIV, COPD and kidney diseases.

Source: (35)

Other health inclusion groups may also experience heat related health risks, but more research is needed

There is some evidence that asylum seekers and refugees may experience greater heat related health & wellbeing impacts than the general population, largely based on findings from work that showed that vulnerable migrants were more at risk due to lack of local knowledge and language barriers.

- Southwark has 5 initial accommodation centres housing around 1,000 asylum seekers (correct at December 2024).
- An audit of asylum seeker accommodation found that only 2 of the settings had access to robust cooling methods in every room.
- The high level of occupancy in some rooms means that asylum seekers may be at greater risk of overheating than those living in non-communal accommodation.
- Asylum seekers and refugees, along with other migrant communities may also be at higher risk during heatwaves due to language and cultural barriers meaning heat warnings are difficult to adhere to.

Some evidence suggests that people with learning disabilities may experience higher rates of mortality during hot weather, however other research suggests there is no association.

- The 2022 LeDeR report, which reviews the deaths of learning disabled and autistic people, found that excess deaths among people with learning disabilities in 2022 compared to the 2018 and 2019 baseline were highest in July 2022, likely linked to hot weather as the high figure could not be attributed to COVID-19.
- 30% of people with learning disabilities who died in 2022 died from circulatory and respiratory disease, which are associated with high temperatures.
- A study carried out using English primary care data suggested that learning disability was not associated with heat related mortality. Learning disability coding in primary care data is not always accurate, so it is possible that this may account for the discrepancy between these two pieces of research.

Source: (12), (36), (37)

Section 4: Local Picture – Impact on Services

Southwark Council

Adult social care recipients in the community and their carers are at risk from heat related ill health

People receiving adult social care are often vulnerable to the health effects of heat, due to their age, health conditions and barriers to adapting their behaviour on hot days. Staff also experience health & wellbeing impacts from travelling around the borough in hot conditions.

38% of domiciliary care recipients in Southwark live in flats, which are more likely to overheat than other types of dwelling.

1% of domiciliary care recipients have dementia. People with dementia can be significantly affected by heat. Heat can lead to increased distress and challenging behaviour and is associated with significantly higher rates of mortality and hospitalisation in people with dementia.

UK Health Security Home Care Heatwave Preparedness Study (2023)

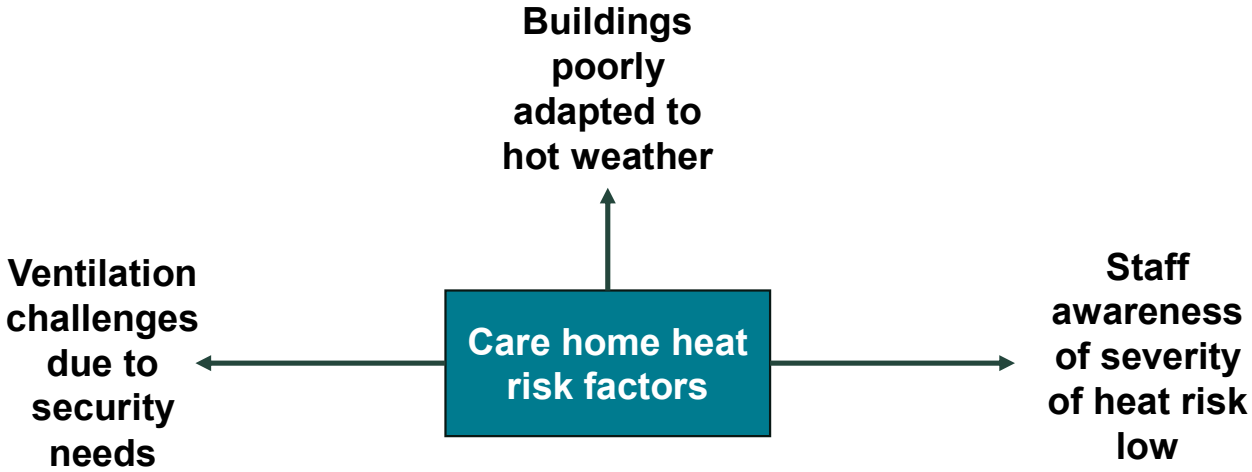
Unless practitioners, including managers and owners, had experienced a fatality first hand they had little knowledge of the potential severity of extreme high temperatures. People working in domiciliary care felt least able to manage very high temperature, due to limited time with clients. They also had to react to urgent situations when entering the domiciliary environment, such as clients with the heating on or being inappropriately dressed. Domiciliary care staff often felt their own wellbeing was impacted by driving around in hot cars.

Source: (20), (38)

People living in care homes and supported accommodation are at higher risk from heat-related ill health

Care home residents are particularly vulnerable to heat due to age, health conditions and living in communal accommodation which can be hard to keep cool.

- Studies of the major heatwave that affected the UK and much of Europe in 2003 showed that care homes were the most common place of death.
- Care Home providers in Southwark surveyed in 2023 said they had a reasonable level of confidence in how to protect residents and staff during hot weather, however they also said more training would be helpful.
- Several Southwark care homes are in areas of high heat risk (see slide 43).



Source: (20), (39)

Southwark GP surgeries operate in neighbourhoods with significant heat risk

The Southwark Public Health team mapped the heat risk of Southwark's GP surgeries, using climate risk maps produced by the GLA.

- For GP surgeries, heat risk was calculated to include both topographical (e.g. tree cover, average surface temperature) and hyperlocal demographic risk factors (such as proportion of older adults living alone).
- The spatial analysis found that 11 GP surgeries are in or on the border of lower super output areas (LSOAs) with very high levels of heat risk.
- All Southwark GP surgeries were located in LSOAs with higher heat risk scores than the London average.

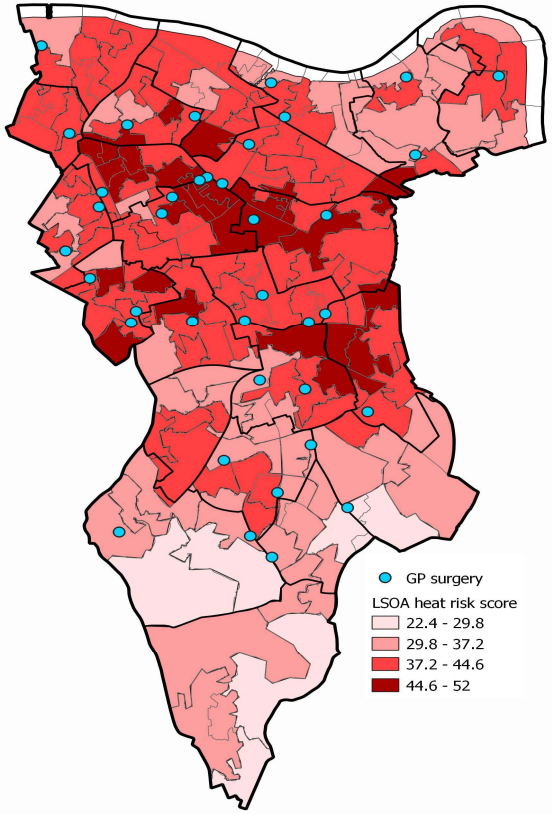


Figure 7. Southwark LSOAs by overall heat risk score (including demographic & topographical risk factors), plus GP surgeries

Source: (13), (40)

Many of Southwark's hospitals, care homes and supported accommodation are in areas at very high risk from heat

The Southwark Public Health team mapped the heat risk of Southwark's hospitals, care homes and shared supported living accommodation.

- For hospitals, care homes and shared supported living heat risk was calculated to just include geographical and topographic factors such as air pollution and tree canopy cover.
- This is because these settings serve residents from a much broader catchment area than just their immediate neighbourhood, so demographic heat risk factors (such as the proportion of older adults living alone in the local area) were less relevant.
- The spatial analysis found that 1 hospital, 3 care homes and 4 supported living sites are in neighbourhoods with the highest topographical heat risk score

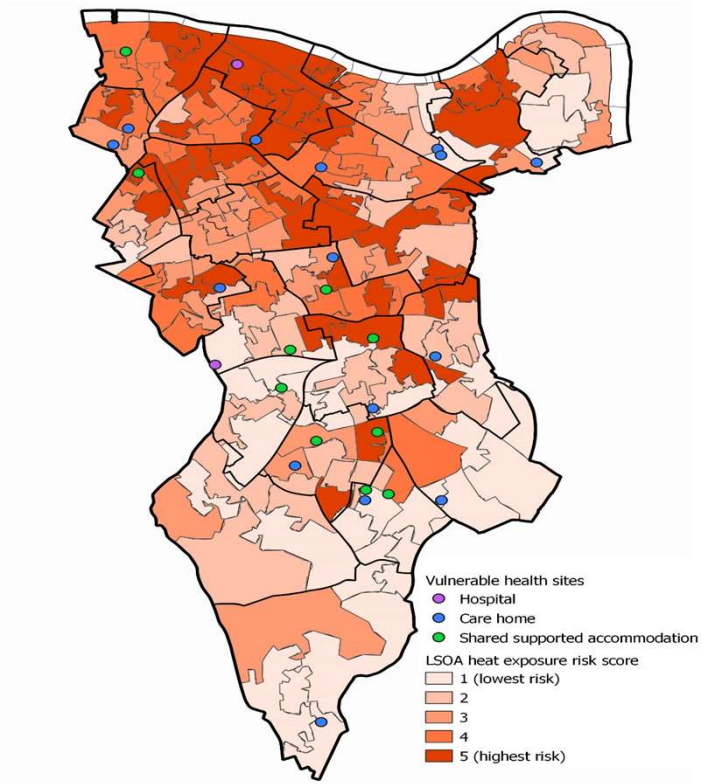


Figure 8. Southwark LSOAs by 4-factor local topographical heat exposure risk score B*, plus vulnerable health sites

*Surface air temperature (2018–2022 average); PM2.5 concentration (2016); NO2 concentration (2016), lack of tree canopy cover (2013).

Source: (13), (40)

Overheating can have a significant impact on the delivery of healthcare in hospital settings

Overheating can drive 'summer pressures' affecting the delivery of healthcare and performance of hospitals.

- 20% of surgeons surveyed for a 2022 study of 140 hospitals reported having to cancel elective surgeries due to heatwave temperatures.
- The ONS estimate that between 2010 and 2019, on a single day in June 2023, the London Ambulance service received 7,751 emergency calls, because of hot weather, air pollution and thunderstorms. Higher rates of admissions can put pressure on hospital performance.
- Dementia admissions in England were found to increase by 4.5% for every 1°C above 17°C. Given current climate trends, this suggests that heat related admissions in people with dementia will increase by around 300% by the 2040s. Southwark already has some of the highest rates of dementia related hospital admissions in the country.

Hospital estates and IT systems are at particular risk from overheating:

- Nationally, 90% of hospital buildings are at risk of overheating, with high risk of indoor overheating even during moderate summers.
- Thermally lightweight, well insulated hospital buildings (often constructed in the 1960s and 70s) are more likely to overheat than older hospital buildings.
- During 2022-23 King's College Hospital reported 27 overheating incidents requiring risk assessment (the 4th highest of any hospital site in London), whereas no overheating incidents were reported at SLAM or GSTT. This likely reflects poor data quality.
- GSTT experienced a critical IT incident in 2022 due to overheating, resulting in 21 incidents of harm to patients, and severe operational pressures, which affected the wellbeing of staff.

There is limited data available on the impact of heatwaves on primary care buildings and service delivery, however given that much of Southwark is a high heat risk area, primary care services will likely be affected.

Source: (24), (41), (42), (43)

Hot weather can affect the health, wellbeing and educational attainment in schools & early years settings

Schools in Southwark are at significant risk from overheating with a negative impact on the health and wellbeing of staff and children.

- The GLA surveyed 60 schools in high-risk areas of London for heat, and found that:
  - 93% of schools surveyed had experienced overheating.
  - 43% of schools experience severe overheating, occurring multiple times or continuously throughout the summer term.
  - 78% of schools reported that overheating has had a significant impact on students learning, productivity or behaviour.
  - During the 2022 summer heatwave, 47 of the surveyed schools experienced a total of 33 closed days, or an estimated 22,000 student days of lost learning.
- A survey of teachers found that 90% had to take individual measures to reduce the classroom temperatures, including buying portable air conditioning.
- A Department for Education survey of 135 teachers found that 100% of respondents felt high temperatures affected the productivity of students and 52% felt productivity was “significantly” affected.
- This aligns with national British Red Cross research which suggests that around 60% of teachers and students have said their concentration is reduced in hot classrooms.
- Modern schools which are naturally ventilated have more problems with increased risk of overheating than schools built in the 1960s and 1970s, Victorian schools and well-designed new schools.
- 17 Southwark schools, including 5 special schools, are in the highest risk lower super output areas in Southwark for heat (Fig 9).
- Evidence suggests children with special educational needs are particularly at risk from heat.

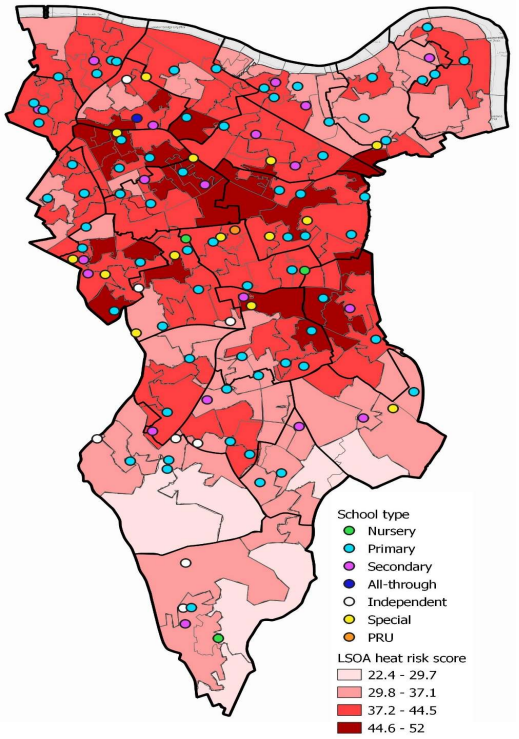


Figure 9. Schools overlaid on Southwark overall heat risk map

Source: (1), (44)

Certain occupations are at higher risk of heat related illness, with workers in higher income households at lower risk

People who work outside, or in physically demanding professions are at highest risk of heat related workplace illness.

- A 2021 systematic review of evidence on the effect of temperature on occupational injuries across 6 high income countries found workers in agriculture, construction & manufacturing were at high risk from heat related illness.
- The review also suggested that within these occupations, male workers and those aged under 35 were most at risk.
- In Southwark, according to census data, around 10% of workers work in these occupations, with 4.5% in construction.
- Analysis by the Resolution Foundation found that across England, the lowest paid workers (23%) were likely to be in an occupation at significant risk from heat when compared to the highest paid workers (15%).

Even people who work in more sedentary occupations can be at risk if their workplaces are not properly cooled:

- Schools in London have reported staff with underlying health conditions having to work from home due to high temperatures.
- In Southwark, during the 2022 heatwave a number of libraries had to close due to dangerously high internal temperatures which meant staff did not feel safe working.

Source: (28), (45)

Section 5: Local Response

Southwark Council

The Climate Adaptation & Resilience Strategy outlines Southwark Council's goals for increasing heat resilience

The Southwark Climate Adaptation & Resilience strategy calls for Southwark to mitigate against heat risk and this will be achieved through provision of respite from heat, cooling buildings and preparing infrastructure.

Providing respite from heat:

- Increasing the number of cool spaces, ensuring good coverage in parts of the borough most at risk from heat.
- Providing social care workers who visit vulnerable residents in their homes with improved means of monitoring home temperatures.
- Improving insulation standards in district heating pipes to decrease heat losses in the pipe networks within buildings.
- Ensuring our parks provide shading for our residents as our summer weather gets hotter.

Cooling buildings while minimising their carbon emissions:

- Expanding the Green Homes Advice Service to help residents deal with overheating by retrofitting their homes.
- Reviewing Southwark Plan policies to ensure new development takes further steps to minimise and mitigate the risk of overheating and provide planning guidance on climate adaptation design for buildings and places through updated Supplementary Planning Documents (SPDs).
- Developing an approach to tackling 'hot homes' so residents who are most vulnerable to this issue have cooler homes.
- Working collaboratively to collect and develop data and tools to better understand and plan for current and future climate risk.

Preparing Southwark's infrastructure for extreme weather:

- Preparing a wildfire emergency plan and a Highways Heat Network plan for sanding roads during periods of high temperatures.
- Updating the Southwark Streetscape Design Manual to include climate adaptation through sustainable design, incorporating nature-based solutions that are more resilient to climate change.

Source: (8)

Local programmes are ongoing to improve the resilience of the built environment, through planning & green spaces

The Southwark Plan (2019 – 2036) contains a range of policies designed to improve the resilience of the local built environment to heat:

- Greening of the public realm to mitigate against the urban heat island (UHI) effect (P13).
- Design of buildings to minimise risk of indoor overheating and mitigate against the UHI effect (P14).
- Residential design should be predominantly dual aspect to allow for cross-ventilation, with mitigations on single aspect dwellings to minimise heat gain (P15).
- Development must retain and enhance the borough's trees and canopy cover (P61).
- Development must reduce the risk of overheating, in line with the following cooling hierarchy: reduce heat entering building through shading, insulation, albedo and orientation; minimise internal heat generation through energy efficient design; manage the heat within the building through internal thermal mass and high ceilings; and ventilation (P69).
- The Southwark Plan also commits to protecting and improving green spaces and makes provision for the development of 210,985 square metres of new open space in the borough, through site allocations and expanding existing open spaces.

Southwark also has a programme of work to increase tree canopy and green space cover in the borough, by:

- Operating a general presumption against tree removal wherever possible, and mandating tree planting where tree removal is necessitated by development.
- Investing £5 million in planting and maintaining trees to support goals to reach carbon neutrality and reduce UHI effect.
- Planting 11,500 trees, more than the target of 10,000 trees set for 2022.
- Working with voluntary sector partners such as Street Trees for Living to further increase tree planting work locally.
- Including guidance to support the planting and retention of trees, and other plants in the Streetscape Design Manual.

Source: (46), (47)

There are also local programmes to improve the resilience of built environment, through retrofit and better construction

Part O of the building regulations in force from 2023 offer robust standards for heat resilience in new construction in Southwark and other inner London boroughs (with less rigorous standards for other parts of the country).

- Prior to Part O, there was not an explicit element of the building regulations focusing on overheating.
- Part O mandates that reasonable provision must be made in all new residential buildings to limit unwanted solar gains in summer, and provide an adequate means to remove heat, without using mechanical cooling if at all possible.
- Solar gains should be limited by following maximum glazing area requirements, including shading and ensuring sufficient cross-ventilation.
- Southwark Construction, the council's housebuilding team, is also exploring other gold standard approaches to adapting new homes to climate change, such as the Passivhaus standard, while acknowledging resource constraints.
- Haringey, Camden, Westminster and Newham councils have built significant developments of Passivhaus standard social housing, however most other London boroughs have not yet built social homes to this standard.

However, 80% of the buildings people will be using in 2050 already exist, so considering approaches to retrofit and improving cooling in existing buildings is crucial:

- The council is investing in work to address overheating in council housing affected by district heating, to improve the wellbeing of tenants & leaseholders and reduce the impact of heat loss on the environment.
- The council is unable to meet the cost of retrofitting existing council homes to ensure climate resilience from current budgets.
- The council commissions providers such as Energy Advice Centre at LSBU to provide information to homeowners on retrofit, however this and most advice across London is mainly focused on energy efficiency rather than heat risk.
- As of 2021, the CCRA3 found that there were no specific hot weather adaptation measures in national retrofit funding.

Source: (5), (48)

Local hot weather preparedness activity focuses on: (1) risk communication

Southwark Council and South East London Integrated Care Board (SEL ICB) support hot weather preparedness of frontline services and staff through alert cascades and awareness raising.

Local heatwave alert cascade:

- Southwark Council Public Health team develop and maintain heat preparedness & response action cards, produced in consultation with services and community organisations, and that are shared with 100s of relevant local stakeholders via a cascade system.
- SEL ICB maintain an alert cascade for NHS providers across South East London.
- Monitoring impact is challenging, although the WHO do suggest alert systems are effective at protecting health during heat.

Upskilling frontline staff:

- The Southwark Public Health team delivers regular awareness raising presentations to key partners and stakeholders, including adult social care providers and local voluntary sector organisations. No formal package of hot weather health training exists.

Southwark Council communicates about hot weather risk to the public through:

- A comprehensive hot weather webpage exists with information about hot weather health risks and support available, but traffic to the web page is low despite efforts to promote it.
- UKHSA produce a comms toolkit with social media assets and infographics, which is used locally every year to promote heat health awareness through existing council communication and social media channels.
- A hot weather leaflet has been developed that includes information about home adaptation, behaviour change and cool spaces. Thousands of copies have been distributed via frontline services and voluntary sector organisations.

Source: (49)

Local heatwave preparedness activity focuses on: (2) cool spaces

The council has for several years advertised council owned buildings as cool spaces on its website, and as of summer 2024 has uploaded these to the GLA cool spaces website.

- 9 libraries and leisure centres were registered as cool spaces in summer 2024.
- These provide reasonable coverage of the borough, but some neighbourhoods of high heat risk do not have a local cool space.
- There is limited evidence around how much cool spaces were utilised for that purpose locally.
- Over 36,000 people viewed the GLA cool spaces pages on 19 July 2022, during the level 4 heat alert, compared to a daily average of 2,000.
- Evidence from The Bureau of Investigative Journalism Hot Homes research project suggests there is demand for cool spaces in the borough with residents reporting going to the cinema and other air-conditioned spaces to keep cool.
- However, 25% of participants in the research project reported having ‘nowhere to go’ to get respite from heat.

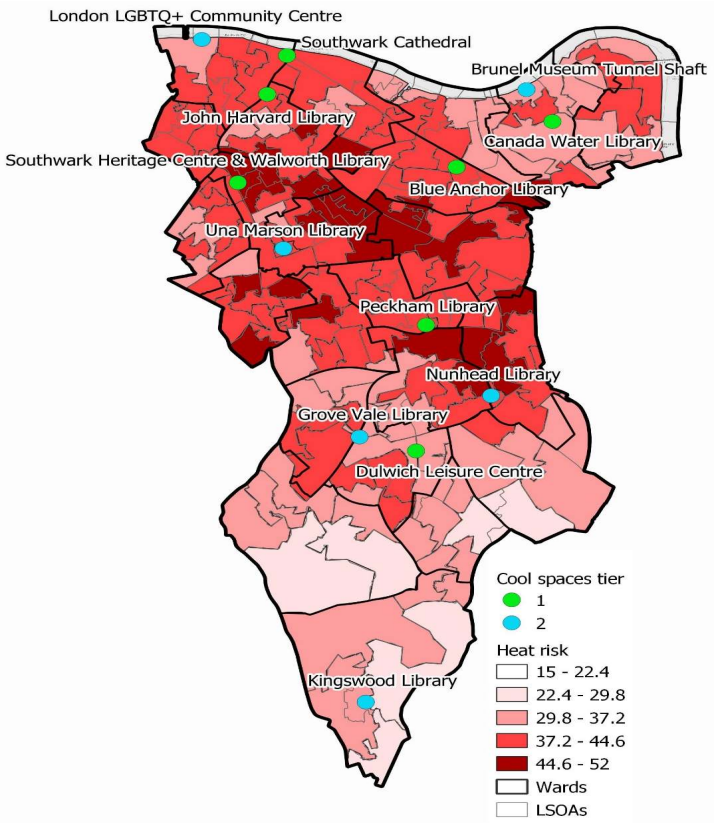


Figure 10. Location of cool spaces overlaid on Southwark overall heat risk map

Source (6), (27), (50), (51)

Local heatwave preparedness activity focuses on: (3) targeted work with health and care providers

Local heatwave preparedness activity includes targeted work with adult social care to improve hot weather resilience for staff and clients.

- An audit was carried out locally of social care provider preparedness for hot weather in 2023. Managers reported being aware of heatwave risks, but that they sometimes struggled to measure temperatures.
- Homecare staff were given thermometer cards to give to vulnerable clients to help measure temperature in their homes, as well as hot weather packs that included water bottles to help staff stay hydrated, and key information on supporting clients during hot weather.
- Positive feedback was received from home care providers, however detailed evaluation of the project has not been completed due to challenges in engaging with providers.
- National research suggests that while managers may be confident in managing hot weather risks to social care clients, frontline staff are less confident in supporting clients, and experience significant adverse effects from heat themselves, particularly those working in home care who must travel frequently during the hottest parts of the day.

Some work has also been carried out with primary care to improve preparedness:

- Detailed action cards were developed to support GPs identify at risk patients, including through medications that put them at risk.
- Work was done to explore targeted text messages for at risk patients, and MECC approaches from pharmacists to raise awareness around heat risk for those on certain medications or with certain health conditions, however this was affected by lack of capacity across the system.

Source: (52)

Local heatwave preparedness activity focuses on: (4) targeted work with rough sleepers

The Severe Weather Emergency Protocol (SWEP), normally used in cold weather, was activated for the first time for hot weather in 2022. Until 2024, it was activated by the Mayor of London, but it is now activated on a local authority basis.

- SWEP is delivered by local rough sleeper outreach teams, in Southwark principally by St Mungo's Street Population Outreach team (SPOT), which is the primary rough sleeper outreach service, and CGL, which supports substance users.
- Detailed guidance is issued by the GLA around the Heat SWEP protocol. Key actions recommended include:
  - Offering cold water, suncream, hats and heat risk advice
  - Providing cool spaces
  - Providing cool accommodation during amber and red heat health alerts.

Southwark stakeholder views: Heat SWEP

- Local homeless outreach providers and homeless health providers were interviewed for this report.
- Importance of heat SWEP was acknowledged, with more client deaths during heat SWEP than cold SWEP.
- During heat SWEP, they reported generally offering water, sun cream and advice. Getting suncream is sometimes a challenge due to lack of specific funding. There were specific challenges with people with alcohol misuse problems, who are higher risk but less likely to follow advice.
- Better coordination with drug and alcohol outreach teams could support these people.
- Christ Church in Blackfriars often signposted to as a cool space, and Great Guildford Street hostel available for emergency accommodation.
- Stakeholders identified gaps in heat SWEP support outside of the North of the borough, particularly in Peckham around Bournemouth Road.

Source: (53)

Section 6: Community & Stakeholder Views

Southwark Council

A range of local and regional community & stakeholder engagement activity since 2020 fed into this report

A number of community engagement & research projects around heat in Southwark have fed into this report.

- **Southwark Council Housing Heating Consultation (2020)** which collected qualitative data on overheating (and other heating related issues) from 800 households living on Southwark Council estates.
- **The Bureau of Investigative Journalism's *Hot Homes* project (2023)** which measured temperatures in 38 homes in Southwark during the heatwave alert period and collected rich qualitative data resident experience during hot weather.
- **Impact on Urban Health's *Lambeth & Southwark Wellbeing Study* (2024)** captured the views of thousands of Southwark residents around overheating in their homes.

Local research with frontline staff and key stakeholders has also informed this research:

- Heatwave preparedness audits have been carried out over the last two years in care homes, home care, initial accommodation centres for asylum seekers and homeless hostels.

The following stakeholders have provided evidence for this JSNA:

Stakeholder group	Stakeholders interviewed for this report
Council	Adult social care; climate change; community safety; drug & alcohol team; health & safety; housing; private sector housing enforcement; Southwark Construction
NHS	South East London ICB; Guys & St Thomas' NHS Trust (including Health Inclusion Team); King's College Hospital; South London & Maudsley NHS Trust
Voluntary sector	Community Southwark Older Person's Network; Groundswell; St Mungos; Alzheimer's Society

Section 7: Evidence Base

Southwark Council

Various construction standards exist to protect new housing from heat, but evidence is limited on their cost effectiveness

To avoid design choices that lock in future overheating risk, new homes need to be built with sufficient cooling measures, without compromising on the energy efficiency improvements required to get to net zero or leading to unsustainably high costs for builders.

- Part O of the building regulations (which came into force in 2023) sets robust standards to prevent overheating, particularly in the high risk zone it identifies for enhanced measures, but this does not necessarily address other building performance or energy efficiency challenges.
- Some local authorities have experimented with building social housing flats to the Passivhaus standards, which do address energy efficiency concerns crucial for reducing CO2 emissions
- Passivhaus does include a summer overheating criterion, however, a 2018 study of 18 Passivhaus social housing flats in the West Midlands found that 72% of all monitored flats failed overheating tests, largely due to excessive glazing and limited information provided to Passivhaus residents about how to manage their home to keep it cool (most significant predictor of overheating risk).
- Passivhaus costs can be managed, but any rollout of the standard in Southwark would need to consider challenges around overheating, particularly those related to occupant behaviour.

Real world evidence on the impact of the new building regulations, and building overheating performance is limited:

- Post occupancy evaluation of new builds rarely takes place – but it would be beneficial to understand the impact of the new building regulations in practice, and to better evaluate the impact of Passivhaus.

Source: (54), (55)

Adapting existing housing to heat is essential, and there is robust evidence on effective cooling measures

In 2050, 80% of lived in dwellings will already exist, so adaptation of existing housing to improve resilience to overheating is crucial to reducing the exposure of residents to unsafe summer temperatures.

Sustainable cooling measures, which reduce indoor temperatures without using air conditioning, have a strong evidence base and are relatively affordable, with most also offering climate mitigation co-benefits:

- Fitting dwellings with external shutters, closed during the day, could reduce heatwave mortality by 60% in current summer conditions and by around 40% in summers up to 2050 (shutters also reduce heating demand by providing additional insulation).
- Improving insulation can reduce overheating, if buildings are also sufficiently ventilated.
- Green or roofs and facades can reduce cooling demand, stabilise indoor temperatures, and reduce the urban heat island effect.
- Reflective coatings to roofs and facades can reduce indoor temperatures and the urban heat island effect, but they may lead to reduced temperature in winter.

Funding for retrofit has not historically included specific stipulations about adapting to heat, with the focus being solely on reducing building energy consumption:

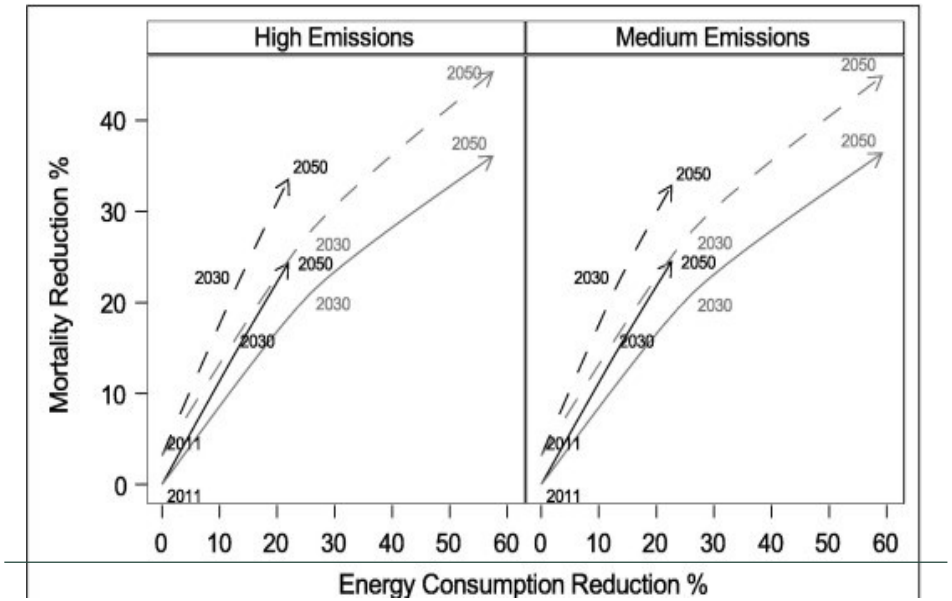
- This means that existing retrofit programmes may also be locking in future heat risk, when retrofit could be used to effectively tackle housing decarbonisation and overheating risk simultaneously.
- This includes the government's flagship Warm Homes programme, which is focused on improving insulation but has no specific provisions in its guidance around overheating risk.
- Where resources have been available, local governments have successfully retrofitted social housing to improve hot weather resilience while also meeting housing decarbonization requirements.

Source; (1), (56)

Evidence suggests ambitious, appropriate retrofit could lead to significant reductions in heat related mortality in London

An accelerated approach to retrofit, including the use of shutters, could reduce heat mortality in London by 40% by 2050, based on current climate and demographic projections. Without shutters, the mortality reduction would only be 5%.

- External shutters are one of the most effective cooling measures but can be expensive to retrofit due to window designs and building regulations.



Key
_____ (current retrofit policy)
_____ (ambitious retrofit policy)
__ __ (current retrofit policy + shutters)
__ __ (ambitious retrofit policy + shutters)

Figure 11. Chart showing the impact of retrofit policy and the use of shutters on temperature related mortality and energy consumption reduction in London.
Reproduced from Taylor J, Projecting the impacts of housing on temperature-related mortality in London in future years. Energy & Buildings. 2021

Source: (57)

Evidence suggests increasing trees, greenspace and cool roofs would directly reduce heat related mortality and illness

Current planning policy does include guidance to improve tree coverage and using green roofs to reduce the impact of the urban heat island, however evidence suggests that going further and faster, particularly around existing buildings, can have a significant impact on heat related health impacts.

Green and reflective roofing can have significant impact on urban temperatures:

- Work in Toronto to make just 5% of the city's area green roofs lowered city wide temperatures by an estimated 1.5-2ºC, with a greater reduction in temperature in higher density areas. Toronto achieved high levels of roof greening by offering grants of $50,000 to $100,000 to individual property owners and larger organisations to install green roofs.
- The Cool Roofs initiative in New York City, where coating the roofs of buildings with a highly reflective white paint had been found to reduce indoor temperatures by up to 30%.

Trees are also key to cooling the built environment:

- Cooling from urban trees in inner London saves £22 million of energy spending on cooling per year alone.

International evidence suggests these interventions can have a significant impact on heat related mortality and illness, with the impact greater in more socioeconomically disadvantaged areas:

- A study in Los Angeles found that decisive action to increase tree cover and the albedo of building surfaces could reduce local heat related deaths by 25% and heat related emergency emissions by between 20 and 50%.
- Greater reductions in mortality and morbidity took place in more socioeconomically disadvantaged neighbourhoods with a more ethnically diverse population.
- Studies in Canada suggested a marginal increase in tree coverage could significantly reduce ambulance call outs on hot days.

Source: (54), (59)

While national heatwave preparedness plans exist, further work is needed locally to improve preparedness

There has been no local level evaluation of the UKHSA Adverse Weather & Health Plan, but an evaluation has been undertaken of the previous Heatwave Plan for England, which the new plan builds on.

Findings from the evaluation of the heatwave Plan for England:

- The communications element of the plan was not robust, with older adults and other vulnerable people not aware of the scale of the risk heat posed to their health, and little information available for the public on how to manage overheating in buildings, including on how to operate their building effectively or guidance on what they could have done to their home to reduce overheating risk.
- The impact of alerts at local level was not routinely measured, making it difficult to assess the effectiveness of preparedness activities.
- The plan was more focused on warning and informing than on long term strategic planning.
- The 2022 Heatwave also highlighted challenges in preparedness, with the Level 4 heat alert guidance not offering any robust information on escalation compared to a Level 3 alert.

Evidence from other emergencies, as well as new initiatives in London, suggest that more robust approaches to heatwave preparedness can be taken at a local or city level:

- London carried out an extreme heat exercise, Exercise Helios, this summer, and 10 London boroughs are organising community heatwave resilience exercises, led by local voluntary sector groups. These approaches might enable a better understanding of current heatwave preparedness levels and help build awareness of heat risks to health.
- Exercise Helios found that participants were not always aware of heat health action cards, and current alerts could be confusing and ‘clunky’.
- During the early phases of the COVID-19 pandemic, mutual aid groups were very effective at mobilising communities to check on vulnerable neighbours and deliver food and prescriptions – similar structures could be used to build community resilience against heat.

Source: (2), (58), (60)

There is national and international evidence around how best to support communities during heatwaves

Cities & municipalities around the world provide a range of practical support and strategies for residents during heatwaves.

- Cooling stations or cool spaces, which provide respite from the heat. Cities do report positive outcomes and feedback from service users. However, evidence is mixed on their effectiveness, with a recent UKHSA review suggesting the number needed to treat for cool spaces to prevent a heatwave death could be as high as 1 million.
- New York City runs a 'be a buddy' programme which assigns volunteers to check on heat vulnerable residents, including those over 65 with multiple LTCs and who are socially isolated.
- Boston's heatwave strategy hands out pop-up cooling kits to organisations running public events, including hoses, misters, and tents.

Effective risk communication is also critical to supporting community resilience during heatwaves. Evidence on the effectiveness of communication around heat from the UK is limited, but strategies with evidence internationally include:

- Using intermediaries such as health & social care workers and the voluntary sector as intermediaries to inform risk groups such as older adults – for example climate engagement organisations in the UK trained members of existing networks such as the Women's Institute to communicate about heat risk.
- Using artistic or visual representations has also been shown to impact on heat risk perception.
- Messaging should highlight personal threat; appeal to action and highlight social norms.
- Stakeholders participating in the London wide emergency planning Exercise Helios reported that communication which emphasised vulnerability could put off people who didn't perceive themselves as vulnerable.

Source: (2), (60), (61)

Local research has highlighted gaps in heat preparedness for some inclusion health groups, but more evidence is needed

There is an absence of academic literature on improving the heat resilience of asylum seekers and other inclusion health groups, aside from evidence highlighting the importance of providing heat resilience messages in translation.

A local audit of heatwave preparedness in asylum seeker hotels generated some recommendations in this area:

- Most asylum accommodation settings did not have a heatwave action plan – these should be developed.
- Asylum accommodation is mostly in buildings prone to overheating. Due to the vulnerability of this cohort and the lack of resources for adaptation of buildings, cooling measures such as the use of ceiling and desk fans should be considered.
- Translated information warning and informing residents around heat risk should be shared.

Evidence around heat resilience in homeless hostels is also limited, but a local audit in 2024 generated recommendations for improving resilience:

- Ensure at least one thermostat or thermometer is present to monitor temperature, and that free sun cream is available for residents use.
- Template heatwave plan and resource about the effect of hot weather on health, especially increased risk to mental health and drug use to be produced and distributed to hostel staff, including the signs of heatstroke and the steps that should be taken once this is identified.

More evidence around protecting the health of rough sleepers during hot weather is available, including the value of providing cool spaces and free drinking water during hot days. Local stakeholders also recommended:

- Providing more support and structure to cool spaces targeted at rough sleepers; more spaces e.g.. lockers for rough sleepers to store coats etc. at day centres; greater coordination by the local authority across homeless & drug/alcohol services and in Peckham/Camberwell neighborhoods; more practical advice for rough sleepers.

Source: (20), (35), (36)

Robust evidence exists on improving heat resilience in adult social care, but resources are limited for implementation

Effective cooling measures are available for care homes although specific funding for care home adaptation does not exist.

- The GLA produced a ranking of measures to reduce care home overheating through adaptation, based on a study of London care homes grouped according to the GLA's cooling hierarchy, with some of the most effective including turning off unused equipment and using trees for shading.
- Specific funding for care home adaptation does not exist, but some care homes are owned by Southwark Council, so may benefit from council asset management approaches to retrofit.
- Occupant behaviour is significant in overheating reduction so training residents and staff to operate the building efficiently is critical.
- Future planning for the delivery of care, which may include greater care at home provision, needs to take into account potential climate impacts of looking after vulnerable residents in harder to adapt settings.

Improving staff awareness and preparedness is key to reducing heat mortality in people cared for at home:

- Evidence suggests that service users have better outcomes where home care providers have a robust heatwave preparedness plan, and staff are trained to identify symptoms of heat related illness.
- Adaptation to care recipients' homes, e.g.. creating cool rooms with ceiling fans, have been found to be impactful on heat related illness internationally.

Source: (2), (39)

Health services need further support to identify heat related illness and make evidence-based adaptations to facilities

Awareness of heat health risk is low among frontline health professionals in the UK, according to 2019 research, with awareness of heatwave response plans also low.

The evidence base around this is limited, but potential solutions identified (but not robustly evaluated) in the literature or proposed by stakeholders include:

- Development of heat illness screening tool to properly understand how heat may be impacting health of individual patients and support healthcare professionals to refer to heat-related support where necessary – the Boston School of Nursing have developed such a tool.
- Using electronic patient record systems to identify if a patient lives in a neighbourhood with high heat risk score or has multiple risk factors (health conditions or medications), so clinicians are aware of heat as a potential cause or factor in a patient's reason for presentation.
- Training for healthcare staff around supporting patients, implementing heatwave response plans and looking after themselves during periods of hot weather.

Adaptation of healthcare facilities to heat is also crucial to improving resilience; this can be achieved by:

- Ensuring that adaptation to heat is embedded in any work done to retrofit healthcare facilities – principles applied to built environment generally will have a similar effect in hospitals.
- Using local authority climate adaptation funds to adapt the built environment around hospitals, e.g.., by ensuring significant tree coverage to reduce the impact of the urban heat island effect.
- Carrying out a climate risk assessment of the entire health estate will identify areas to be prioritized for adaptation – this could also be used in the shorter term through better data collection around heat events (ERIC data is currently patchy).
- Green roofs are a particularly impactful intervention in hospitals, as they can not only reduce summer indoor temperatures, but also provide a therapeutic environment for staff and patients.

Source: (17), (63)

Section 8: Recommendations

Southwark Council

We can reduce the impact of hot weather by adapting buildings, improving resilience and reducing emissions

Several recommendations have been outlined to further guide the development of a heat & health action plan, sitting under the climate resilience & adaptation action plan, in collaboration with the community, stakeholders, and wider cross-sectoral partners.

1. **Investing in evidence-based measures to adapt the built environment to heat** such as green and reflective roofs, shutters and green infrastructure and planting. Housing and the built environment are key contributors to overheating risk, so adaptation here will be crucial to protecting residents from hot weather as the climate warms
2. **Improving support for those most vulnerable to heat** provided by the council, NHS and voluntary sector. Health & social care supports individuals most vulnerable to heat – these recommendations aim to accelerate progress around adaptation and equip staff to better support patients at risk from heat.
3. **Develop robust approaches to monitoring overheating across Southwark,** including in existing council housing, new developments and within health & care settings, and co-produced with community groups and other stakeholders to effectively manage the risk.
4. **Working with frontline staff and community groups** to raise awareness of the health risks of heat, and how to respond to them. Hot weather has the potential to exacerbate pre-existing health inequalities, but evidence suggests that targeted support and communications can improve outcomes for health inclusion groups and those with underlying conditions.
5. **Carry out further research to better understand the impact of heat on health & wellbeing in Southwark,** drawing on expertise from across the system. Significant evidence gaps around heat impacts on health remain, but as climate change makes hot weather more likely, it is crucial that we better understand issues such as the extent of indoor overheating and the impact of heat on hospitalisations.

1. Investing in evidence-based measures to adapt the built environment to heat

Challenge	Recommendation	Lead
Poor understanding of overheating in Southwark homes	1.1. Include heat risk assessment in stock condition survey and influence Council Housing Investment Strategy that survey will feed into in 2026 1.2. Review data on heat hazards captured by Private Sector Housing Enforcement, and explore means to address any emerging trends	Southwark Council (Housing; Environmental Health)
New construction may lock in heat risk - Part O of building regulations may be sufficient to prevent this	1.3. Devise approach to monitor overheating risk in new developments (comparing those built before Part O and after)	Southwark Council (Planning)
Existing council buildings poorly adapted to risk of overheating, contributing to urban heat island	1.4. Consider overheating risk in all new retrofit projects 1.5. Where possible install green or reflective roofs on all large council owned buildings	Southwark Council (Climate Change; Facilities Management)
Urban heat island effect is a significant contributor to overheating and thus poor health & wellbeing in the borough	1.6. Consider grant programme to support installation of green or reflective roofs 1.7. Consider expanding funding for tree planting 1.8. Baseline current council workstreams with positive heat impact	Southwark Council (Climate Change; Tree team; Highways; Housing)

2. Improving support for those most vulnerable to heat

Challenge	Recommendation	Lead
Hospitals, GP surgeries and care homes are not sufficiently adapted to heat, and many lie in high-risk areas, putting patients and staff at risk	2.1. Adapt high risk health & care settings to heat by installing green or reflective roofs, and planting trees in the vicinity 2.2. Consider integrating adaptation plans for these settings with council adaptation work to speed up delivery	Southwark Council (Adult Social Care; Climate Change); SEL ICB; Hospital Trusts
Hospital overheating incidents are reported on, but data collection appears to be inconsistent	2.3. Train relevant hospital staff to improve data collection around overheating, so risk can be more accurately assessed	Hospital Trusts
Health & care staff are not always aware of the risk heat poses to health, or who is most vulnerable	2.4. Develop training for health & care staff on heat & health 2.5. Develop heat risk warning alerts for clinicians in EPIC	Southwark Council (Public Health); SEL ICB; Hospital Trusts
Staff visiting patients in their homes are not always able to monitor temperature	2.6. Build temperature monitoring into new home care contract	Southwark Council (Adult Social Care); SEL ICB

3. Develop robust approaches to monitoring overheating across Southwark

Challenge	Recommendation	Lead
Work around heat & health in Southwark is not always joined up across the system	3.1. Hold a heatwave response emergency planning exercise, involving colleagues from the NHS and the voluntary & community sector 3.2. Based on findings from the exercise & this report, develop a local heat action plan encompassing, preparedness and response (sitting under existing Climate Resilience & Adaptation Strategy)	Southwark Council (Public Health; Climate Change; Emergency Planning); SEL ICB (EPRR)
Community groups are well placed to support adverse weather response, but their involvement is currently limited	3.3. Provide training for community groups around managing heat risk 3.4. Consider establishing a memorandum of understanding with community groups around support they could provide in the event of a hot weather event	Southwark Council (Public Health; Emergency Planning)
The public are not always aware of the risk around heat, or how to mitigate it	3.5. Develop communications strategy for heat, including tailored communications around keeping cool at home and incorporation of air quality messaging	Southwark Council (Communications; Public Health)

4. Working with frontline staff and community groups

Challenge	Recommendation	Lead
Deaths among rough sleepers are higher in hot weather than during winter, and rough sleepers experience higher rates of skin cancer	4.1. Develop a more robust local heat emergency protocol 4.2. Review our cool spaces and identify and promote cool spaces suitable for rough sleepers 4.3 Support distribution of sun cream to rough sleepers	Southwark Council (Rough Sleeper Coordinator; Emergency Planning)
People with certain health conditions and on certain medications are at higher risk of heat related illness, but may be unaware	4.4. Explore sending targeted text messages around heat risk via GP or EPIC 4.5. Highlight heat risk of medications in pharmacy	Southwark Council (Public Health); King's Health Partners; SEL ICB
Checking in on vulnerable residents is key to protecting their health, but is not done systematically	4.6. Work with residents services and the VCS to develop robust approach to checking in on residents	Southwark Council (Public Health; Emergency Planning)
Heat has a clear impact on mental health conditions, but evidence about mitigation approaches is limited	4.7. Pilot interventions to raise awareness around mental health heat risk with patients and staff 4.8. Work with patients to understand how they can be better supported during hot weather	SLAM; SEL ICB (Southwark CMHT group)
Asylum seekers, refugees (ASR) and migrants may be at higher risk from heat	4.9. Ensure communications are translated 4.10.Suggest improvements to cooling in ASR hotels	Southwark Council (Public Health)

5. Carry out further research to better understand the impact of heat on health & wellbeing in Southwark

Challenge	Recommendation	Lead
Further evidence is required around heat vulnerabilities including the extent of indoor overheating in Southwark	5.1. Prepare a Southwark climate risk and vulnerability assessment 5.2 Consider funding study providing temperature and indoor air quality monitors to larger numbers of Southwark residents	Southwark Council (Climate Change; Public Health)
Evidence around heat related hospitalisations in Southwark is limited	5.3. Review hospital episode statistics and other relevant data to establish attributable fraction of hospital admissions due to heat	SEL ICB
The hot weather alert system is the main way in which services prepare for hot weather, but limited data on impact	5.4. Commission or deliver an evaluation of hot weather alert system and action cards locally	Southwark Council (Public Health)
Heat has a clear impact on mental health conditions, but evidence about mitigation approaches is limited	5.5. Escalate need for further research on interventions to address increased risk from hot weather for people with mental health conditions at pan-London level eg ADPH or OHID	Southwark Council (Public Health)

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