MAYOR OF LONDON

LONDON COUNCILS

Heat Ready London

Adapting the city to a warmer climate

Technical Report

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Greater London Authority
September 2026

Published by
Greater London Authority
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London E16 1ZE

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Co-funded by
the European Union

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This project has received
funding from the European
Union's Horizon Europe research
and innovation programme
Pathways2Resilience under
grant agreement No 101093942.
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02

Executive Summary

London is already experiencing the impacts of a warming climate.

In May 2026, temperatures observed in London broke records for two consecutive days. June temperature records were broken just a month later and by early July, London was in its third official heatwave for the year. Preliminary analysis from the UK Health Security Agency (UKHSA) estimates that there were **a total of 2,877 heat-associated deaths in England across May and June alone.** This is almost double the annual figure reported for 2025 and suggests that the highest annual total on record – 2,985 deaths in 2022 – will be exceeded.[01]

These events are not isolated. In July 2022, **temperatures exceeded 40°C** for the first time. Heat impacts across that summer resulted in **387 deaths** in London; and the three heatwaves experienced between June and August cost the city **£1.5 billion in economic damages to productivity and health.**[02] In 2025, the city experienced four official heatwaves and more than 120 wildfires – the highest rate since the exceptional heat of 2022. And yet London will continue to be exposed to significant heat risk. Climate projections indicate that **London could experience twice as many days a year above 30°C by mid-century.**

This technical report brings together the evidence behind Heat Ready London, a call to action published in June 2026. It is intended to provide a springboard to help partners move from ambition to delivery by presenting further evidence for intervention and highlighting priorities for action shaped through engagement with partners.

The impacts from heat risk extend across health, infrastructure, the economy, and the everyday functioning of the city. They include:

- Avoidable premature mortality, ill health, and pressure on health and care services.
- Widespread overheating in homes, schools, hospitals, care settings, workplaces, and public buildings – with impacts on health and productivity.
- Disruption to transport, energy, water, communications and waste-management systems.
- Damage to green and blue spaces – harming ecosystems and reducing their ability to provide cooling benefits.
- Reduced productivity and disruptions to business.

These risks are not evenly distributed. Exposure, vulnerabilities and adaptive capacity are inequitably distributed across our communities; and the impacts of high temperatures are felt most by those least able to cope. Without further action, risks will increase significantly as the climate changes, and as London's population grows and ages.

The case for urgent, coordinated action

London is the hottest region in the country. In addition to its warmer meteorological climate, the built environment intensifies heat through the urban heat island (UHI) effect, trapping warmth in buildings and hard surfaces.

01 UK Health Security Agency (2026): Interim heat mortality monitoring report, England: May and June 2026 – GOV.UK

02 England et al. (2026): The economic costs of the 2022 heatwaves in London

This particularly affects overnight temperatures and there is strong evidence that high overnight temperatures are associated with increased impacts on health. Climate change is increasing these effects; and in the coming decades, will lead to other UK cities becoming more exposed to the risks of hotter and more extreme temperatures. Some of the impacts already experienced in London include the following:

- An average of over **300 preventable excess deaths per year** during UKHSA Heat-Health alerting periods from 2020-2025.[03]
- Adults aged 45-65 in London have almost double the heat mortality risk of their peers nationally, with a 9 per cent[04] increase in risk of death during hot weather. This difference is likely due to the conditions in which Londoners live and work.
- Harms to health due to heat occur across all settings – in summer 2024, 36 per cent of heat-related mortality in England occurred in hospitals; almost 38 per cent in care homes; and 27 per cent in personal residences.[05]
- Approximately **200,000 homes (5.2 per cent of London's homes) are deemed to be at very high risk of overheating, with a further 800,000 (21.3 per cent) at high risk.**[06]
- Critical public buildings that are deemed to be in high heat risk locations include **1,361 schools, 60 hospitals, and 351 care homes.**[07]
- London's systems, services, and communities also face concurrent heat-related risks from wildfires, surface water flooding, drought, and subsidence.

Without adaptation, **climate change is projected to decrease London's GDP by up to 3 per cent in the 2050s,**[08] with costs increasing further towards late century. This could equate to between **£16 billion to £36 billion a year in damages in the 2050s,** depending on how London's economy grows. Climate change will also create additional headwinds against the London Growth Plan's aims to boost productivity by an average of 2 per cent a year.[09]

London has already taken important steps to manage heat risk and other climate risks such as flooding and drought, including through the leadership of the Mayor of London and the vital work taking place in London boroughs. In relation to heat risk, this includes expansion of cool spaces and public drinking-water fountains; planning policy; homes and building retrofit programmes to reduce overheating; upgrades across our transport network; investment in green infrastructure; developing guidance for care homes, schools and early years settings; and measures to improve infrastructure resilience.

However, as our climate warms more rapidly, action remains too fragmented and limited to match the scale of the challenge. **The economic case for action is strong, and the costs of inaction are high.**

03 UK Health Security Agency (2025): Heat mortality monitoring reports

04 Thompson et al. (2025): Social determinants of heat-related mortality in England: a time-stratified case-crossover study using primary care records

05 UK Health Security Agency (2024): Heat Mortality Monitoring Report, England: 2024

06 GLA (2024): Properties Vulnerable to Heat Impacts in London

07 GLA (2024): Properties Vulnerable to Heat Impacts in London

08 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

09 GLA and London Councils (2025): London Growth Plan

Many adaptation measures represent good value for money but will require significant investment in the near to mid-term. Over a 30-year period, London's existing parks and green spaces are estimated to deliver over £90 billion in benefits through recreation, improved health and temperature regulation, at a cost of £3.3 billion.[10] Analysis suggests that retrofitting London's most heat-exposed homes could require a blend of upfront investment from the public and private sector, of between £9 billion and £45 billion, depending on the interventions and level of overheating reduced.[11] However, when delivered at scale and alongside planned works, these measures can deliver benefits at between 1.2 and 1.8 times the cost, through fewer deaths, better health, sleep and productivity. New evidence suggests this could be even higher.[12]

A pathway for a heat-resilient London

This report sets out London's first city-wide pathway for adapting to heat risk across systems, sectors, and communities. It provides the evidence to move from fragmented action to a coordinated, city-wide response. It aligns with DEFRA's climate adaptation planning assumption that the UK should adapt to **2°C global warming by 2050.**[13]

Alongside Heat Ready London, it sets out five objectives for a heat-resilient London:

- Protect Londoners from the health impacts of high temperatures.
- Reduce inequalities by prioritising those most at risk.
- Ensure buildings, public realm, and green spaces are adapted to heat and provide shade.
- Maintain essential services and infrastructure.
- Support productivity and economic resilience.

Delivery will be guided by principles of equity and justice, collaboration and shared ownership, informed decision-making, and whole-systems thinking.

A coordinated programme

The Heat Ready London Technical Report sets out **37 priority areas of focus across six sectors** – the built environment; business and economy; emergency preparedness, resilience and response (EPRR); green space and nature; health and care; and infrastructure. The report also recommends the sequence in which these priority areas should be implemented and scaled looking out to 2050 as well as co-benefits. Together, these provide a coordinated pathway for strengthening resilience across London. These priority areas were developed through engagement with sector relevant organisations and provide a well-evidenced starting point for prioritising delivery.

10 Vivid Economics (2017): Natural capital accounts for public green space in London, for the Greater London Authority

11 See Funding and Financing section, Deep Dive 1

12 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

13 Defra (2026): Building a more resilient UK: our investment in climate adaptation – Environment

For six priority areas of focus, this report provides additional analysis to support decision-making. These are referred to as **"deep dives"**. They were selected for deeper analysis, in recognition of the role that this report could play in filling key evidence and data gaps that could inform decision-making. The deep dives provide a stronger foundation for investment decisions and implementation at scale. While some areas were selected for further analysis, all 37 priority areas of focus are necessary to support London's resilience.

It will **take several decades to adapt London to be resilient to heat risk**, so it is critical that London takes the first steps on that journey now. Many short-term measures are needed to minimise the impact on health, productivity, critical infrastructure and service delivery, whilst major medium and long-term measures can be implemented in parallel. Short-term actions include supporting households and businesses to practise heat-safe behaviours; strengthening existing preparedness and response measures; and building the capacity of the health and care system, infrastructure, and frontline workers.

Over the medium to long term, **retrofitting homes and buildings to reduce indoor overheating is an essential measure**, as much of London's building stock was not designed for current and future summertime temperatures. While passive cooling measures must play a key role, climate projections indicate that in some settings passive measures alone will not be sufficient – and active cooling will also be required to address overheating in some homes and buildings facing the greatest risk of overheating, including sensitive settings.[14]

The CCC recommends that a combination of passive and active adaptation should enable **safe and appropriate temperatures in healthcare facilities by 2035, care homes by 2040, and schools and prisons by 2050.**[15]

Alongside managing risks, **adaptation offers huge opportunities to deliver economic**, social, and environmental benefits, including creating jobs, addressing inequality, enhancing biodiversity, and improving health and productivity.

Priority areas of focus

Built Environment

- Retrofitting the highest-risk homes to reduce the risk of indoor overheating – via, for example, shutters, insulation and ventilation, and air conditioning.
- Retrofitting the highest-risk non-residential buildings that deliver essential public services, for example, schools and care homes.
- Installing outdoor shading structures to reduce temperatures and decrease sun exposure – for example, shade canopies, shade sails and pergolas.
- Maintaining, raising awareness of and, where possible, expanding public drinking-water points and public toilets.
- Ensuring new buildings and major refurbishments are designed for heat resilience.
- Maintaining and protecting heritage buildings from heat-induced damage.
- Expanding access to blue spaces.

14 Love Design Studio and Shade the UK (2026): Cooling Roadmap for London

15 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

Business and economy

- Supporting businesses to adapt their facilities, working practices and supply chains to heat risk.
- Strengthening heat-risk planning for large events and venues.
- Developing skills and supply chain capacity for a heat-resilient economy.

Emergency Preparedness, resilience and response

- Enhancing community cool spaces and improving links with community-led initiatives.
- Developing a coherent public communication strategy for extreme heat in collaboration with London Resilience Partners.
- Response partners to consider the impact of heat on their services and users – including on their own capacity to engage in or lead on partnership response arrangements.
- Mitigating risks to emergency responders through existing learning and risk assessment processes – considering changes to uniforms, equipment and processes.
- Enabling statutory responders to support those already facing systemic inequalities and any compounding risks during heat emergencies.
- Enhancing partnership working and support between emergency planners and partners from the voluntary, community and faith sector (VCFS); identifying how the Equalities Impact Assessment (EqIA) process could be used in developing a response to heat emergencies.

Green space and nature

- Managing and expanding tree cover and green space in areas of high cooling and shading need; and improving access to London's existing blue-green spaces.
- Ensuring nature and green infrastructure can thrive in future higher temperatures.
- Using greening on and around buildings.
- Improving management of habitats and green spaces to reduce wildfire risk.

Health and care

- Establishing a cross-system heat health partnership to inform decision-making and embed heat health across clinical, operational and strategic functions.
- Identifying approaches to enable oversight, coordination and delivery of heat health actions within London's existing and emerging governance structures (e.g. London Health Plan, Health Improvement Plan, neighbourhood model and Integrated Care Board (ICB) Blueprint).
- Developing and disseminating targeted resources, for the health and care system, on priority actions to support at risk groups.
- Developing and disseminating tailored guidance, to help frontline staff manage their own heat risk while providing care.
- Embedding heat risk management in routine care through pilot pathways for priority heat sensitive conditions – including severe mental illness, neurological disorders and diabetes.
- Developing guidance for using the Disability Facilities Grant for housing interventions to reduce indoor overheating.

- Using learning from care pathways work to inform a system wide, evidence based approach to implementing Awaab's Law, including individual risk factors for heat-harm.
- Identifying options to integrate clinical and public health expertise in risk and vulnerability assessments, including a 'once for London' approach to inform Trust, ICB and borough adaptation plans.
- Clarifying governance and delivery functions for NHS Green plans at regional, ICB and Trust level.
- Characterising the scale and extent of overheating in London's healthcare estate.
- Strengthening outreach and welfare checks for vulnerable groups during heat risk events, including people experiencing rough sleeping by utilising the Hot Weather Rough Sleeping Guidance.

Infrastructure

- Improving the transport sector's understanding and management of direct heat-related risks to infrastructure assets and services by, for example, exploring the use of heat-resilient materials and technology.
- Continue ensuring safe working conditions for transport workers, and journeys that are as comfortable as operationally feasible for passengers.
- Reducing strain on water and wastewater systems during high temperatures and peak demand.
- Enhancing phone and internet networks to avoid disruption caused by high temperatures.
- Making electricity and gas networks reliable during hot weather and peak energy demand by, for example, ensuring Local Area Energy Plans (LAEPs) are resilient.
- Reducing the impacts of hot weather on waste management services, including fire risk.

Funding and financing

Delivering these priority areas will require coordination and sustained investment across London. The investment required is substantial. For example, analysis suggests that retrofitting homes at high risk of overheating could require upfront investment of between **£9 billion to £45 billion over 10–15 years**,[16] requiring a blend of public and private sector financing solutions to meet the scale of need. Public funding plays an important role, but alone will not be enough, highlighting the importance of enabling private investment. The long-term benefits of adaptation – including enhanced productivity, and reduced impacts on health outcomes and healthcare demand – are estimated to outweigh the costs.

In addition to identifying what needs to be done, this report also examines how the priority areas can be funded and delivered in practice. It does this by:

- Assessing **investment needs** for the six 'deep dive' priority areas.
- Identifying **barriers to investment**, such as high upfront costs and fragmented benefits.

16 The cost depends on the retrofit package selected, potential cost efficiencies, and alignment with wider objectives to improve housing quality in London. The low end of this cost range focuses on a relatively modest set of passive retrofit measures that are cost-effective but do not eliminate overheating; the high end of this range has a much more extensive range of passive retrofit measures, and also uses active cooling as a residual measure to eliminate overheating.

- Exploring potential options for **funding and financing** (drawing on an assessment of beneficiaries), including approaches that blend public and private investment.
- Identifying enabling actions and next steps that can help **mobilise investment at scale.**

This represents a significant step forward in London's approach to climate adaptation, helping to address a key challenge: **how to fund adaptation delivery at scale.**

Next steps and delivery

A clear and lean governance and delivery framework will help to galvanise, coordinate and prioritise effort and investment across London. It will provide clear oversight; and support the development of practical delivery programmes under the priority areas of focus outlined in this technical report and Heat Ready London.

The approach for implementing Heat Ready London is currently in a co-design phase. While this technical report sets out a proposed model, further engagement with partners is required before structures, roles and commitments are finalised. This approach is therefore intentionally flexible and iterative; it reflects the need to build shared ownership and ensure it is credible and deliverable.

The GLA's role, in partnership with London Councils, is to convene, coordinate and provide strategic direction. This will enable effective collective effort across London, unlocking the benefits for all Londoners.

A call to act

Heat is a defining risk for London – affecting health, infrastructure, ecosystems, the economy, and quality of life. This technical report provides a **clear, evidence-based platform** for action. Alongside Heat Ready London, its implementation will bring together partners across London to deliver a coordinated response that protects people, strengthens systems, and builds long-term resilience.

Acting now will save lives; reduce future costs; and ensure London remains liveable, resilient and inclusive in a warming climate.

Credit: GLA

02

Introduction

In July 2022, temperatures in London exceeded 40°C for the first time since records began.

In London, that year's heatwaves resulted in £1.5 billion of economic costs and London Fire Brigade's (LFB's) busiest day since World War II.[17] An estimated 387 Londoners lost their lives prematurely during heat events in summer 2022. Unfortunately, in recent years, this number of deaths has not been unusual, with over 300 excess deaths during heat-events in London in each of 2020, 2023 and 2025 as well.[18] This is the tip of the iceberg, as many more people will have died prematurely from temperatures that are harmfully high, but don't fit the definition of a heatwave or UKHSA Heat-Health threshold. Due to climate change, high temperatures and heatwaves are expected to become more frequent and more severe in the future, with around two to three times as many heatwaves per year projected to take place by mid-century[19] as there are now.[20] People and organisations in London need to be prepared for these high temperatures and be able to manage the risks they bring.

Many organisations have responsibility for the management of heat risk in London and already have preparedness plans in place. However, no single organisation can manage heat risk alone, as exposures, vulnerabilities and adaptive capacity that define London's risk transcend sectors, organisations and geographic boundaries. This is why London needs Heat Ready London. The framework, underpinned by this technical report, provides London's first integrated strategy for adapting and building resilience to heat across systems, sectors, and communities.

This report has been produced in collaboration with local stakeholders, representing boroughs and public, private, and third sector organisations across the built and natural environments, emergency services, health and care, infrastructure, and business. It aims to ensure a coordinated approach to tackling heat risk in London, helping to protect London's people and places. Some people and places are disproportionately affected by heat risk, and so the benefits of managing heat must be fairly distributed, and action must prioritise the most vulnerable. This report sets out a sequence of priority areas of focus that will be taken to address heat in the short, medium, and long term.

17 England et al. (2026): The economic costs of the 2022 heatwaves in London

18 UK Health Security Agency (2025): Heat mortality monitoring reports

19 Mid-century here refers to the 30-year period of 2041-2070 over which the average number of heatwaves per year is calculated.

20 UK Climate Resilience Programme (n.d.): Climate Risk Indicators

Why London needs a Heat Plan

Due to increasing severity and frequency of observed climate impacts, including the unprecedented 40°C heatwave in 2022 **(see Figure 1)**, the Mayor of London commissioned the London Climate Resilience Review (LCRR).[21] The LCRR recognised that London already has existing policies, strategies and programmes to manage heat, but that more needs to be done to reduce risks, especially for the most vulnerable. Specifically, the Review recommended:

> "A regional strategic plan for adapting to higher temperatures in London to be developed with a governance framework that sets out roles and responsibilities."

Delivering this is one of the priorities in the Mayor's "Delivering a Greener, More Climate-Resilient London" programme, which aims to provide leadership and convene partnership action on climate resilience across London within this mayoral term.[22] It is also a priority within London Councils' Climate Programme, which aims to accelerate boroughs' action on climate change.

The LCRR also called for more investment into climate resilience, in particular the need to create a structured finance mechanism to mobilise greater levels of public and private finance into climate adaptation projects to plug the existing funding gap.[23] To progress this recommendation, this report includes a chapter that sets out how selected actions could potentially be funded and financed. The methodology used to develop this is based on an approach developed by Pathways2Resilience (P2R),[24] a European Union programme that has provided funding to London to help address gaps in climate resilience.

21 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

22 Mayor of London (2025): MD3384 Delivery Plan – Delivering a Greener, More Climate-Resilient London

23 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

24 Pathways2Resilience (2026): Developing Regional Climate Resilience Investment Plans and Project Pipelines

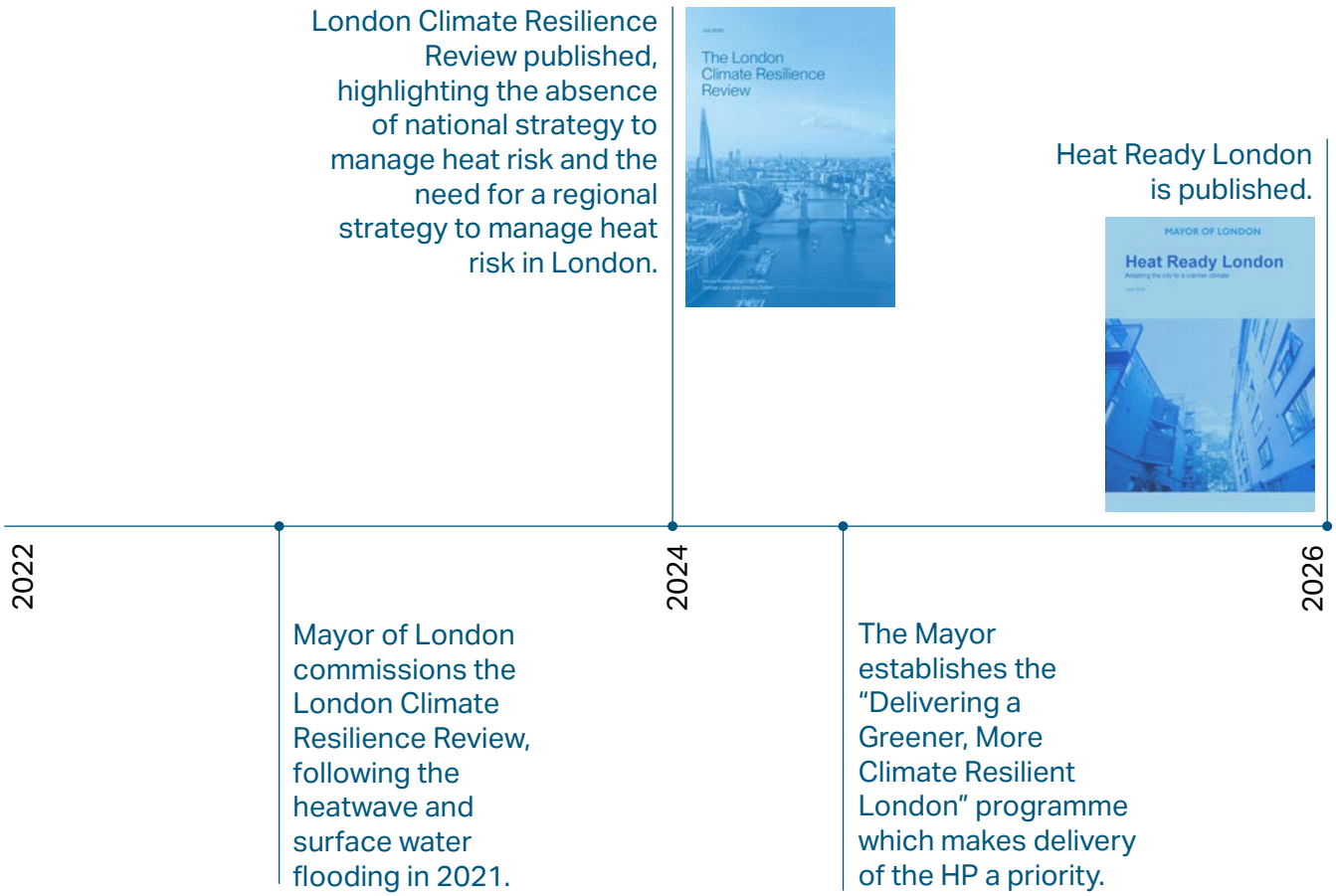


Figure 01: A timeline of some of the key events that led to the development and publication of Heat Ready London.

The London Risk Register rates high temperatures and heatwaves as a "very high" risk.[25] A 2023 survey by the British Red Cross found that London was the UK region with the highest levels of concern about heatwaves: 71 per cent of Londoners had concerns about the impact of heatwaves on themselves, compared to 62 per cent of adults across the UK.[26]

Credit: Efe Kuyu on Pexels

25 London Resilience Partnership (2025): London Risk Register

26 British Red Cross (2023): Policy brief: public perceptions of heatwaves in the UK

What does this report cover?

The Heat Ready London Technical Report outlines measures that should be taken in the short term (by 2030), the medium term (by 2040) and the long term (by 2050 and beyond). Medium – and long-term actions generally need to be preceded by preparatory or exploratory enabling actions in the shorter term.

It is organised into six key sectors:

- **Built environment –** the built environment at all scales, including homes, commercial buildings, the public realm, and other buildings such as schools, community centres, hospitals, and care homes, and the people and services that rely on these.
- **Business and economy –** businesses, including their sites, assets and services they supply, supply chains, and employees, and the wider economic and financial systems.
- **Emergency preparedness, resilience and response –** systems and organisations that plan for, prepare for, respond to and aid recovery from extreme heat events, including the emergency services, local authorities, and voluntary organisations.
- **Green space and nature –** London's green and blue spaces, the habitats and species within them, and the cooling benefits they provide.
- **Health and care –** the complex system that supports the physical and mental health of Londoners, and delivery of health and care services at all levels.
- **Infrastructure –** all systems, assets and services providing energy, water and wastewater, transport, communication, and waste management.

There is a chapter on each of these sectors which explains more about the specific context and priority areas of focus. Stakeholder buy-in is crucial for successful delivery and shared ownership of the priority areas within this report. Reflecting this, stakeholder input has been an important part of its development. These sectors were selected through engagement and validation with a multi-sector group of stakeholders convened by the London Climate Ready Partnership (LCRP). Continued engagement will be key to delivery, and Heat Ready London provides the foundations to facilitate this.

This report is focused on addressing the risks posed by high temperatures in London. However, the compounding risks posed by other climate hazards interacting with heat are also considered. London's summers are expected to get drier and hotter as the climate changes, while winters get warmer and wetter. Hotter, drier summers could lead to water shortages, exacerbated by the greater demand for water during hot weather, and increased wildfire risk, especially in grassy and wooded areas.

Credit: Daria Agafonova on Pexels

How does it link to other plans?

Heat Ready London, which is underpinned by this report, is the first integrated call to action for managing heat risk in London. However, many organisations, sectors, and boroughs already have their own plans and strategies in place for managing and adapting to aspects of heat risk. Some of the key plans that Heat Ready London and this technical report aim to work alongside are shown in **Figure 02**.

Given the important role of the health and care system in managing heat risk, the GLA Health Unit led a bespoke project to co-produce a Heat-Health Action Plan (HHAP) with health and care system stakeholders, applying the World Health Organization HHAP framework to systematically map gaps and opportunities to address heat-health outcomes.[27] These priority areas are included in this report and are focused on near-term activities to reflect the maturity of the system in terms of adaptation planning, and is a pragmatic approach given the extent of system reform under way. A HHAP for London will be published to support implementation of this work in due course.

Complementing existing sectoral plans such as The London Plan which manages heat risk in new developments, the London Urban Forest Plan and TfL's Climate Change Adaptation Plan.

Building resilience alongside the London Surface Water Strategy, London Resilience Strategy and borough level adaptation and heat plans, such as Westminster's Cool Neighbourhoods Strategy.

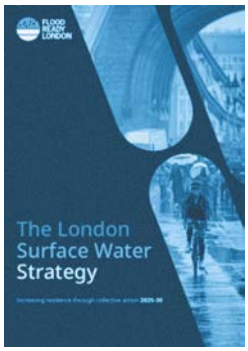


Figure 02: Some of the key plans that the Heat Ready London aims to complement and work alongside.

27 World Health Organization (2026): Heat–health action plans: guidance, second edition

How will the plan be used?

This technical report aims to influence how all of London responds to heat risk, and it is geared towards coordinating multi-agency action between partners involved in delivering action. This includes boroughs, GLA teams, NHS organisations, utilities, infrastructure operators, emergency services, the VCFS, developers, businesses, care providers, schools, and other relevant organisations across London.

Credit: Transport for London

It is expected to be used in the following ways:

- **Provide a springboard for action on heat risk.** It provides clear pathways that will help protect London's people and places from heat, focusing on the most vulnerable.
- **Coordinate multi-agency action.** It has been developed collaboratively with a wide range of relevant stakeholders. Specifically, the aim is to improve coordination of cross-sector and multi-agency action, as a step toward better governance of heat risk in London.
- **Support investment decisions.** The report provides an evidence base on the economic case for action, and potential models for funding and financing the investment required. The evidence base includes benefits registers which identify the economic, fiscal and financial benefits of action, and who receives these. These aim to help mobilise investment for adaptation planning.

03

Evidence Base: Heat Risk in London

CURRENT RISKS AND IMPACTS FROM HEAT IN LONDON

London already experiences higher summer temperatures than much of the rest of the UK.

Temperatures in London can be several degrees higher than the surrounding countryside due to the UHI effect. This is where cities experience higher temperatures due to features of their built environment, including:

- Heat absorption by concrete and other building materials.
- Reduced ventilation due to a high density of tall buildings.
- Limited levels of green space.
- Additional heat being produced by human activities.

Temperatures in London have already risen because of climate change. The last four years have been in the UK's top five warmest on record. Since 2000, there have been numerous significant heatwave events in London, as shown in **Figure 3**.[28][29][30]

Credit: Daria Agafonova on Pexels

28 Met Office (2026): 2025 is double-record breaker: UK's warmest and sunniest year on record

29 Pathways2Resilience (2025): Pathways2Resilience baseline assessment – London

30 Climate stripes in Figure 3 produced by Hawkins (University of Reading) and accessed from https://showyourstripes.info/ on 21/4/26

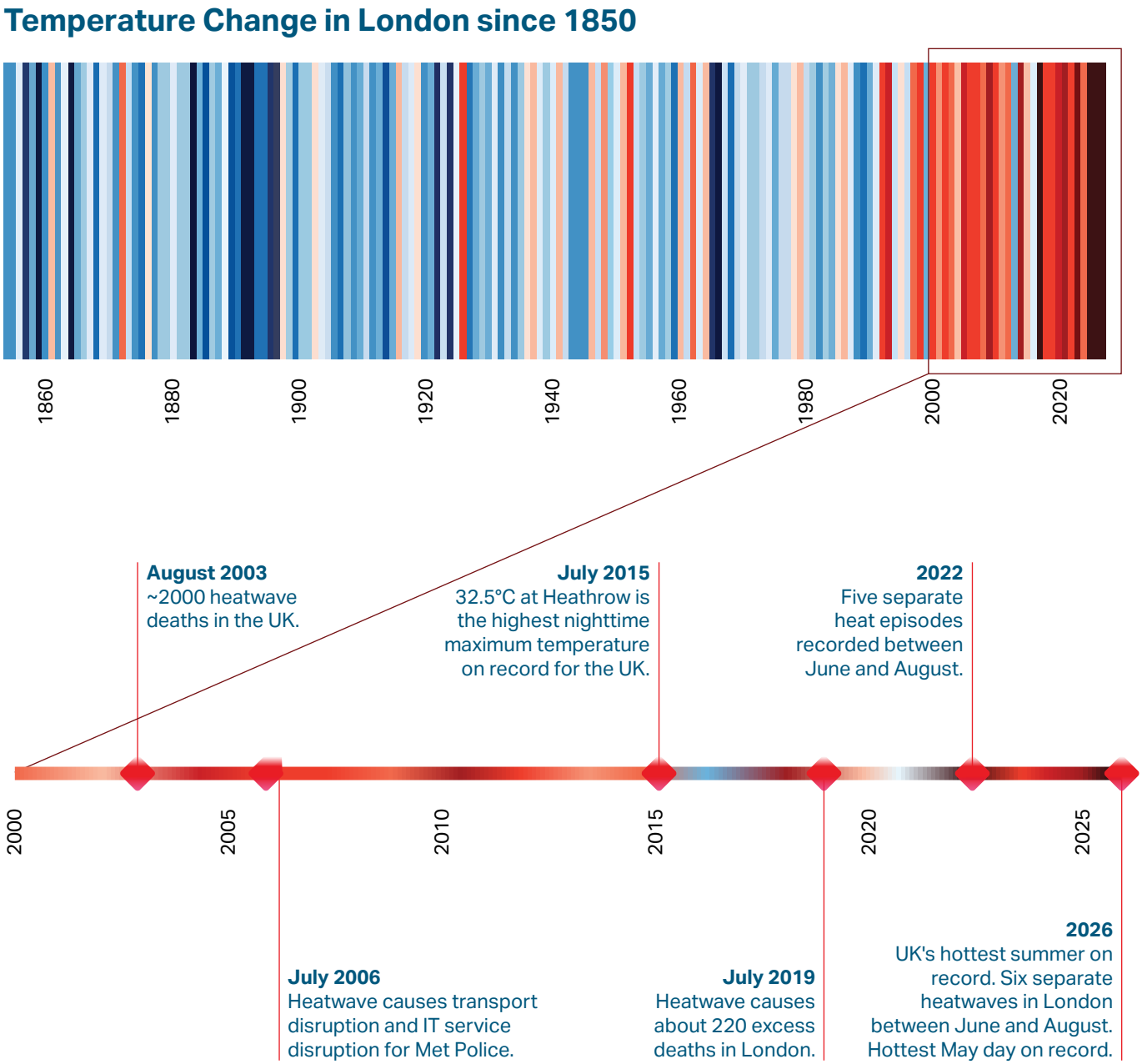


Figure 03: Climate stripes showing the annual temperature change in London from 1850 to 2024, relative to the 1961-2010 average. Red stripes show higher-than-average temperatures; blue stripes show lower-than-average. Also shown is a timeline of some of London's significant heat events since 2000.

These historical events have shown that the impacts of heat can be significant, and that there are limitations in London's preparedness.

Key impacts from high temperatures that have already been seen in London include the following:

- Impacts on health, wellbeing and premature mortality: the vast majority of heat-health impacts observed are not the result of heat stroke. Rather, they are due to the exacerbation of long-term mental and physical health conditions, many of which are very common in the population – cardiovascular and respiratory disease; severe and common mental health conditions; diabetes; and neurological disorders such as Parkinson's disease.[31]
- Increased pressure on emergency services, as an emergency response is required to protect Londoners, especially the most vulnerable. In June 2026, during a record-breaking heatwave, London Ambulance Service faced its busiest ever week, with an unprecedented number of 999 calls and patients treated.[32]
- Increased pressures on frontline staff in health and care services, who are expected to deliver care to a greater number of people in high temperatures, whilst maintaining their own wellbeing.
- Overheating of buildings including homes, workplaces, schools, hospitals, and care homes. This affects the health and productivity of occupants; increases energy demand for cooling; and can lead to the temporary closure of some public spaces. Impacts on productivity and closure of buildings may also impact London's economy.

"The school buildings were not designed to cope with temperatures being experienced. It was hard to work and for the children to concentrate."

Quote from a Londoner impacted by high temperatures.[33]

- As demand for emergency services increases, provision can be affected by disruption to transport and other infrastructure; heat impacts on staff welfare; and overwhelm of service capacity.
- Increased hospitalisations due to heat-related impacts on health and well-being.
- Disruption to infrastructure provision:
  - Rail buckling results in cancellations and speed restrictions.
  - Water demand increases.
  - Cooling demand puts strain on the energy grid and poses outage risks.
  - Telecoms and communications systems are strained.
  - Heat stress in vehicles and road melt affect road transport.
  - Waste management services face disruption and higher fire risk.

The comfort and wellbeing of users of public transport are also affected by high temperatures when travelling, reducing passenger numbers and hence operator revenue.

31 UK Health Security Agency (2024): Heat summary – Health Effects of Climate Change (HECC) full report

32 London Ambulance Service (2026): London Ambulance Service breaks record for busiest ever week during the heatwave

33 Talk London (2025): London Heat Risk Delivery Plan Discussion Analysis.

"The worst thing is the temperature on public transport. Lack of air conditioning on tube trains, windows on buses."

Quote from a Londoner impacted by high temperatures.[34]

- Damage to London's nature and biodiversity as heat, water shortages and wildfires lead to harm such as loss of trees and vegetation and impacts on water quality (e.g. algae blooms), and a decline in biodiversity, as some species cannot adapt quickly enough and face multiple pressures from human activity. This has negative consequences for London as a whole, as degraded green and blue spaces are less able to provide cooling benefits to reduce heat risk.
- Disproportionate harm to groups facing existing inequalities, which interact with heat to compound risk. People with poor mental or physical health, socio-economically disadvantaged and marginalised communities face higher levels of heat risk overall.

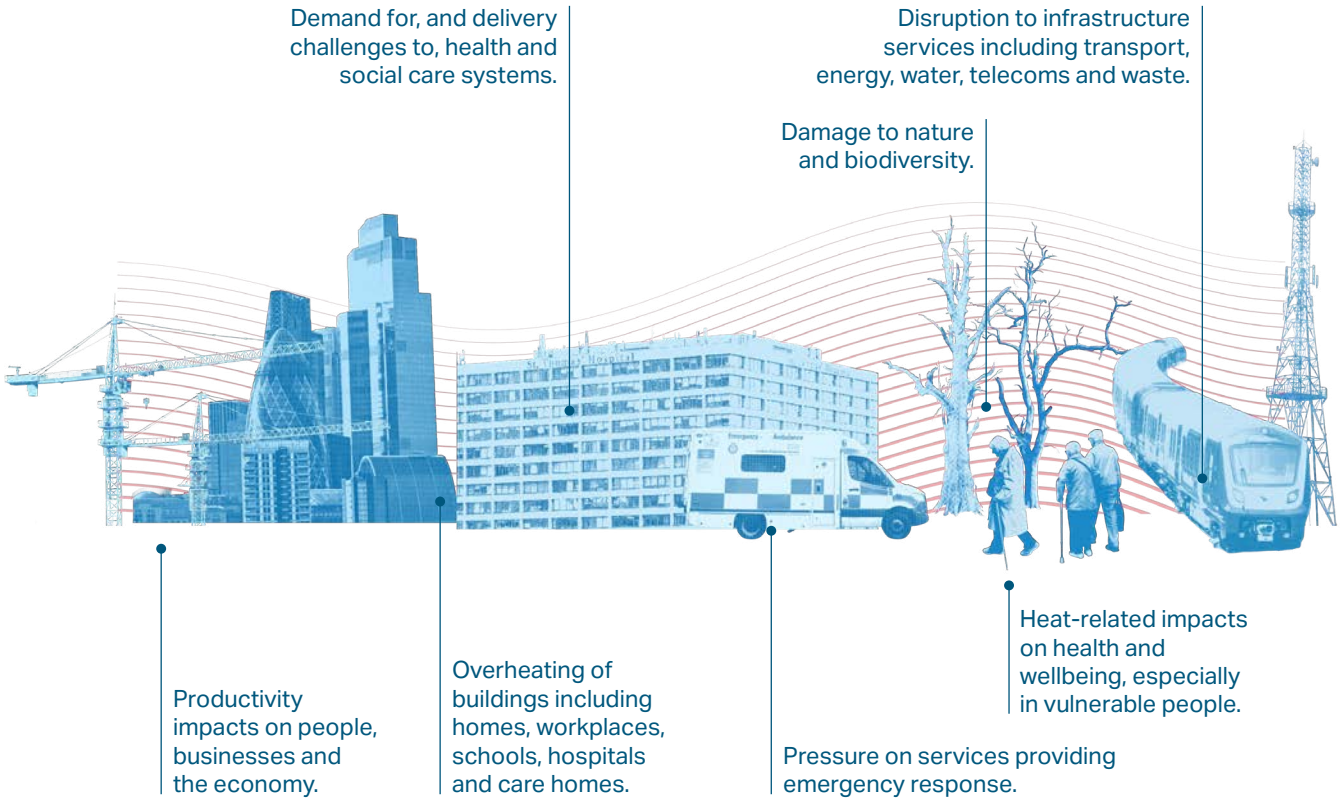


Figure 04: A summary of the key impacts of heat on different people, places and services across London.

34 Talk London (2025): London Heat Risk Delivery Plan Discussion Analysis

As described in some of these examples, risks are not always confined to a single sector or under the management of a single organisation. Risks can interact and 'cascade', where disruption to one part of a system results in disruption to another part. For example, London's transport and healthcare systems are both dependent on the energy system.

Therefore, failure of the energy system due to high temperatures could impact healthcare and transport. Managing these cascading risks requires awareness of these dependencies and partnership working between the relevant stakeholders.

The current level of heat risk varies across London, as shown in **Figure 5**.[35] Factors that affect the spatial distribution of heat risk include the numbers of vulnerable people in different areas; the density and types of buildings and infrastructure; and levels of green and blue space. These factors mean that it is often more deprived neighbourhoods that face higher levels of heat risk, and this could exacerbate existing inequalities in London. London is estimated to have the highest proportion of neighbourhoods that are vulnerable to heat in England because of social or environmental factors.[36]

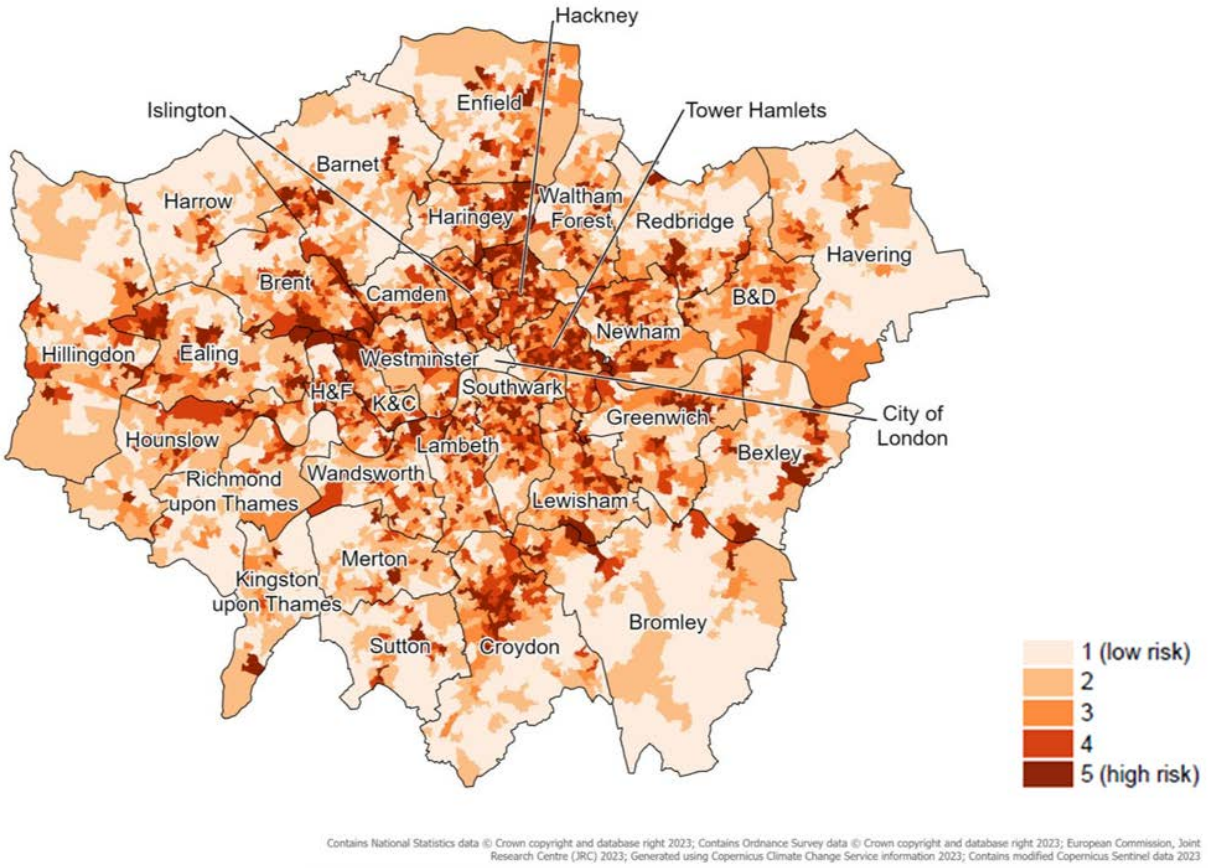


Figure 05: Heat risk map for residential properties in London.[37]

35 GLA (2024): Properties Vulnerable to Heat Impacts in London

36 Climate Just (n.d.): In depth: which places are disadvantaged?

37 GLA (2024): Properties Vulnerable to Heat Impacts in London

CASE STUDY: JULY 2022 HEATWAVE

In July 2022, temperatures reached 40°C in London for the first time in recorded history; and the Met Office issued its first ever red warning for extreme heat. This red warning meant adverse health effects were expected across the population, including among the fit and healthy – not just at-risk groups. Studies suggest that the heatwave was made over ten times more likely by human induced climate change.[38] Some of the key impacts were as follows:

- Nationally, there were over 3,000 excess deaths across all the heat events of 2022, with 387 of these taking place in London.[39]
- At Guy's and St Thomas' Hospitals, two data centres failed in the heat, leading to the failure of IT systems. The hospitals were required to move to paper-based operations; patient care and appointments were disrupted; and £1.4 million of unplanned spending on IT was required to resolve the incident.[40]
- Transport systems were disrupted, with cancellations and temporary speed restrictions affecting trains due to overhead cable sagging and rail buckling. Network Rail issued a 'do not travel' warning; and Transport for London (TfL) lost £8 million in revenue due to fewer underground passengers during the heatwave.[41]
- Across England the number of 999 emergency calls was five times higher than normal. In Wennington, east London, 16 homes were destroyed by wildfires.[42]
- Water consumption increased by 50 per cent in London.[43]
- The economic cost of the heatwaves in London was estimated to be £1.5 billion.[44]
- For a short time, National Grid's Electricity System Operator paid £9,724 per megawatt hour of electricity – more than 50 times the average price for that year so far – to avoid a blackout in London.[45] This was due to surging energy demand during the hot weather, alongside supply disruption due to planned maintenance and low wind turbine output.

Credit: Magdalena Przybyla on Pexels

38 Zachariah et al. (2022): Without human-caused climate change temperatures of 40°C in the UK would have been extremely unlikely
39 UK Health Security Agency (2025): Heat mortality monitoring reports
40 Guy's and St Thomas' NHS Foundation Trust (2023): Review of the Guy's and St Thomas' IT Critical Incident
41 TfL (2023): Climate Change Adaptation Plan
42 CCC (2025): Progress in adapting to climate change: 2025 report to Parliament
43 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review
44 England et al. (2026): The economic costs of the 2022 heatwaves in London
45 SNC Lavalin (2022): Towards Net Zero Energy Security: Are we building fast enough?

Future risks and impacts from heat in London

Heat risk is projected to escalate in London over the coming decades as climate change intensifies, leading to more severe impacts. The amount the climate changes, and hence the severity of the impacts, depends on the levels of greenhouse gases emitted into the atmosphere globally and how quickly these are reduced. However, the evidence is clear that the extent of global warming that is already locked in will lead to higher average temperatures in summer and increasing frequency and severity of heatwave events. Adaptation is now essential, alongside continued efforts to decarbonise, to ensure that we do not exceed the limits of our ability to safely adapt.

The 2022 heatwave and other recent heat events provide a warning of what London can expect from the future climate. Climate projections show that, under a medium emissions scenario, a year like 2022 (the second warmest year on record for the UK, and currently the only year on record where UK temperatures exceeded 40°C), could become normal by the middle of the century; and might be a relatively cool year by the end of the century.[46] DEFRA's climate adaptation planning assumption is that the UK should prepare for a minimum of 2°C of global warming above pre-industrial levels by 2050.[47] As shown in **Figure 6**, warming of 2°C could mean twice as many days a year above 30°C as there are now, and warming of 4°C could increase this to six times as many.[48]

Credit: Transport for London

46 Met Office (2023): Record breaking 2022 indicative of future UK climate

47 Defra (2026): Building a more resilient UK: our investment in climate adaptation – Environment

48 Met Office (2026): Local Authority Climate Explorer Climate Report for London

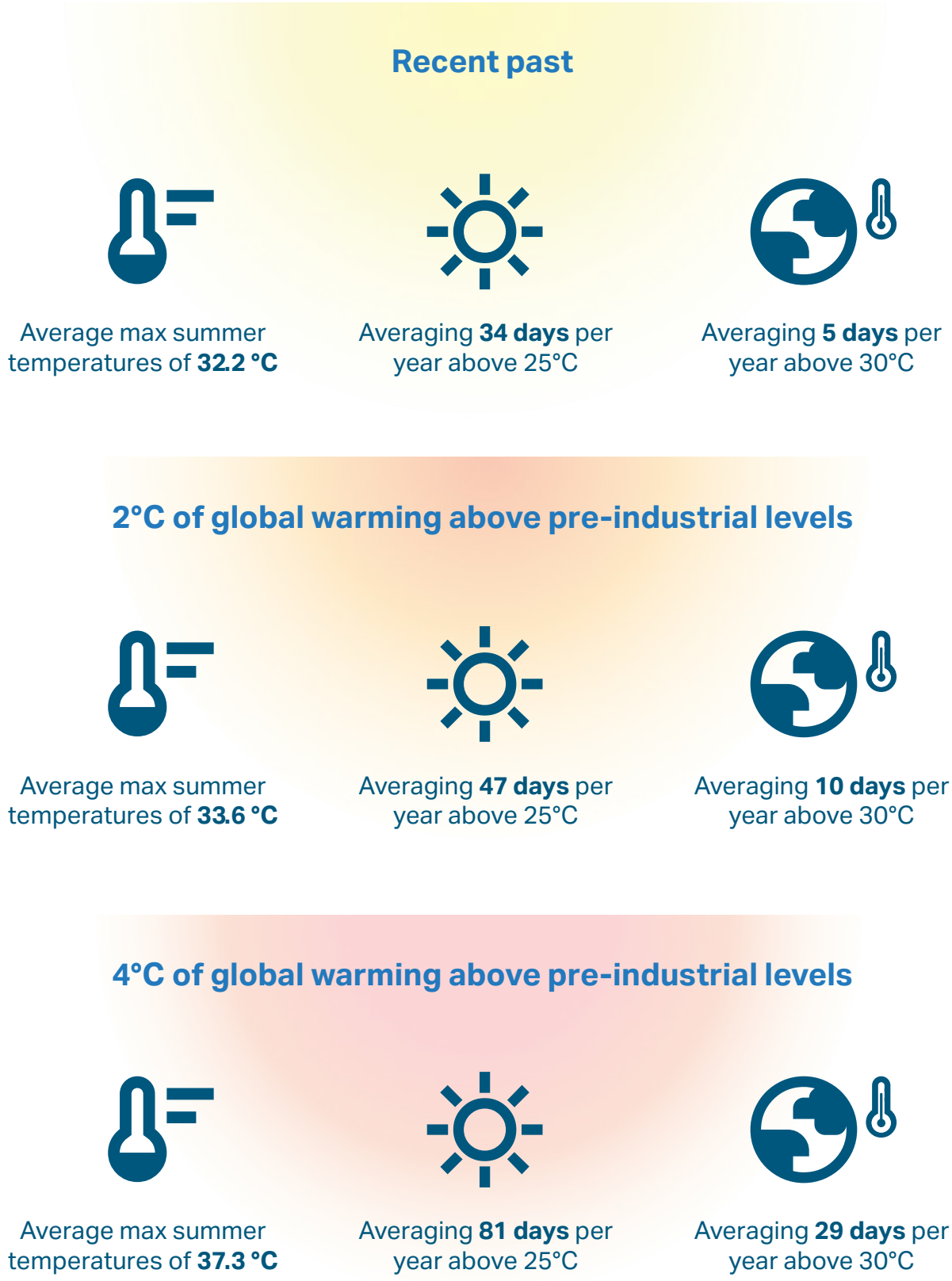


Figure 06: A summary of climate projection data for London showing how key heat metrics are expected to change for global warming of 2°C and 4°C above pre-industrial levels.[49]

49 Met Office (2026): Local Authority Climate Explorer Climate Report for London

Who are the Londoners most at risk?

High temperatures do not pose the same level of risk to everyone in London. Differences in exposure, vulnerability and adaptive capacity mean that some groups are more adversely affected than others. These factors often intersect, resulting in multiple and compounding risks for those least able to cope with extreme heat.

1. **Londoners who are more sensitive to heat**

Some people are physiologically more sensitive to high temperatures. For example, older people, the very young and people with mental or physical health conditions, or taking certain medication, are at higher risk of heat-related illness and other health outcomes.[50][51] One Londoner told a community engagement exercise:

> "The medications I took, there were two that I took, made it worse. The heat, especially at night, I couldn't sleep, my whole body burned and I felt like there was a heater on me all the time."[52]

People with reduced capacity to adapt their behaviour to hot weather are also at higher risk. This includes people with cognitive impairment; physical or mental disability; or substance-misuse issues.

London's population is ageing, leading to a higher proportion of older people; and hence, more likely to have a heat-sensitive condition **(see Figure 7)**.[53] London's total population is also predicted to increase, and in some places this growth could be more rapid. For example, the population of Tower Hamlets, one of London's most deprived boroughs, is projected to increase by 20 per cent between 2022 and 2032.[54] If the development needed to support this growth is not well adapted to the future climate, higher levels of climate risk affecting more people could be locked in.

2. **Londoners who are more exposed to heat at home, work or outside**

Exposure to heat is strongly shaped by people's living and working conditions.

Homes and indoor overheating

One study found that even in the current climate, bedrooms in a representative range of London homes would be expected to overheat.[55] Overheating is exacerbated in certain types of housing, such as loft conversion and high-density flats with limited ventilation.

50 Cole et al. (2024): Systemic inequalities in heat risk for greater London

51 Thompson et al. (2024): Identification of individual-level clinical factors associated with increased risk of death during heatwaves: a time-stratified case-crossover study using national primary care records in England

52 Shade the UK & Love Design Studio (2025): Heat Risk Community Engagement (unpublished)

53 GLA (2024): 2022-based Population Projections

54 Office for National Statistics (2025): Subnational population projections for England: 2022-based

55 Arup (2022): Addressing overheating risk in existing UK homes

Londoners have told researchers looking at heat:

> "When you're actually at home, there's no respite for a second once it gets hot."

> "When you open the door it's like an oven hitting you like with hot air."[56]

In rented homes, tenants may be less able to make building-level improvements to reduce overheating risk. Lower-income households may also have fewer resources to make changes in response to heat; and areas of higher deprivation often have less access to green space.

Workplaces and outdoor exposure

Some individuals are at higher risk through their work – for example, outdoor workers or those who work in roles that involve physical exertion. In the workplace, a range of factors can affect heat risk. **For example, workers in hot places such as kitchens may all be at higher risk.**

Homelessness and rough sleeping

One study found that Londoners experiencing homelessness were at higher risk of hospitalisation – even at moderately high temperatures of 25°C.[57] Londoners who are sleeping rough face higher risks as they are more exposed to heat and already face a higher prevalence of physical and mental health issues.

3. **Londoners in high-risk settings**

In addition to domestic housing, many sensitive settings such as care homes, schools, prisons, and hospitals are also at high risk of overheating in London.[58] In summer 2024, 36 per cent of heat-related mortality in England occurred in hospitals, almost 38 per cent in care homes, and 27 per cent in personal residences.[59] Residents of these types of settings are more likely to be heat-sensitive and are often less able to adapt due to institutional constraints. One survey found that 93 per cent of respondent London schools reported overheating as a problem.[60] One parent told a community engagement exercise on heat risk:

> "... there are no shaded areas in the playgrounds, there's not any shade on the walk to the school so we had to drive anyways ... I decided to keep my son out of school."[61]

56 Winder et al. (2026): Living with Extreme Heat in London: A compendium of stories

57 Hajat et al. (2023): Ambient temperature and emergency hospital admissions in people experiencing homelessness: London, United Kingdom, 2011–2019.

58 GLA (2024): Properties Vulnerable to Heat Impacts in London

59 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

60 GLA (2023): Climate Adaptation Plans for Schools

61 Shade the UK & Love Design Studio (2025): Heat Risk Community Engagement (unpublished)

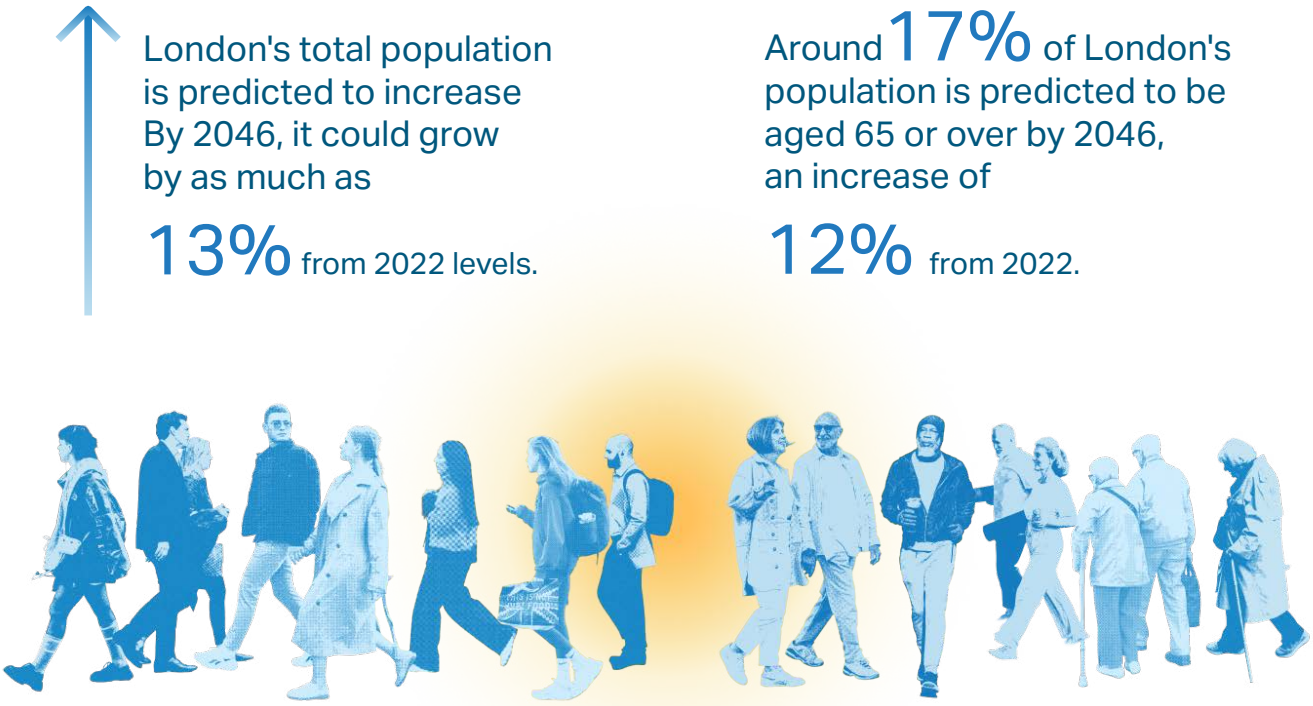


Figure 07: London's total population is predicted to increase, and the population is predicted to age, according to the GLA's 2022 trend-based population projections.[62]

Making the economic case for acting on heat risk

Without adaptation, climate change is projected to decrease London's GDP by up to 3 per cent in the 2050s,[63] with costs increasing further towards late century. This could equate to around £16 billion to £36 billion a year in damages in the 2050s, depending on how London's economy grows. Climate change will create additional headwinds against the London Growth Plan's aims to boost productivity by an average of 2 per cent a year.[64]

Specifically on addressing heat risk, there is a strong economic case for action. Estimates of the economic costs of the 2022 heatwaves in London totalled £1.5 billion,[65] although this is likely to be an underestimate as impacts on several sectors are not included. Costs were incurred across sectors; and were absorbed by various organisations and groups across the city, including businesses, households, the NHS, emergency services, and infrastructure providers. Productivity losses make up nearly 90 per cent of the estimated costs.[66] However, not all the impacts and associated costs in some sectors, including health, are well characterised.

62 GLA (2024): 2022-based Population Projections
63 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review
64 GLA and London Councils (2025): London Growth Plan
65 England et al. (2026): The economic costs of the 2022 heatwaves in London
66 England et al. (2026): The economic costs of the 2022 heatwaves in London

As climate change brings more intense and more frequent heatwaves, and the ageing population increases vulnerability, these costs are likely to increase unless action is taken to reduce the impacts. Many adaptation measures that reduce the impacts of heat, such as increasing green space, also bring wider benefits to communities or the economy, such as providing recreational spaces and reducing flood risk. Proactive implementation of, and investment in, adaptation action can help to maximise these benefits whilst reducing the future economic costs of worsening climate impacts. Embedding adaptation in decision-making now, particularly for long-term decisions around investment in buildings and infrastructure, is key to avoiding the need for potentially costly retrofit and repair of assets that are not fit for the future climate. For many adaptation measures, the economic benefits are expected to outweigh the costs. For example, the benefit-cost ratio (BCR) from adapting care homes in selected locations in England has an estimated median value of 1.26:1 but could be as high as 11.2:1 in some cases.[67] London's natural capital accounts estimate that the BCR of London's parks and green spaces to be 27:1.[68] The BCR is an indication of the benefits delivered for every £1 spent (for example, a BCR of 5:1 means £5 of benefits for every £1 invested).

Managing heat risk in London is in the national interest as the impacts of heat in London can have nationwide consequences.

London plays an outsized role in the UK economy: in 2021 the average gross value added per job in London was 40 per cent higher than for the average UK job.[69]

The city is also a global centre for finance and commerce. Therefore, heat risks to productivity could have significant impacts to the UK economy as a whole. London is also a national transport hub, meaning that impacts on its transport network can have knock-on effects nationally.

Progress so far on addressing heat risk

The LCRR found that "London is underprepared, but not unprepared".[70] Across London, organisations are already taking proactive steps to reduce heat risk and generate benefits. For example, the Mayor and the GLA are working with London boroughs and other partners to manage heat risk and cooling the city in several ways. These include:

- Improved public messaging.
- Planning policy for cooling.
- Improved building standards.
- Retrofitting.
- Transport adaptation.
- Green infrastructure investment.
- Borough-led action such as tree planting, awareness-raising campaigns, and cooling buildings.[71]

67 Ibbetson et al. (2025): Cost-benefit analysis of interventions to protect care home residents in England against heat risks

68 Vivid Economics (2017): Natural capital accounts for public green space in London, for the Greater London Authority

69 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

70 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

71 TfL (2023): Climate Change Adaptation Plan

The need for further action

Despite the progress that has already been made, more needs to be done to protect London from heat risk. The key challenges are as follows:

- **The risk from heat is increasing,** as outlined in the section above. Long-term decisions taken now around buildings, infrastructure and development could lock in higher levels of risk for the future if we fail to consider heat risk.
- **Adaptation action must be equitable.** Previous community engagement work in London has found that "disabled and neurodivergent people feel invisible in climate adaptation plans", and that cultural factors and language barriers can make it more difficult for some communities to adapt.[72] Measures are needed that address heat risk whilst prioritising the most vulnerable, while benefitting and building capacity within marginalised communities.
- **Governance and responsibilities for dealing with heat risk in London are fragmented.** No organisation has a statutory duty to plan for and manage heat risk, in the long term, in London. There is also no national-level heat risk strategy for England; and so regional strategic leadership, planning and coordination across London is necessary, as recommended by the LCRR.[73]
- **Investment and resources to implement and maintain adaptation measures are needed.** A 2024 survey of London boroughs found only 44 per cent of respondent boroughs said they had some internal funding for adaptation and resilience project delivery; and only 40 per cent had a dedicated officer to manage and deliver adaptation work.[74] The LCRR identified gaps in both public and private adaptation finance in London.[75] During engagement with boroughs to inform Heat Ready London and this technical report, additional barriers to funding adaptation were identified including:
  - Limited data on the cost of inaction and adaptation benefits.
  - A fragmented funding landscape due to a lack of statutory duties.
  - A combination of high upfront costs and low or uncertain revenue, negatively impacting the business case.

72 Shade the UK & Love Design Studio (2025): Heat Risk Community Engagement (unpublished)
73 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review
74 Pathways2Resilience (2025): Pathways2Resilience baseline assessment – London
75 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

- **Knowledge and awareness are lacking around heat risk.** The LCRR highlighted that urgent action is needed to engage Londoners on climate risk and adaptation, to build their understanding and empower them to make climate ready choices.[76] Similarly, the review highlighted gaps in organisational awareness, particularly where risks depend on interdependencies between organisations. Exercise Helios, an exercise to test London's preparedness for a severe heat episode, recommended that evidence needs to be made available to all relevant organisations to ensure responses to heat are evidence-based.[77]

Heat Ready London, underpinned by this technical report, aims to address these challenges and provide a springboard to overcome the key barriers that currently prevent effective adaptation action being taken across London.

Credit: Transport for London

76 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

77 London Resilience Partnership (2025): Exercise Helios An extreme heat exercise for London Post exercise report

04

Strategic Framework

OBJECTIVES FOR A HEAT-RESILIENT LONDON

The priority areas within this plan have been developed in line with DEFRA's climate adaptation planning assumption of a minimum 2°C increase in global temperatures above pre-industrial levels by 2050, while also recognising the need to consider warming scenarios of up to 4°C by 2100. These priority areas aim to meet the objectives shown below, at **Figure 8**:

01

Protect Londoners from the health impacts of high temperatures.

02

Reduce inequalities by prioritising those most at risk.

03

Ensure buildings, public realm, and green spaces are adapted to heat and provide shade.

04

Maintain essential services and infrastructure.

05

Support productivity and economic resilientce.

Figure 08: The objectives of Heat Ready London.

Guiding principles for delivery

Work with delivery partners should be guided by a set of shared principles:

- **Fairness and inclusion:** prioritising the needs of those most at risk and impacted by heat – and, in this way, ensuring that communities have a voice in shaping and benefiting from action.
- **Shared responsibility:** coordinating action across sectors and organisations.
- **Evidence-led action:** using evidence, data and local knowledge to inform decisions.
- **Collaboration:** working in partnership to address cross-cutting risks.
- **Proactive approaches:** acting early to reduce future impacts.
- **Whole-systems thinking:** recognising connections between systems and avoiding unintended consequences.

Approach to developing this report

This report has been developed through five phases of work:

1. **Review of London's current approach to managing heat risk** – existing adaptation plans and strategies for London were reviewed to understand current approaches across key sectors, identify gaps, and draw lessons from leading practice in other cities.
2. **Development of a multi-criteria assessment** – potential interventions were assessed against criteria including their adaptation effectiveness, cost-benefit ratio, deliverability, and impact on vulnerable groups. This enabled the respective strengths, weaknesses and trade-offs associated with each action to be examined.
3. **Validation of findings with sector stakeholders** – sector-specific workshops were facilitated to test and refine the findings. Stakeholders helped identify priority areas, urgency, relevant existing programmes, implementation enablers, and opportunities. Six actions were then selected for deep-dive analysis, based on the role that this report could support in filling key evidence and data gaps that could inform decision-making.
4. **Development of funding and financing models for selected actions** – funding and financing models were developed for the six selected deep-dive actions, by defining the benefits and beneficiaries, and by considering models that enable beneficiaries to pay for benefits received. Several of these models were validated with relevant stakeholders (e.g. local and central government, developers, finance, insurance, academia). Limitations and enablers were identified to further develop and pilot the most promising models. See chapter: Funding and financing **(p.159).**
5. **Synthesis of implementation-relevant information** – a range of information was collated to support delivery, including potential partners, sequencing (short, medium or long term), equity implications, co-benefits, relevant policies and programmes, and key implementation considerations. For the six deep-dive areas, indicative costs and benefit-cost ratios were also collated.

What does it mean for London?

Residents from the Hopeful Futures project envisioned how their boroughs might look and feel in 2050 if effective action was taken now to adapt to climate change.[78] They highlighted priorities such as: improving mental and physical health to improve quality of life, expanding green and blue spaces, making transport cleaner and more accessible, and making the built environment more resilient. The objectives of this plan aim to deliver heat resilience in a way that is aligned with Londoners' priorities.

Concerted, collective action from delivery partners, against the priority areas of focus, will achieve tangible improvements to Londoners' lives in the following ways.

Londoners will be better prepared for hot weather

Heat-related harms to health will be reduced through:

- Stronger collaboration, coordination and governance across the health and care system.
- Embedding heat-risk management in existing pathways and processes.
- Targeted action to protect those at highest risk.

Homes, schools and workplaces will be fit for a hotter climate

The highest-risk buildings will be prioritised for retrofit to prevent overheating. New developments will be future-proofed for comfort in higher temperatures.

Neighbourhoods will be cooler and greener

Tree canopy, green spaces and water features will be expanded, and well maintained and managed – particularly in areas most at risk. This will provide shade and reduce temperatures to help people cope on hot days.

Infrastructure and services will remain reliable during hot weather and heatwaves

Energy, transport, water and emergency services will be better prepared for high temperatures, to keep our city running and reduce disruption for Londoners.

London's response to hot weather and heatwaves will be coordinated and effective

A more joined-up approach across organisations will ensure that early warnings, emergency response and recovery efforts are delivered consistently across the city.

Action will be fair and targeted

Investment and interventions will be prioritised in communities that are most exposed to heat, and least able to adapt – helping to target support where it makes the biggest difference.

78 Hewlett et al. (2025): Hopeful futures: Londoners' visions for a city that is well adapted to climate change

05

Next Steps

The development of Heat Ready London and this report has been informed by engagement with a wide range of professional stakeholders, and evidence from Londoners on their lived experience of hot weather.

Achieving tangible change on heat risk in London will depend on action and investment from delivery partners, across the London system, against the priority areas set out in this report.

The next phase is to work with partners to co-produce the delivery pathways needed over the short, medium and long term. This will help determine the nature, scale and location of delivery, guided by factors such as risk, opportunity and funding availability. This process began in June 2026, with a roundtable of key stakeholders.

Continued engagement with Londoners will also ensure delivery reflects lived experience; and supports fair, effective action across the city.

Governance

A governance and delivery framework is needed to galvanise, coordinate and prioritise effort and investment from across the London system. A robust but lean governance framework will provide clear oversight; and support the development of practical delivery programmes under the priority areas of focus.

The governance approach for implementing Heat Ready London is currently in a co-design phase. While this chapter sets out a proposed model, further engagement with partners is required before structures, roles and commitments are finalised. This approach is therefore intentionally flexible and iterative – reflecting the need to build shared ownership and ensure it is credible and deliverable.

The GLA's role, in partnership with London Councils, is to convene, coordinate and provide strategic direction. This will enable effective collective effort across London, unlocking the benefits for all Londoners. Responsibility for delivery will primarily sit with the potential delivery partners listed in this report.

From publication of Heat Ready London to delivery

To ensure this vision translates into action, delivery will follow a phased approach. This creates a clear route from high-level priorities to funded, deliverable programmes.

Partner alignment and delivery planning will take place in four phases, with some of these activities taking place concurrently, where appropriate.

Phase 1 – Partner alignment and co-design

Phase 1 will focus on engagement with key delivery partners, to explore opportunities for greater coordination, and shape the governance and delivery model for effectively managing heat risk across London. This will include:

- Developing draft terms of reference.
- Testing governance options.
- Clarifying roles and responsibilities.
- Exploring alignment with existing structures.
- Identifying the coordination resource required.

The aim is to secure partner buy-in and agree a clear direction of travel for a London Heat Partnership.

Phase 2 – Governance aligned to delivery

Phase 2 will establish a proportionate governance structure to support delivery. A two-tier model is proposed, comprising a strategic steering group and one or more delivery focused working groups – subject to co-design and alignment with existing arrangements. This structure will provide oversight; maintain momentum; support coordination across sectors; and enable delivery and learning without creating unnecessary burden for partners.

Due to its complexity, governance for the health system section of this plan will follow alternative arrangements, with details to be determined. A representative from the existing health partnerships would sit on the Heat Ready London steering group to ensure alignment.

The role of established external sector groups will also be explored as an additional or alternative vehicle for delivery, where they are deemed the best available mechanism. They would tie into the Heat Ready London governance structure.

Phase 3 – Prioritisation and implementation design

Phase 3 will turn Heat Ready London's priority areas of focus into a practical delivery programme. Partners will:

- Review and refine the priority areas of focus.
- Agree prioritisation criteria.
- Identify an initial set of priority actions.
- Develop a multi-year roadmap with clear ownership, delivery arrangements, funding routes, risks and measures of success.

This phase will also explore how different funding approaches can support delivery and scale.

Phase 4 – Funding and scaling

Phase 4 will focus on aligning funding with the agreed delivery pipeline and mobilising investment to support delivery at scale. The aim is to establish viable funding pathways that can sustain implementation over the longer term.

Resourcing delivery

The GLA will be responsible for convening the Heat Ready London governance structure and providing oversight of the work.

06

Built Environment

CONTEXT

London's built environment comprises the city's residential, commercial, industrial, civic and cultural buildings, alongside the public spaces between them that support everyday activity including living, working and social interaction.

Buildings across London, including homes, schools, workplaces and care settings are at growing risk of overheating as temperatures rise. Indoor overheating negatively impacts health and wellbeing; reduces comfort and productivity; and affects learning and care provision. In the 2022 heatwave, 80 per cent of people surveyed reported discomfort in buildings.[79] With people spending over 90 per cent of their time indoors, it is critical that buildings are resilient to warmer weather – to protect occupants and keep essential services running. People also need safe, cooler places outside. When outdoor spaces become too hot or unsafe, people are less able to travel, exercise, play, socialise or find respite from overheated homes – further exacerbating risks.

The UHI effect makes parts of the city significantly hotter than surrounding areas. This is due to the density of buildings and hard surfaces, which trap heat. London's building stock is varied and complex – ranging from modern new-build to heritage buildings, across all building types. London also has a high proportion of private and social renters who have limited ability to adapt their home.[80]

For homes in particular, heat risk can vary based on housing types; and due to residents within homes who may be more vulnerable due to health, age, mobility or socio-economic factors.[81][82] This means that the highest-risk homes are those with a combination of both vulnerability and exposure to heat. Similarly, users of schools, care homes, hospitals and prisons have a higher level of heat risk due to their individual vulnerabilities and the limited ability of staff or residents to adapt the setting to hotter weather. Of all buildings, managing heat risk in homes and buildings for the most vulnerable Londoners is critical to reduce health inequalities, ensure equitable access to comfort, and limit productivity impacts of hot weather.

The Well-Adapted UK report from the CCC (the government's independent advisor on climate change) sets clear, costed targets for reducing heat-health impacts. Passive methods for cooling (e.g., external shading) will minimise energy demand and increase resilience; however, at current and future temperatures, some settings (e.g. hospitals) will now also require air conditioning to avoid increasing levels of ill-health and premature mortality.[83] To reach safe and comfortable temperatures across other settings, there may be cases where air conditioning is needed in combination with passive measures. However, passive measures should be prioritised to ensure residents and building operators that are unable to afford air conditioning are still protected from overheating.

79 Khosravi and Scott (2026): A strategy to reduce the risk of overheating in London's homes

80 Harding, Cottell, Tabbush and Mahmum (2023): Homes fit for Londoners: London's homes today

81 UK Collaborative Centre For Housing Evidence (2024): The heat is on: the growing problem of overheating in domestic homes in England and the need for a national strategy

82 Zhang, Robinson and Hasova (2025): Housing and household vulnerabilities to summer overheating: A Latent Classification for England

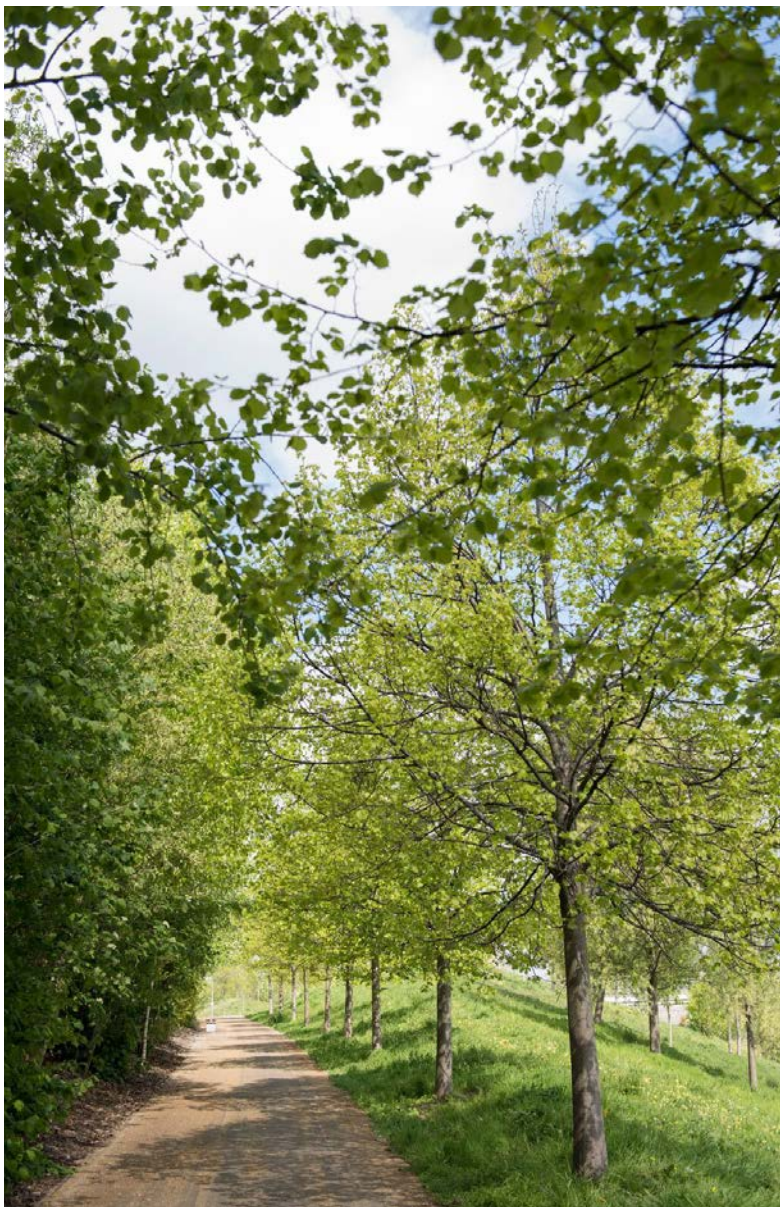
83 MHCLG (2022): Overheating: Approved Document O

Wide-spread reliance on air conditioning puts pressure on electricity networks, which can increase the risk of power outages when cooling is needed most. Additionally, air conditioning has equity implications as purging excess heat into the local environment increases the ambient temperature and further exacerbates the UHI effect.

Shading and green infrastructure can make streets and public spaces safer and more comfortable – supporting local economic activity and helping people access essential services during hot weather. Trees and green space not only provide shade; they also reduce street temperatures, which in turn helps lower temperatures in nearby buildings. Since 2008, the London Plan has required all new buildings seeking planning approval to be designed for heat resilience. The 2016 London Plan adopted an industry-accepted methodology to require all new buildings (domestic and non-domestic) to show they are designed for hot weather. This methodology was subsequently adopted by national government within the 2021 Building Regulations, to manage overheating risk for new homes only.[84] National government also introduced Awaab's Law in 2025.[85] Currently, this protects social-housing residents from mould and condensation; but later in 2026, it is planned to be extended to include excess heat as a housing hazard that requires intervention.

Positive steps have been made to adapt the built environment to heat; but at the same time, heat risk is rapidly intensifying. To support the day-to-day running of London, protect residents' health and comfort, and maintain productivity, it is critical the built environment adapts for current and future heat risk both across buildings and public realm spaces.

Positive steps have been made to adapt the built environment to heat; but at the same time, heat risk is rapidly intensifying.



Credit: GLA

84 MHCLG (2022): Overheating: Approved Document O

85 MHCLG (2025): Awaab's Law: Guidance for social landlords – Timeframes for repairs in the social rented sector

Heat risk overview

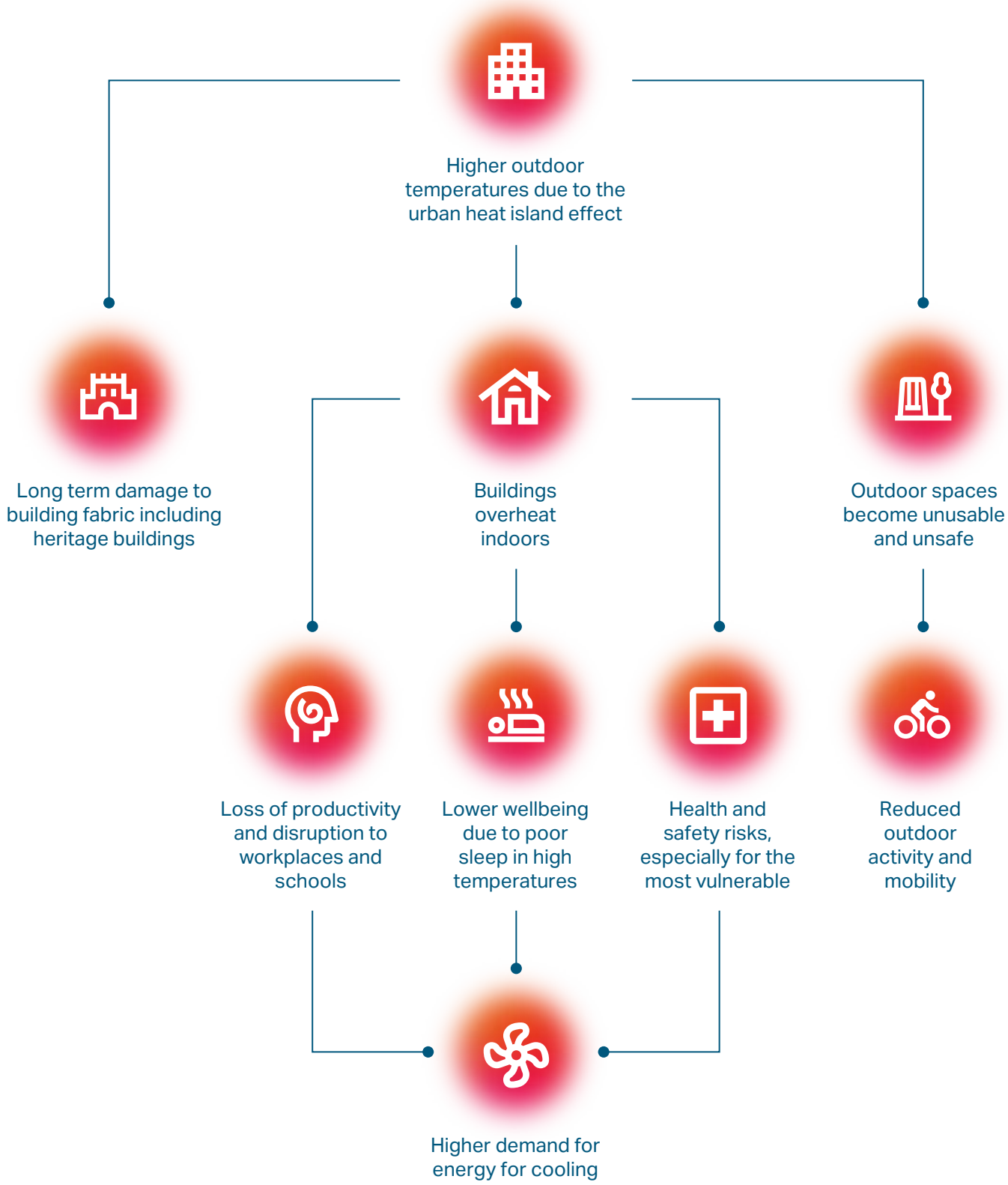


Figure 09: Summary of key risks to the built environment from high temperatures.

Sector objectives

- Ensure buildings and public spaces maintain safe and comfortable conditions during high temperatures – protecting health, wellbeing and productivity.
- Address inequalities related to heat risk by prioritising vulnerable homes, communities and essential public services.
- Deliver heat-resilient public-realm spaces through external shading, drinking water, and access to blue and green spaces.

Priority areas of focus for this sector

- Retrofitting the highest-risk homes to reduce the risk of indoor overheating – via, for example, shutters, insulation, ventilation, and air conditioning.
- Retrofitting the highest-risk non-residential buildings that deliver essential public services – for example, schools.
- Installing outdoor shading structures to reduce temperatures and decrease sun exposure – for example, shade canopies, shade sails and pergolas.
- Maintaining, raising awareness of and, where possible, expanding public drinking-water points and public toilets.
- Ensuring new buildings and major refurbishments are designed for heat resilience.
- Maintaining and protecting heritage buildings from heat-induced damage.
- Expanding access to blue spaces.

Links to other sectors

The built environment is integral to all sector areas within London's heat ready vision. Indoor overheating is the causative exposure for most heat-related deaths and ill-health, addressing this is essential to addressing heat-harms and health inequalities. Green and blue infrastructure form a large part of London's public realm spaces. This infrastructure is critical to reduce heat exposure and manage the UHI effect while delivering co-benefits to health and wellbeing, biodiversity and flood resilience. The built environment is reliant on infrastructure to ensure the operation of buildings and public realm spaces. With Londoners spending over 90 per cent of their time indoors, workplaces and healthcare facilities form a part of the built environment. Therefore, ensuring these buildings are resilient to rising temperatures is critical to maintain the continued running of emergency services, healthcare and businesses, to ultimately allow Londoners to continue day-to-day activities in an equitable, affordable and sustainable way.[86]

86 Talk London (2025): London's risk from rising temperatures

Box 1 – Behavioural, passive and active measures for buildings

Buildings and public realm across London need to be resilient to heat. This requires the built environment to be designed and retrofitted using passive interventions, nature-based solutions, and where necessary combining these with active technologies. In addition, it requires people to change their behaviours and lifestyles to effectively use passive and active technologies to manage their comfort and health within homes, workplaces, public sector buildings, and public realm spaces.

Buildings and public realm spaces have varying levels of risk to overheat based on their current design, condition, location, orientation, and use type. Cooling measures should therefore be applied based on specific constraints and opportunities for each asset, on a case-by-case basis. For new buildings, optimising the orientation, massing, and building fabric can significantly improve the performance of buildings during hot weather. This includes optimising the form factor of a building, minimising glazing (particularly full-length glazing), detailing wall build-ups and thermal bridging, and ensuring high-quality installation of building fabric. For new and existing buildings, passive measures include reducing glazing areas, maximising external shading, and maximising window opening areas. These measures can reduce incoming solar gains, which broadly account for 50 per cent of all heat gains, and maximise natural ventilation to purge heat during cooler periods. Window, shading and ventilation design must be balanced against design for noise, pollution and security risks, as these are well-evidenced challenges in urban settings.

Where passive cooling measures have been fully considered but are insufficient to maintain safe indoor conditions, combining these with energy efficient active cooling may be needed in some cases. Maximising passive measures can reduce overall energy demand for active cooling, helping limit the pressure on electricity networks, reduce energy costs for occupants, and minimise waste heat from air-conditioning systems that can contribute to higher outdoor temperatures and exacerbate the UHI effect. Where active cooling is required, it can be designed to be as low-carbon and efficient as possible, including by using energy generation from roof top solar, which can generate electricity during hot and sunny periods when cooling demand is highest.

Aligning cooling measures with planned energy-efficiency retrofit can also provide a practical and cost-effective route to scale. Integrating passive cooling into existing retrofit programmes can reduce disruption, avoid duplicative works, and help ensure homes are both warmer in winter and cooler in summer.

The way in which occupants use the building can also improve comfort and health during hot weather. This requires occupants to open windows during cooler periods of the day (generally in the evening); use shading during sunny periods; minimise internal heat loads by turning off unused appliances; and set reasonable cooling set point temperatures where active cooling is available. These measures can all improve people's comfort, health and reliance on active cooling – ultimately delivering more affordable, equitable and sustainable solutions for Londoners.

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.

1.1 Deep dive: retrofitting the highest-risk homes to reduce the risk of indoor overheating – via, for example, shutters insulation, ventilation, and air conditioning.

Overview and Purpose

More than half of UK homes already experience overheating risk.[87] Without adaptation, under a high-emissions warming scenario for 2°C warming in 2050, overheating risk in a typical summer is projected to result in up to 10,000 excess heat-related deaths in the UK by 2050.[88]

Of the entire housing stock, 80 per cent of existing homes will still be standing in 2050. With 92 per cent of residents in all existing homes affected by heat risk, it is critical homes are retrofitted to be heat-resilient.[89] As indoor overheating is the primary causal exposure for most heat-related premature deaths and ill-health, retrofit will confer significant benefits to health and well-being. Similarly, ensuring equitable access will reduce heat-related health inequalities.

The housing stock across London is varied; existing homes range from heritage assets to homes constructed in the past five years. Some archetypes such as top-floor flats, loft conversions, bungalows and highly insulated and glazed homes have higher risk of overheating. The variation in stock requires a flexible approach to retrofit, which allows for a diversity of solutions to be implemented.

Households vary by socio-economic status, age, health status and mobility, all of which will affect their adaptive capacity. The level of heat risk at a household level depends both on the extent of overheating due to the characteristics of the dwelling and the vulnerability of the household to that exposure. To avoid widening health inequalities, retrofit for cooling must be delivered in an equitable, affordable and sustainable way.[90]

To manage the disparity in heat risk by housing type and household vulnerability, the CCC recognise that delivering adaptation measures to 30 per cent of the most vulnerable urban households will reduce 57 per cent of deaths.[91]

Measures could include the retrofit of external shading and shutters, secure purge ventilation strategies, and where necessary, combining active cooling with passive measures **(as detailed within Box 1)**. Supporting low-cost shading, cooling and fan solutions will help to deliver health and comfort to homes in an equitable and affordable way for Londoners in higher-risk homes. For homes that are very challenging to retrofit, providing a cool room with portable and low-cost active cooling may be required to ensure the wellbeing of more vulnerable households.

87 Shade the UK & Love Design Studio (2024): Building Heat-Resilient Neighbourhoods
88 UK Health Security Agency (2023): Health Effects of Climate Change (HECC) in the UK
89 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee
90 Love Design Studio and Shade the UK (2026): Cooling Roadmap for London
91 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

To avoid widening health inequalities, retrofit for cooling must be delivered in an equitable, affordable and sustainable way.

Potential Delivery Partners

DESNZ leads the national retrofit funding and delivery framework through programmes such as the Warm Homes Plan and Warm Homes: Local Grant, which focus on energy efficiency, fuel poverty, bill savings and low-carbon heating.[92] These programmes are relevant to overheating because they provide existing delivery routes through which adaptation measures could be considered where aligned with scheme objectives. **MHCLG** plays a complementary role through housing, planning and building regulations, including standards relevant to overheating in new homes.

In London, **Warmer Homes London** provides an established retrofit delivery mechanism, while the **GLA and London Councils** are relevant through their broader roles in evidence-building, supporting boroughs, pilot learning, and convening partners. **Boroughs and housing associations** are owners and managers of London's social housing stock – responsible for implementing retrofit measures within their portfolios and engaging directly with tenants. **VCFS** partners support effective resident engagement, behaviour change and outreach, particularly to vulnerable and under-served households, helping to ensure measures are used as intended and benefits are realised equitably.

Landlords have obligations to ensure safe conditions for tenants; and in some cases **private homeowners** will decide to retrofit their own homes. Authorities, mortgage lenders, insurers, **energy providers and employers** have a role to play to incentivise home retrofit. **Manufacturers, suppliers, retrofit contractors, and installers** are also important delivery partners, enabling the delivery of these interventions at scale.

Implementation pathway and timeframes

Short-term

- Communicate heat resilience solutions for how residents reduce heat gains and implement low-cost solutions (such as turning off unused appliances, keeping windows closed and using curtains and blinds during the hottest part of the day).
- Communicate fixed heat resilience retrofit measures to residents able to support retrofit works, prioritising passive solutions and low cost, low energy active solutions where necessary.
- Complete overheating modelling and post-occupancy evaluation surveys to identify high-risk homes across London. This should identify high-risk housing archetypes, their locations, and possible technical solutions (passive or active) available for these housing archetypes.
- Identify technical solutions (including external shading and inward opening windows) to target under-developed supply chains for further development.

92 DESNZ (2026): Warm Homes Plan

- Monitor and audit existing buildings to identify technical constraints and opportunities for specific passive and active measures.
- Identify and group homes by neighbourhood or housing archetype where neighbourhood scale retrofit programmes can be delivered.
- Deliver retrofit for pilot projects in neighbourhoods at risk of overheating to evaluate the cost-effectiveness and acceptability of retrofit interventions for overheating to identify a suite of scalable solutions. These projects should also support industry sectors for under-developed supply chains (such as external shading, windows with shutter compatible openings and active cooling integrated with heating systems).
- Review existing retrofit delivery plans to integrate heat-resilience measures with energy-efficiency retrofit in a cost-effective way.
- Develop training schemes to support the construction sector to deliver heat resilience alongside energy-efficiency retrofit to ensure overheating risk is not exacerbated, this should be aligned with priority area of focus 2.3: Developing skills and supply chain capacity for a heat-resilient economy.

Medium-term

- Review guidance developed to communicate heat-resilience solutions to occupants, based on behaviour change and adaptation over the previous years.
- Monitor and audit pilot projects to assess the performance of homes; document lessons learnt and identify any challenges in design and delivery. This should evaluate the capital and operational costs, maintenance requirements and wider benefits associated with each pilot project.
- Disseminate lessons learnt for successful retrofit schemes to support upskilling of the construction industry in delivering high-quality and site-specific passive and active retrofit to homes.
- Integrate heat-resilience measures into energy-efficiency retrofit and wider building renewal programmes, ensuring heat resilience is reflected in retrofit guidance, programme design and funding mechanisms to deliver healthy, affordable and comfortable homes while expanding delivery to a wider range of properties where required based on ongoing risk assessments.
- Develop an overheating assessment methodology and extend building regulations to cover existing buildings.[93]

Long-term

- Review guidance and training programmes for the construction sector to address challenges and defects identified in the audit and post-occupancy evaluation of schemes.
- Expand the retrofit of all homes across London based on pilot projects and lessons learnt.

93 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

Co-benefits

- Reduce avoidable heat-related mortality and ill-health by reducing indoor overheating.
- Reduced pressure on healthcare and emergency services during hot weather, as people are safer in their homes.
- Improved productivity through improved sleep and improved home working conditions.[94]
- New economic opportunities in the construction sector through development of heat- resilience supply chains (across manufacturing, design and delivery).

Relevant existing policies & programmes

- UK Heat and Buildings Strategy.[95]
- London Plan, particularly Policy SI4: Managing Heat Risk.[96]
- London Net Zero Neighbourhood Programme.[97]
- Warmer Homes London.[98]
- PAS 2035 retrofit standard;[99] compliance with PAS 2035 is mandatory for all retrofit projects using government funding, such as the Energy Company Obligation and Warm Homes programme.[100][101]
- Chartered Institution of Building Services Engineers' (CIBSE's) TM59 overheating assessment methodology.[102]
- Awaab's Law, including Guidance for social landlords.[103]

Key considerations for delivery

- Public buy-in, awareness and acceptance of heat-resilience measures are crucial for the successful delivery of both passive and active technologies.
- Consideration is needed to determine how far delivery should rely on encouragement and voluntary action, versus when stronger rules or requirements may be needed over time.
- Retrofit should maximise passive measures to manage uptake of air conditioning, which risks exacerbating the UHI effect,[104] and can increased energy costs for residents.
- Retrofit should be carried out with energy-efficiency measures to reduce costs, ensure they are both optimised, and design measures do not exacerbate overheating risk.

94 ONS (2024): Impact of hot days on productivity in Great Britain methodology – Office for National Statistics

95 HM Government (2021): Heat and buildings strategy – GOV.UK

96 GLA (2021): Chapter 9 Sustainable Infrastructure | London City Hall

97 London Councils (2025): Boroughs launch proposal to retrofit 20,000 homes and cut energy bills

98 Warmer Homes London (2026): Making Londoners' homes greener, healthier and more affordable to heat: starting with those most in need

99 BEIS (2023): PAS 2035:2023 Incorporating Corrigendum No. 1. Retrofitting dwellings for improved energy efficiency – Specification and guidance

100 Retrofit Academy (2025): PAS 2035 Guide

101 MHCLG and DESNZ (2026): Improving the energy efficiency of socially rented homes in England: government response

102 GLA (2018): Evidence on Heatwaves: Adapting to Climate Change

103 Kingsborough, Jenkins and Hall (2017): Development and appraisal of long-term adaptation pathways for managing heat-risk in London.

104 Investment amounts are undiscounted i.e. not on present value terms. A 50 per cent cost saving was incorporated to reflect potential efficiencies associated with large-scale delivery (e.g. programme standardisation, bulk procurement and supply chain development). This saving brings costs more in line with recent analysis: Arup (2026) Heat risk and adaptation in the urban built environment

Indicative implementation costs

To retrofit around a million homes at high risk of overheating, retrofit packages with the most favourable BCRs require upfront investment of approximately £9 billion to £45 billion over the next 10-15 years.[105] The low end of this cost range focuses on a relatively modest set of passive retrofit measures that are cost-effective but do not eliminate overheating; the high end of this range has a much more extensive range of passive retrofit measures, and also uses active cooling as a residual measure to eliminate overheating.

Bespoke cost-benefit analysis estimates retrofitting homes is likely to deliver net economic benefits under preferred delivery assumptions, where estimated BCRs range from 1.2:1 to 1.8:1. These reflect benefits from reduced mortality and morbidity, improved sleep quality and enhanced productivity for those working from home. If retrofit is optimised by bundling technology solutions, and delivering at scale, capital costs can be reduced by up to 50 per cent compared with 2022 estimates **(See Box 2 and the HRL: Technical Annex for more detail)**. Further analysis on the costs, benefits and wider case for investment can be found in the Funding and Financing section, Deep Dive 1.

Barriers and enablers

Barriers

- Lack of building regulations requirement or minimum standards for existing buildings to be resilient to heat risk.
- Renters and low-income households are less able to initiate building adaptations, due to a lack of financial resources, tenure security or decision-making power needed to implement retrofit measures themselves.
- The most vulnerable residents also face additional housing issues such as overcrowding, poor ventilation, condensation and mould – increasing reliance on publicly funded or borough-led retrofit programmes.[106]
- Residents have a low awareness of adaptation measures they can take to improve the heat resilience of their homes.
- The variation in housing stock and household types, and lack of evidence for the effectiveness/cost-effectiveness of heat adaptation interventions for different contexts makes it challenging to deliver heat resilience solutions systematically across all homes.
- Lack of alignment across national policy and capital funding for energy efficiency retrofit and overheating risk.

105 Investment amounts are undiscounted i.e. not on present value terms. A 50 per cent cost saving was incorporated to reflect potential efficiencies associated with large-scale delivery (e.g. programme standardisation, bulk procurement and supply chain development). This saving brings costs more in line with recent analysis: Arup (2026) Heat risk and adaptation in the urban built environment

106 Shade the UK & Love Design Studio (2024): Building Heat-Resilient Neighbourhoods

Enablers

- Awaab's Law,[107] introduced in 2025, will require excess heat to be recognised as a Class A physiological hazard that must be addressed by social housing landlords.
- Guidance developed by charities across the built environment sector are emerging to develop targeted communication for residents across all housing types.[108][109][110]
- Government schemes are beginning to fund passive and active measures – including external shading, shutters and active cooling for retrofit such as the Warm Homes Plan[111] and the Boiler Upgrade Scheme.[112]
- At the national level, planned reforms to Energy Performance Certificates (EPCs) include consideration of overheating risk. Expediting their implementation would support improved decision-making on overheating risks and adaptation measures by landlords, housing providers and residents.

Credit: Cristobal Martinez on Unsplash

107 MHCLG (2025): Awaab's Law: Guidance for social landlords – Timeframes for repairs in the social rented sector
108 Shade the UK (2024): Overheating Adaptation Guide for Homes
109 British Red Cross (n,d.): Heatwaves in the UK: how to cope with extreme heat
110 Good Homes Alliance (2022): Overheating in Retrofit and Existing Homes
111 DESNZ (2026): Warm Homes Plan
112 DESNZ and Ofgem (2022): Boiler Upgrade Scheme

CASE STUDY – TAKING A FULL-HAZARD APPROACH TO RETROFIT-FOR-RESILIENCE, WESTMINSTER CITY COUNCIL

The City of Westminster sits in the centre of London's UHI. Dense urban development, historic building stock and extensive conservation areas limits the heat-resilience solutions available to residents, property owners and developers. It is projected that 75 per cent of Westminster's buildings expected to be in use by 2050 have already been built, emphasising the central role that retrofit will play in developing a heat-resilient building stock for the borough.[113]

In a collaboration between multiple departments (strategic transport and connectivity, planning and environment) Westminster City Council commissioned heat-resilience retrofit experts to create a retrofit 'how-to' guide specifically for residents to understand how to retrofit measures for heat-resilience alongside wider climate hazards including flooding, storm and water scarcity. The 'Weather-Ready Homes' guide explains how residents are exposed to heat risk. It also explains the passive and active solutions available for their homes, and the importance of behavioural changes to optimise comfort within their homes. It also creates a self-guided risk assessment and checklist to help residents in their decision-making for retrofitting their home.

Since its release, the guide has been embedded into Westminster Council's planning team with specific training for planning officers to ensure that Westminster's planning applicants are using the guide to embed climate resilience into their home retrofit projects.

Credit: Westminster Council

113 City of Westminster (2021): City Plan 2019-2040

1.2 Deep dive: retrofitting the highest-risk non-residential buildings that deliver essential public services, e.g., schools.

Overview and purpose

Care homes, health facilities, schools and prisons are particularly vulnerable to overheating, due to a combination of highly sensitive population groups and building characteristics that limit adaptive capacity.[114] Of these non-residential buildings, analysis identified 1,361 schools, 60 hospitals and 351 care homes to be in high-heat-risk areas.[115]

During heatwaves in 2022, services were disrupted for key public services including in care homes, hospitals, schools and prisons. High ambient temperatures alongside building design and fabric prone to overheating, internal heat gains from equipment, and a lack of passive and active technologies for heat management led to high temperatures within many buildings. The 2022 heatwave led to the cancellation of elective operations for one in five UK hospitals, and disruption of services for one in three hospitals. During the same heatwave, one in four schools closed – resulting in an estimated 800,000 lost days of learning.[116]

Addressing overheating in these settings is critical to safeguard health and maintain the continuity of essential services. A balanced approach to reducing heat risk will be required, combining passive design measures with active cooling to minimise cooling loads. Passive measures include the effective use of external shading, shutters, improved ventilation, solar control glazing, enhanced insulation, and high albedo finishing materials.[117] However, passive measures alone are unlikely to maintain safe indoor temperatures in higher-risk settings under future climate conditions. Active cooling will be necessary in some settings, particularly those with vulnerable occupants or a residential component to occupancy, such as healthcare facilities and care homes. The CCC recommends that adaptation should enable safe and appropriate temperatures in healthcare facilities by 2035, care homes by 2040, and in schools and prisons by 2050. Achieving these thresholds will likely require active cooling on the hottest days.

Potential delivery partners

DESNZ leads national funding and support for public sector building decarbonisation through programmes such as the Public Sector Decarbonisation Scheme, which focuses on decarbonisation and energy efficiency in public sector buildings. These are relevant to overheating because they provide existing delivery routes through which cooling and resilience measures could potentially be considered where aligned with scheme objectives. **MHCLG** plays a complementary role through planning and building regulations, including standards relevant to overheating and building resilience.

In London, the **GLA** and **London Councils** are relevant through their broader roles in evidence-building, borough support, pilot learning and convening partners. At the local level, **boroughs** can help plan and deliver retrofit programmes for at- risk public buildings within their areas.

114 Shade the UK & Love Design Studio (2024): Building Heat-Resilient Neighbourhoods

115 GLA (2024): Properties Vulnerable to Heat Impacts in London

116 England et al. (2026): The economic costs of the 2022 heatwaves in London

117 Greater London Authority (2020): Care Home Overheating Audit Pilot Project

Other relevant organisations for retrofitting different building types include:

- Schools – **The Department for Education, boroughs and academies.**
- Health facilities and hospitals – **The Department for Health and Social Care, The NHS, Ambulance Service, primary care.**
- Care homes – Care home providers, commissioners and operators, Care Quality Commission.
- Prisons – **The Ministry of Justice.**
- Wider public buildings – **public sector estate owners and facilities managers** across local and national government.

Emergency service buildings, including those used by **LFB** and **the Metropolitan Police**, are important considerations for adaptation because they support critical response functions during heatwaves and other extreme weather events. Improving the resilience of these buildings can help maintain service continuity and support operational effectiveness during periods of extreme heat. **Supply-chain partners** – including manufacturers, suppliers, retrofit contractors, installers, and maintenance providers – support the manufacture, installation and long-term maintenance of cooling retrofit measures at scale. A**uthorities, mortgage lenders, insurers and energy providers**, also have a role to play to incentivise building retrofit.

Implementation pathway and timeframes

Short-term

- Identify non-residential buildings at the greatest risk of overheating using heat risk mapping and modelling.
- Install building-level temperature monitors in key facilities to monitor and assess building overheating.
- Deliver staff training and building user guidance to support the effective use of heat reduction interventions (behavioural, passive, and – where necessary – active).
- Identify which combinations of cooling interventions are most effective across different building types and settings.
- Develop guidance for key high-risk buildings (including care homes, schools, hospitals and prisons) to identify design considerations for heat resilience alongside energy-efficiency retrofit for specific use cases.
- Strengthen and better coordinate existing retrofit programmes across boroughs to support consistent overheating assessments, procurement, and delivery in line with energy-efficiency and decarbonisation retrofit.
- Engage with finance industry to explore viability of potential financial mechanisms to support scaling delivery, including insurance mechanisms, green mortgages, and green leases that can all help to incentivise public and private building owners to carry out retrofits.

Medium-term

- Engage supply chain partners (including manufacturers, suppliers and installers) to increase investment into products and skills for passive and active technologies, to ensure cost-effective large-scale delivery.
- Identify key retrofit schemes as pilot projects to showcase heat-resilience measures; monitor building performance; and communicate lessons learnt, opportunities and challenges to support delivery of other schemes.
- Deliver retrofit programmes at scale through coordinated, area-based approaches, integrating overheating mitigation with wider energy-efficiency upgrades and urban greening.

Long-term

- Review and revise retrofit approaches, technical standards and guidance based on monitoring data and delivery experience over time.
- Scale up retrofit programme to a wider range of buildings (including those currently assessed as medium overheating risk) as the heat-risk profile changes.

Co-benefits

- The skills and technologies required to retrofit buildings for heat resilience can also benefit energy-efficiency of buildings in the winter, reducing energy costs and improving year-round comfort.
- Retrofitting public buildings as cool centres can deliver heat relief while also delivering community hubs and event spaces to enable cohesion.
- Ensuring continued running of public services will ensure continued productivity and activities across the city.
- Public realm retrofit delivered as part of these schemes, such as green infrastructure, can enhance resilience to drought and flood-risk and improve health and wellbeing by increasing access to green spaces.

Relevant existing policies & programmes

- GLA's Care Home Overheating Audit Pilot Project.[118]
- GLA's Climate Resilient Schools Programme (2022-23).[119]
- Properties Vulnerable to Heat Impacts in London research.[120]
- GLA's Reflective Roof Opportunity Map.
- DESNZ's Public Sector Decarbonisation Scheme.
- Ministry of Justice overheating risk mitigation measures for the design of new prisons and expansions.
- Adaptation strategies from London boroughs.
- DfE sustainability and climate change strategy.[121]

118 Greater London Authority (2020): Care Home Overheating Audit Pilot Project
119 Greater London Authority (n.d.): Climate Resilient Schools
120 GLA (2024): Properties Vulnerable to Heat Impacts in London
121 DfE (2023): Sustainability and climate change strategy – GOV.UK

Key considerations for delivery

- Carry out Post Occupancy Evaluations after retrofit of overheating measures to assess effectiveness and inform future adaptation schemes.[122]
- Use heat-adaptation measures to support both summer cooling and winter thermal performance,[123] to ensure vulnerable residents are comfortable and safe throughout the year.[124]
- Consider staff wellbeing alongside occupant thermal comfort in retrofit design.
- Allocate retrofit funding to maximise benefits for lower-income and disadvantaged communities, who are often at greater risk of overheating, to ensure retrofit is delivered where it is most needed to reduce the disproportionate health impacts.

Technical considerations

- Effectiveness of ventilation for cooling may be limited in highly urbanised areas due to noise, air pollution and security concerns, particularly where vulnerable groups are present.[125]
- Interventions for cooling will need to be designed to reflect the functional complexities of these settings and the needs of a variety of users and residents – e.g. active cooling in operating theatres may cause condensation, which is an infection control risk, care home residents are very sedentary and may feel cool whilst their carers may feel hotter as they are more active.
- Integrate green infrastructure and engineered shading into retrofitting programmes to help manage cooling energy demand.
- Utilise opportunities to minimise internal heat gain (e.g. improve energy-efficiency of lighting and appliances, reduce the number of appliances, etc.) alongside adaptation measures to reduce external heat gain.
- In specific cases, district cooling systems might be considered to deliver energy-efficient large-scale cooling, for example on campuses.

Indicative implementation costs

Indicative costs vary depending on the level of intervention, but evidence suggests a broad range – from relatively low-cost external measures, to more capital-intensive building retrofits.

Analysis of three UK care homes indicates that capital costs can rise to around £2,600 to £3,000 per occupant (approximately £250 per year) for whole-building active cooling solutions, such as air conditioning installed across both communal spaces and bedrooms.[126] These systems also incur ongoing maintenance costs of around £75-£85 per capita per year, or £12-£30 where cooling is limited to communal areas, alongside additional energy costs of approximately £2-£90 per capita annually.

122 Greater London Authority (2021): The London Plan

123 Greater London Authority (2020): Care Home Overheating Audit Pilot Project

124 Gupta et al. (2021): Monitoring and modelling the risk of summertime overheating and passive solutions to avoid active cooling in London care homes

125 Greater London Authority (2020): Care Home Overheating Audit Pilot Project

126 Ibbetson et al. (2025): Cost-benefit analysis of interventions to protect care home residents in England against heat risks

The study also showed that passive shading measures have lower capital costs than active cooling, with solar control window film costing approximately £800-£5,600 per building and external louvres costing £1,700-£14,000 depending on size, alongside relatively low maintenance requirements.

In addition to building retrofit measures, shading measures such as trees, pergolas and canopies are relatively low-cost measures to reduce heat exposure around buildings by improving thermal comfort in outdoor spaces. Evidence from Climate Adaptation Plans for London schools shows that shade structures, particularly sail shades (£1,900-£5,500), were among the most frequently recommended measures, reflecting their affordability, ease of installation, and ability to deliver immediate improvements in usable shaded space compared to more complex building retrofits.[127]

A cost-benefit analysis by Ibbetson et al. (2025) identifies a range of technologies suited to care homes of different sizes.[128] Further analysis on costs, benefits and the wider case for investment can be found in the Funding and Financing section, **Deep Dive 2**.

Barriers and enablers

Barriers

- Retrofitting public service buildings is challenging to carry out due to the complex and varied functions within the settings and different users/residents. Additionally, some settings may be in continuous use e.g. hospitals, care homes and prisons.
- There is limited capital funding for heat resilience, this can limit the scope of measures delivered and result in inadequate overheating retrofit.
- There are trade-offs in building design for heat-resilience measures against noise, security and pollution. This makes it challenging to deliver optimised passive measures (for purge ventilation) in London.

Enablers

- New and refurbished DfE buildings are obligated to use Design Summer Years that align with 2°C and 4°C global warming scenarios, promoting the use of both passive and active measures. This sets a precedent for setting similar requirements for buildings outside the education sector.
- The Climacare research project provides evidence for the cost-effectiveness of different interventions for adapting care homes for hot weather.[129]

127 GLA (2023): Climate Adaptation Plans for Schools

128 Ibbetson et al. (2025): Cost-benefit analysis of interventions to protect care home residents in England against heat risks

129 UK Climate Resilience Programme (2019): ClimaCare: Climate Resilience of Care Settings

1.3 Deep dive: installing outdoor shading structures to reduce temperatures and decrease sun exposure – for example, shade canopies, shade sails and pergolas.

Overview and purpose

Increasing outdoor shading in public realm spaces can reduce direct solar exposure in public spaces including public squares, playgrounds, bus stops and high streets. This can improve thermal comfort; and allow people to comfortably and safely continue with their daily routine. Outdoor shading can also reduce solar heat affecting buildings and infrastructure, reducing the UHI effect.

In urban settings, where delivery of green infrastructure can be challenging to retrofit, fixed or demountable built structures (such as shade sails, canopies, and pergolas) can provide useful and cost-effective shading. Such structures are common in cities with warmer climates;[130] they can reduce peak daytime ground temperatures by up to 16°C and façades by up to 6°C.[131] While these are less common in the UK, demonstrator projects are beginning to emerge, such as the Holborn Liveable Neighbourhood Heat Resilience Study, which uses microclimate modelling to identify priority locations for targeted interventions due to limited space and installation constraints.[132]

Potential delivery partners

The **GLA** provides the strategic leadership needed to embed action on shading structures within wider climate adaptation and heat risk priorities, and setting expectations for delivery across London. **London boroughs** are also central to implementation, enabling planning approvals, integrating shading into public realm schemes, and managing and maintaining assets over time. **TfL** could play an important role in incorporating shading within transport corridors and assets, including streets, bus stops and station environments. **Developers** are vital to delivery, through integrating shading as part of new developments. **Utilities providers** also play an important coordination role, particularly where shading structures may interact with underground and overhead utility infrastructure. **Supply chain partners**, including manufacturers, suppliers, installers and contractors are key delivery partners, supporting the design, specification, installation and long-term maintenance of shading structures. **Community organisations and businesses** can identify priority locations and help to deliver shading structures.

130 Shade the UK (2024): Overheating Adaptation Guide for Homes

131 Garcia-Nevado, Beckers and Coch (2020): Assessing the cooling effect of urban textile shading devices through time-lapse thermography

132 Camden Council & Holborn Liveable Neighbourhood Project (2025): Holborn Liveable Neighbourhood: Heat Resilience Study

Implementation pathway and timeframes

Short-term

- Identify and prioritise at-risk locations where shading can be delivered.
- Implement pilot interventions to a selection of high-priority sites. These pilot projects should test a range of permanent and temporary shading solutions, such as canopies and removable shade sails, to assess performance in different public realm contexts and to inform the development of efficient, scalable delivery models.
- Evaluate the capital and operational costs, maintenance requirements and wider public health and usability benefits associated with each pilot project.
- Develop the economic case to inform future investment.
- Incorporate shading delivery within planned public realm upgrades, transport schemes and regeneration programmes.

Medium-term

- Develop guidance for how external shading can be delivered in public realm spaces for a variety of shading solutions including fixings, maintenance requirements and responsibilities, and replacement.
- Expand delivery to priority locations across the city, informed by lessons from pilot schemes.
- Integrate external shading measures within wider public realm and transport hub improvements.

Long-term

- Embed shading as a standard part of public realm renewal, transport hub upgrades, and management of estates and public spaces, so that shading is consistently delivered.

Co-benefits

- Shading can enhance usability and attractiveness of public spaces, supporting increased social interaction.[133][134]
- In some cases, shading structures can be designed as public art pieces, adding to a place's culture and character, and engaging the community as well as the creative industry.
- Shading can increase the time people spend at retail and hospitality outlets by up to 40 per cent. This can translate to higher spending and increased revenue for these sectors.[135][136][137]
- There is potential for some shading structures to support solar photovoltaic panels to generate renewable energy.
- Shading can support sustainable transport behaviours by making walking and cycling more comfortable.[138]

133 Fabbri, Antonini and Marchi (2023): Sun-Shading Sails in Courtyards: An Italian Case Study with RayMan.
134 Camden Council & Holborn Liveable Neighbourhood Project (2025): Holborn Liveable Neighbourhood: Heat Resilience Study
135 Biggar and McAdams (2016): Time is money: Shoppers buy more when they stay longer
136 Wu, Morlotti and Mantin (2024): Shopping or dining? On passenger dwell time and non-aeronautical revenues
137 Shade-Space (2025): How Outdoor Structures Increase Guest Dwell Time in Hospitality
138 ESCAP (2024): The role of climate shelters in supporting active transport networks

Relevant existing policies & programmes

- London Plan: Policy D8 (Public Realm) [139] requires development to incorporate appropriate shade, shelter and microclimatic considerations, to ensure public spaces are comfortable and usable in a warming climate. This is reinforced by Policy SI4 (Managing heat risk).[140]
- Mayor's Transport Strategy – embeds the Healthy Streets Approach. One of the core Healthy Streets indicators is the provision of "shade and shelter".[141]

Key considerations for delivery

- Deliver shading structures as part of wider public realm improvements, and integrated with planting, seating, and other measures to maximise cost-effectiveness and place-making benefits.
- Coordinate early on to address complex ownership, governance, approvals, and maintenance responsibilities.

Technical considerations

- Shading interventions should respond to site-specific solar exposure and patterns of use.
- Shading structures should prioritise high-use areas such as seating, waiting points, and key pedestrian routes.
- Implementation should consider appropriate approaches in heritage-designated areas.

Credit: GLA

139 GLA (2021): Chapter 3 Design | London City Hall

140 GLA (2021): Chapter 9 Sustainable Infrastructure | London City Hall

141 TfL (2017): Healthy Streets for London

Indicative implementation costs

Qualitative assessments consistently identify shading interventions deliver low-cost public value, improving public health and urban liveability.[142]

The high-level capital costs of a range of potential shade interventions are outlined in **Table A**. Operational costs include routine maintenance, inspections, and periodic replacement cycles.

Table 01: Indicative cost ranges for shading interventions.

Shade intervention	Indicative cost range
Shade sails	Indicative costs: £300-£1,030 per m^2, per installation, depending on size and specification (e.g. hypar sails).[143][144]
Tensile membrane canopies	Indicative costs: £510-£1,160 per m^2 depending on size and design complexity (e.g. star and shield designs).[145]
Polycarbonate canopies	Indicative costs: £435-£1,420 per m^2, reflecting variation in structure type (e.g. monopitch, asymmetric, and walkway configurations) and scale.[146] These costs also include integrated drainage and foundations.
Pergolas	Indicative costs: £200-£380 per m^2, varying by material (e.g. timber or steel), design, and site conditions, with higher costs where features such as planting or seating are included.[147]

142 C40 (n.d.): Heat Action Platform
143 GLA (2023): Climate Adaptation Plans for Schools
144 Street space structures (n.d.): Canopy Estimator
145 Street space structures (n.d.): Canopy Estimator
146 Street space structures (n.d.): Canopy Estimator
147 GLA (2023): Climate Adaptation Plans for Schools

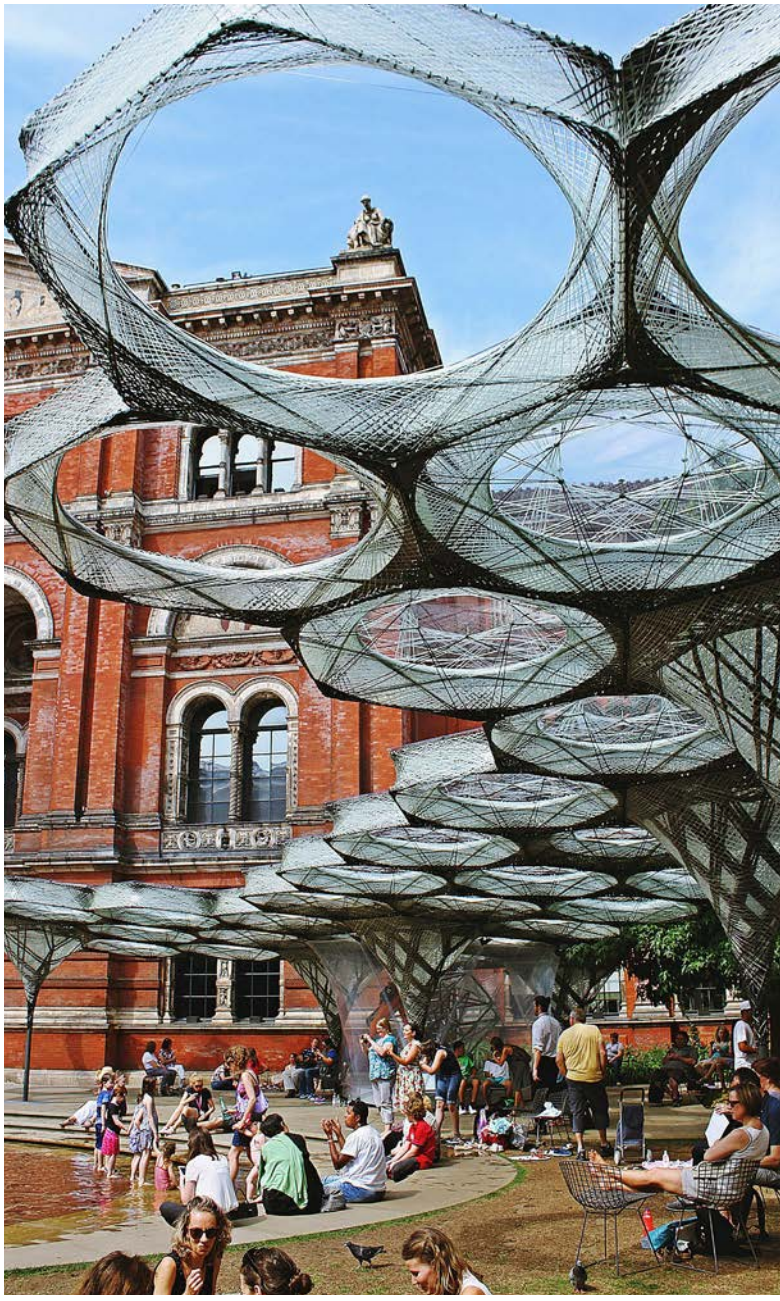
Barriers and enablers

Barriers

- There is no systematic requirement or dedicated mechanism to drive the retrofitting of shading in existing public realm. As a result, provision is typically discretionary – rather than embedded in standard design expectations – and remains secondary to established priorities such as green infrastructure.
- Technological constraints for installation with coordination across multiple stakeholders may limit installation.
- Ongoing maintenance can hinder uptake. Asset owners may be reluctant to install structures that introduce long-term maintenance obligations or risks associated with damage.
- Lack of empirical evidence, standardised design and performance and pilot projects reduce confidence in investment.

Enablers

- The support for adequate shading in new development through the London Plan shows clear alignment and support for the delivery of fixed and demountable shading.
- Identifying additional uses for shading structures (for example the potential to add advertising space on the structures) can help with funding and delivery.



Credit: Toa Heftiba on Unsplash

CASE STUDY – SHADING IN THE PUBLIC REALM SPACES

Credit: Tahoe Groeger on Unsplash

148 Climate Resilience Center (n.d.): Public shading structures: Commitment - Heat Action Platform

149 Climate Resilience Center (n.d.): Public shading structures: Commitment - Heat Action Platform

150 150 Camden Council & Holborn Liveable Neighbourhood Project (2025): Holborn Liveable Neighbourhood: Heat Resilience Study

1.4 Deep dive: Maintaining, raising awareness of and, where possible, expanding public drinking-water points and public toilets.

Overview and purpose

Dehydration during extreme heat can lead to heat exhaustion, fatigue and dizziness, and long-term damage to the brain, heart, and kidneys if left untreated.[151] Well-maintained and accessible public toilets also promote health and wellbeing during hot weather. Public toilet provision across London has declined over the last decade to an average of 22 facilities per local authority, with significant variations across boroughs.[152] 90 per cent of Londoners consider toilet provision before making a journey, and 52 per cent reduce the amount they drink before going out.[153] This can lead to social isolation or encourage people to limit their fluid intake, which raises the risks of dehydration, urinary tract infections, and kidney damage.[154]

Maintaining and expanding London's network of public drinking fountains and public toilets is therefore a key part of making the city climate-resilient for the future. This action includes incorporating public drinking fountains and toilets into existing and new developments and public spaces, and reopening previously closed facilities. It also means ensuring hydration infrastructure is accessible, well maintained and free of charge to encourage adequate water consumption during hot weather.

Public toilet provision also supports the economy, as people feel more confident to go out and participate in activities across the city without being discouraged by the lack of accessible toilets. The locations, available facilities, and opening times of both water fountains and public toilets must be well communicated to ensure effective use.[155]

Potential delivery partners

GLA, borough councils, TfL, Network Rail, developers, and local organisations and businesses should work collaboratively with **London's water companies**, and other asset owners, to assess opportunities to add additional drinking water fountains, refill points and public toilets.

Borough councils, GLA, water companies, and the **NHS** could support in communicating and promoting an expanded network of hydration and sanitation infrastructure – ensuring residents and visitors are aware of the available facilities, and can use them effectively during extreme heat.

151 NHS Dehydration advice (2026): Dehydration - NHS

152 Responses of 30 out of 33 local authorities to a 2025 FOI request. Age UK (2025): Age UK London reveals the extent of public toilet decline in the capital

153 Survey of 637 members of the public. Age UK (2022): London Loos: Public toilets in London

154 The King's Fund (2019): A Lav Affair: Do We Care Enough About Public Toilets? | The King's Fund

155 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

Implementation pathway and timeframes

Short-term

- Ensure effective systems are in place to communicate the locations of existing water refill points and public toilets to Londoners and visitors, including physical and digital maps and signage. This should include integration with existing mapping platforms, wayfinding, and partnerships with boroughs and transport operators to improve visibility and access.
- Assess the economic benefits of public drinking fountains and public toilets to support the case for enhancing maintenance and delivering additional facilities.
- Assess the condition and accessibility of existing facilities and identify refurbishment needs and changes to maintenance regimes.
- Identify priority locations for new facilities to be delivered, focusing on high heat-risk areas that experience high footfall.

Medium-term

- Ensure existing facilities are well maintained, safe, and accessible. This includes implementing strengthened maintenance and management practices (e.g. cleaning regimes, staffing, opening hours, reporting systems).
- Expand the network of free water-refill points and public toilets across London, targeting priority locations and integrating delivery with wider cool spaces and public realm interventions.

Long-term

- Assess how London's drinking fountain and public toilet provision is supporting the economy and reducing heat-related risks, assess relevant adaptation indicators, and modify facilities as required.
- Ensure existing facilities are well maintained, safe, and accessible.

Co-benefits

- Promotes safe outdoor recreation and exercise, which support health and wellbeing.[156]
- Public water points reduce the use of single-use plastic bottles, decreasing litter and waste management costs.[157]
- Increases the attractiveness and use of areas, benefitting nearby businesses and outdoor workers.
- Provision of hydration and sanitation infrastructure in cool spaces supports the use of those spaces during hot weather, which has social and economic benefits.
- Access to drinking water can save people money from buying bottled water, delivering more equitable and inclusive public realm spaces.

156 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

157 GLA (2018): Drinking Fountains for London Application Guidance

Relevant existing policies & programmes

- Pilot partnership between #OneLess (a network of policymakers, NGOs, businesses, communities and individuals) and the Mayor installed 20 drinking fountains in 2018.[158]
- The Refill London campaign.[159]
- Refill App.[160]
- Zoological Society of London and Thames Water drinking-water fountains partnership.[161][162]
- TfL toilet provision and improvement programme.[163]
- TfL Toilet Map.[164]
- The Great British Toilet Map.[165]
- 13 local authorities in London have Community Toilet Schemes.[166][167]

Key considerations for delivery

- New water fountains and public toilets should be located in high-footfall areas based on expected demand during periods of high temperatures.
- Provision of drinking water and public toilets may require different spatial approaches, depending on location needs.
- Delivery should consider the availability of water, wastewater, and power connections.
- Accessibility considerations should be integrated into the design and refurbishment of facilities, including pathways, lighting, signage, and step-free access.[168]
- Delivery should be coordinated with the expansion of London's cool spaces network.
- Funding and long-term maintenance responsibilities will need to be established across boroughs and organisations.

158 GLA (2018): Drinking Fountains for London Application Guidance

159 Greater London Authority (2023): Water Fountains

160 Refill (n.d.): Life with less plastic, made easy

161 Based on the first six installations. London Assembly (2019): Water Fountains (1)

162 London Assembly (n.d.): Drinking fountains for London

163 TfL (2024): Improving our toilet provision

164 TfL (2026): Public toilets in London

165 Toilet Map (n.d.): The Great British Toilet Map

166 As of September 2022. Age UK (2022): London Loos in-focus: Local authorities. Community Toilet Schemes

167 An example is the Richmond Community Toilet Scheme, where local businesses are paid £800-£1,000 annually to provide clean and accessible toilets free of charge for public use. Reusable water bottles can also be refilled at these locations. The locations of facilities are available on an online tool and on printed maps available from 10 community spaces across the borough (Richmond.gov.uk (2025). Toilets – London Borough of Richmond upon Thames)

168 #OneLess (2019): A guide to installing drinking fountains

Indicative implementation costs

Water fountains

The costs of drinking fountain units range from £800 for an indoor wall-mounted bottle filler, to £4,200 for an outdoor floor-standing bottle filler and double drinking fountain. Installation costs range from £340 for an outdoor floor-standing fountain in a park to £5,200 for a floor-standing filler and fountain in a pedestrian area.[169] Installation costs will differ across sites due to factors including underground obstructions and varying proximity to water mains.[170]

Water fountains must legally be serviced twice a year, with examples from London boroughs estimating costs of £230-£350 annually.[171]

Public toilets

Costs of public toilets vary widely between new installations and refurbishment, across locations and size and type of facilities, and depending on proximity of existing water and wastewater connection to the location. A recent example is the addition of an accessible toilet to existing facilities at Hackney Downs Overground Station, which cost £75,000.[172]

Ongoing maintenance costs of public toilets include regular planned and reactive cleaning, such as sweeping, mopping and wiping down surfaces, as well as restocking essential supplies such as toilet paper and soap.

Regular planned maintenance includes checks to plumbing, drainage, and ventilation.[173]

GLA currently maintains two public toilet facilities in London. The Trafalgar Square facility,[174] which has very high use, cost almost £170,000 for cleaning and consumables in 2020-21, whereas the Thames Barrier Park facility,[175] which has much lower use, cost around £8,000 for cleaning and consumables in 2019-20.[176]

Further analysis on the costs, benefits and wider case for investment can be found in the Funding and Financing section, **Deep Dive 5**.

Barriers and enablers

Barriers

- Approval and delivery of drinking water fountains and public toilets requires coordination across multiple stakeholders and landowners; and it is challenging and costly to identify suitable sites. This has been experienced in the past by stakeholders including GLA, the Zoological Society of London and Thames Water.[177]
- Maintenance of drinking water fountains is costly and difficult to coordinate, contributing to previous fountains falling into disrepair.[178]

169 #OneLess (2019): A guide to installing drinking fountains
170 London Assembly (2022): FOI – Water Fountains [Nov 2022]
171 #OneLess (2019): A guide to installing drinking fountains
172 London Assembly (2025): Toilet installation cost on the TfL network
173 TfL (2024): Improving our toilet provision
174 Trafalgar Square facility: 12 cubicles and urinals, 2 disabled toilets, 2 baby change facilities.
175 Thames Barrier Park facility: 4 cubicles, 3 urinals, 1 disabled toilet, 1 baby change facility.
176 London Assembly (2021): FOI – Public Toilets [Jul 2021]
177 GLA (2026): Background on Mayor of London Water Fountains Program. Internal working paper (unpublished)
178 Based on the first six installations. London Assembly (2019): Water Fountains (1)

- Public toilets require high ongoing maintenance costs. This includes staffing, cleaning, and protecting toilets from antisocial behaviour such as vandalism.[179]
- There is currently no statutory duty for local authorities to provide public toilets; this discourages the delivery of new toilets, and contributes to the closure of facilities.[180]

Enablers

- Customers at licensed premises in England are legally permitted access to free potable water.[181]
- Pilot schemes for free water refill points have already been implemented, and evidence from these initiatives should be systematically gathered to evaluate effectiveness and identify locations with the highest levels of use. This evidence can then inform the design and rollout of future schemes.
- TfL's programme to increase and enhance public toilet provision aligns with TfL's Equity in Motion plan, aiming to make the network more accessible, fair and inclusive.[182] Existing systems, such as the TfL Go app, are already available and can easily support the communication of locations and opening hours of public toilet facilities.

1.5 Ensuring new buildings and major refurbishments are designed for heat resilience.

Overview and purpose

All new buildings that are designed and constructed today should be resilient to current and future summer temperatures. This will ensure they can deliver long-term comfort and health for occupants. There is already current policy that aims to do this, including Building Regulations: Part O;[183] and London Plan, Policy SI 4: Heat Risk.[184] In London, the cooling hierarchy has been in use since 2016 and promotes the use of passive measures to minimise reliance on active cooling.[185] The draft London Plan 2026 continues to have a heat risk policy (Policy GHR 4 Heat Risk). The draft policy requires developers to incorporate heat resilience into designs from the beginning, avoiding costly retrofitted solutions later, with passive measures being the starting point before considering mechanical cooling. Evidence from the Part O consultation highlights significant variation in how assessments are undertaken, modelled and reported, making compliance difficult to interpret consistently across schemes. [186] Studies by UCL also show that practitioners in the construction sector do not believe Part O is delivering homes resilient to heat.[187]

179 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

180 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

181 BBC News (2017): Free drinking water – what are your rights?

182 fL (2024): Transport for London announces bold plans to grow and improve toilet provision

183 MHCLG (2022): Overheating: Approved Document O

184 Greater London Authority (2021): The London Plan

185 GLA (2021): Chapter 9 Sustainable Infrastructure | London City Hall

186 MHCLG (2026): The Future Homes and Buildings Standards: 2023 consultation response

187 Halai et al. (2026): Delivering heat-resilient housing in England: Reflections on the role of overheating building regulations in a warming climate.

In addition, assessments do not adequately account for future climate conditions, limiting their effectiveness in delivering long-term heat resilience. There is also a gap between policy requirements and real-world outcomes, emphasising the need for stronger verification of delivery through post-occupancy evaluation and long-term, data-led monitoring and verification.

Strengthening how overheating risk is managed through enforcement of planning policies and building regulations is critical, to ensure that new and refurbished homes are resilient to current and future heat risk. Planning applications and overheating assessments must become more consistent to ensure the existing policies can be enforced – leading to buildings that effectively use passive measures, work with public realm overheating measures (such as blue and green infrastructure) and reduce active cooling loads.

Potential delivery partners

The **GLA** provides strategic leadership and guidance, with London **Councils** supporting coordination across boroughs. At the national level, **MHCLG** sets the planning and regulatory framework, including the National Planning Policy Framework (NPPF)[188] and Building Regulations. Primary delivery and enforcement sit with **London boroughs** as local planning authorities (who assess applications and their compliance with planning policy), complemented by **building control bodies** (who check compliance with Building Regulations). Developers are responsible for delivering schemes that meet these requirements, with technical guidance from bodies such as **CIBSE** underpinning overheating assessment and design approaches.

Implementation pathway and timeframes

Short-term

- Further to the requirements of London Plan policy, explore ways to encourage new developments to maximise passive measures including external shading and reduced glazing through the design process.
- Set clear expectations for building regulations compliance and their trade-offs with broader building regulations requirements.
- Introduce the requirement to assess buildings against future weather files, as set out in CIBSE TM59 (2026).
- Communicate overheating measures within handover to ensure building occupiers can effectively use passive and active measures to reduce overheating.
- Explore alternative assessment methods to assess overheating risk to ensure passive design is optimised alongside active measures where required.
- Explore low-cost methods of monitoring overheating in new buildings.

Medium-term

- Review opportunities to adapt overheating design and assessment to maximise the use of passive measures and minimise energy use associated with active cooling.
- Strengthen and clarify building design and building control review process to ensure passive measures are maximised.
- Complete post-occupancy evaluation and audits for new buildings to gather lessons learnt.

188 Ministry of Housing, Communities and Local Government (2024): National Planning Policy Framework

Long-term

- Review local and national policy based on powers available, associated with NPPF and devolution, and steps made in overheating building design.
- Use post-occupancy evaluation to inform planning and regulatory policy requirements.

Co-benefits

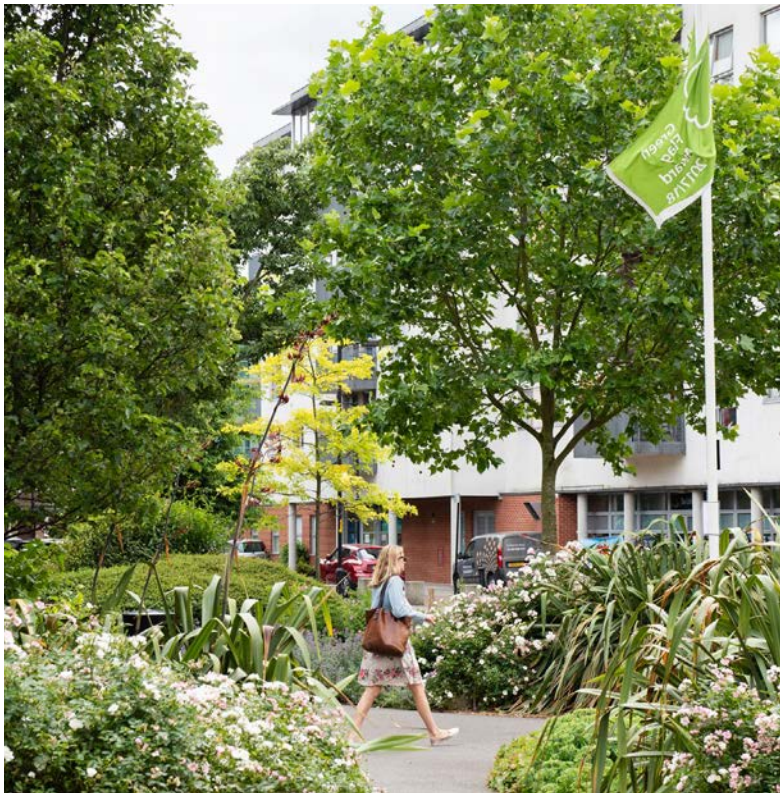
- By prioritising passive design measures, energy demand associated with cooling is reduced, lowering carbon emissions and reducing energy costs for occupants.
- The focus on robust design and delivery improves overall building quality and long-term performance.
- Creates new economic opportunities by supporting the growth of passive and active cooling solutions.

Relevant existing policies & programmes

- National Planning Policy Framework (NPPF) 2024.[189]
- London Plan Policy SI4 Managing heat risk[190] requires developments to follow the cooling hierarchy.
- Policy D6 Housing quality and standards.[191]
- CIBSE TM59 overheating assessments.[192]
- Building Regulations (Approved Document O). [193]
- Borough-level planning processes.

Key considerations for delivery

- Trade-offs in building design for overheating (Part O), ventilation (Part F), energy-efficiency (Part L) and fire risk (Part B) must be weighed up to deliver holistic and high-performing buildings.
- Requires skills development across the design, retrofit and construction supply chain – including upskilling designers, installers and tradespeople.
- Post-occupancy evaluation associated with thermal comfort and energy-use for active cooling can close the performance gap.



Credit: Transport for London

189 Ministry of Housing, Communities and Local Government (2024): National Planning Policy Framework
190 GLA (2021): Chapter 9 Sustainable Infrastructure | London City Hall
191 GLA (2021): Chapter 3 Design | London City Hall
192 CIBSE (2017): Technical Memorandum 59: Design methodology for the assessment of overheating risk in homes
193 BSI (2023): Retrofitting dwellings for improved energy efficiency – Specification and guidance

1.6 Maintaining and protecting heritage buildings from heat-induced damage.

Overview and purpose

London has many heritage assets including conservation areas, historical buildings and monuments **(see Figure 10)**.[194] As temperatures rise, heat can accelerate the degradation of historic materials and finishes – increasing maintenance needs, and the risk of long-term damage to heritage structures and features.[195] These assets must be protected from heat-induced damage to maintain London's cultural history, and ensure they are safe and functional for Londoners. The CCC recommends that by 2035, all cultural heritage assets managed for public good that are deemed 'at risk' should have a long-term adaptation plan; and by 2050, climate risks for all at-risk cultural heritage assets should be managed.[196]

In practice, this means identifying elements that are most vulnerable to heat; and maintaining, repairing or upgrading them to prevent accelerated deterioration (e.g. cracking, fading or material failure). Heat adaptation must be sensitive to building characteristics, and listed status. Since heritage assets are unique, they must be assessed on a case-by-case basis, taking a whole-building approach to ensure heat-resilience retrofit does not create unintended consequences (such as trapping heat or moisture elsewhere).[197]

Alongside physical measures, changes to building use including limiting occupancy in spaces prone to overheating or temporarily closing certain rooms may be required to manage heat gains.[198]

Together, these measures reduce thermal stress on both the building fabric and any sensitive interior features, helping to extend the life of heritage assets while maintaining their cultural and functional value under a warming climate.

Credit: Kabir Ahmed on Unsplash

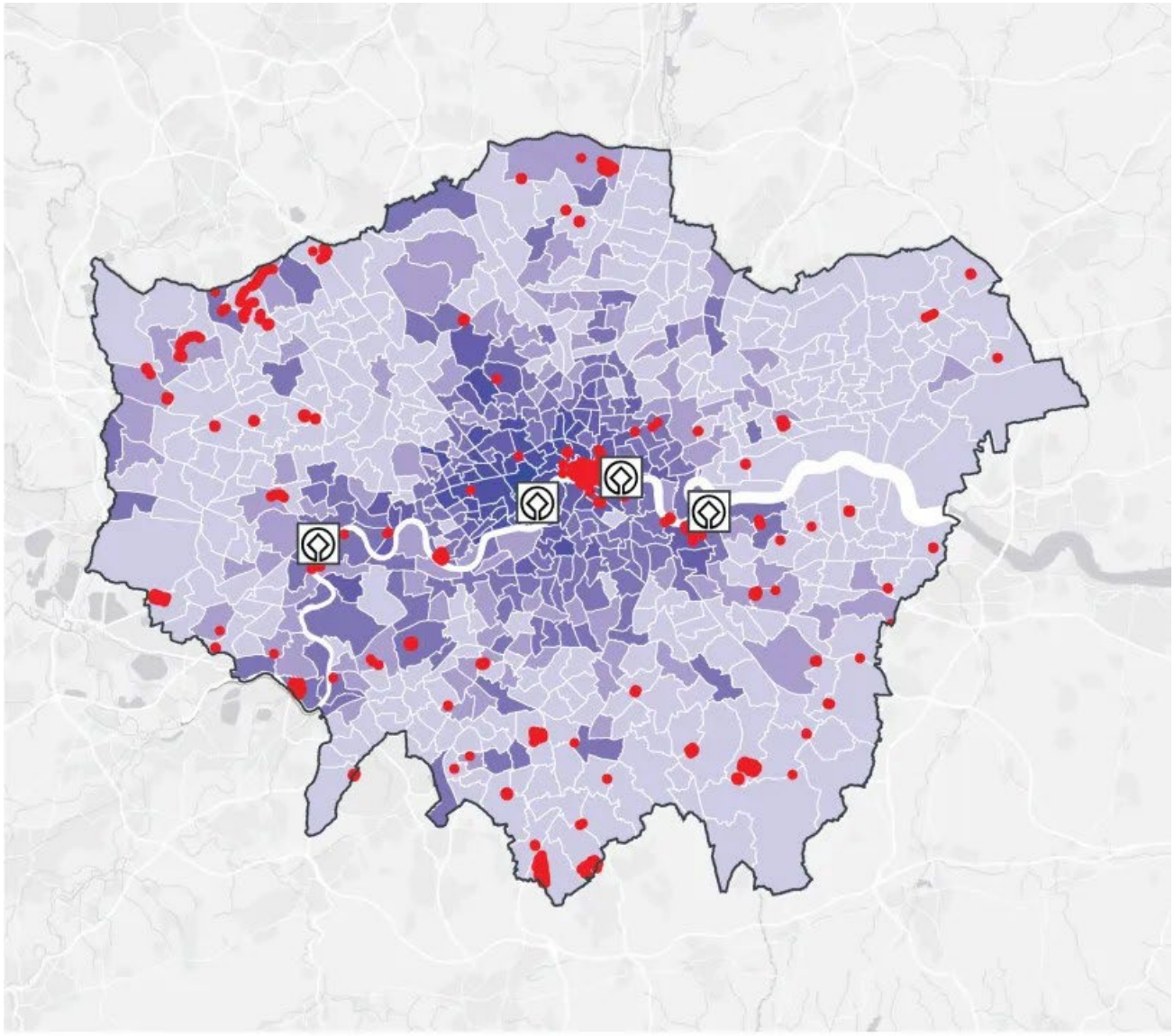
194 GLA (2021): The London Plan. Chapter 7 Heritage and Culture | London City Hall

195 Blavier et al. (2023): Adaptive measures for preserving heritage buildings in the face of climate change: A review

196 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

197 Historic England (2026): Adapting Historic Buildings for Energy and Carbon Efficiency

198 Shah et al. (2025): Future Occurrence of Climate-Induced Extreme Heat Events in Museum Galleries: A Modeling Study under Two 21st Century Climate Scenarios at V&A South Kensington



Listed Buildings
per square km

- 350 - 710
- 100 - 349
- 50 - 99
- 10 - 49
- 5 - 9
- 0 - 4

Scheduled Monuments

UNESCO World Heritage Sites from left to right: Royal Botanical Gardens, Kew; Westminster; Tower of London; and Maritime Greenwich

Source: Historic England

Contains OS data © Crown copyright and database right (2017)

Figure 10: Listed buildings, scheduled monuments and World Heritage Sites. This includes four World Heritage Sites; over 1,000 conservation areas;19,000 list entries for historic buildings; 150 registered parks and gardens; 160 scheduled monuments; and one battlefield.

Potential delivery partners

Delivery of this action will rely on collaboration between specialist heritage bodies and asset owners. **Historic England** (including the **Government Historic Estates Unit**) will provide guidance and expertise on approaches to managing heat risks in historic buildings. **The Department for Culture, Media and Sport** provides national policy direction for the heritage sector; and the **GLA** and **borough culture and heritage teams** will support integration into local strategies, planning, and asset management. Major heritage owners and operators (including **English Heritage, the National Trust, Historic Royal Palaces, and the Crown Estate**) alongside **private heritage landowners and London's wider cultural sector,** will be central to site-specific implementation, maintenance, and long-term stewardship of adapted heritage buildings and places.

Implementation pathway and timeframes

Short-term

- Identify vulnerable buildings and assets across London to prioritise retrofit and resilience measures.
- Complete detailed audits and assessments to identify retrofit strategies for specific building types – sharing recommendations, opportunities and challenges.
- Implement low-regret interventions such as maintenance and minor repairs, as well as introducing seasonal operational measures during heat events.

Medium-term

- Monitor the impact of high temperatures on heritage assets, and review guidance for managing these risks, to ensure usability and preservation of heritage buildings and places under future climate conditions.
- Deliver adaptation measures to heritage buildings and places – including the integration of green infrastructure to reduce heat exposure, and improve local thermal conditions where appropriate.

Co-benefits

- Improved thermal comfort and reduced heat stress for building users.
- Action may reduce reliance on active cooling, alongside broader environmental benefits where green and blue infrastructure is integrated.
- Economic opportunities for suppliers who specialise in conserving heritage features.

Relevant existing policies & programmes

- **The London Plan** Policy HC1 (Heritage conservation and growth).[199]
- **NPPF.**
- Historic England guidance on **Overheating in Historic Buildings**.[200]
- London Councils **Heritage Retrofit Guide**.[201]
- City of London **Heritage Building Retrofit Toolkit**.[202]

199 GLA (2021): The London Plan. Chapter 7 Heritage and Culture | London City Hall
200 Historic England (n.d.): Overheating in Historic Buildings
201 London Councils (2025): London Councils Heritage Retrofit Guide
202 City of London (2024): Heritage Building Retrofit Toolkit

Key considerations for delivery

- Requires careful balancing of climate adaptation and heritage conservation, ensuring that interventions reduce heat risk without harming the significance of heritage assets.
- Measures should prioritise low-impact, reversible solutions, where possible; and be informed by monitoring and an understanding of site-specific vulnerabilities.
- Delivery challenges include limited capacity and funding for ongoing maintenance, particularly for smaller or privately owned assets.

1.7 Expanding access to blue spaces.

Overview and purpose

Blue spaces and access to safe public outdoor swimming can help to provide relief during high temperatures, making London a more liveable and attractive city in current and future hot weather. Blue spaces are a heat sink, absorbing excess heat and reducing the UHI effect[203] whilst supporting a diverse range of wildlife. Safe, accessible swimming opportunities within lidos and swimmable waterways can also provide Londoners with a space to cool down. People should, however, only swim in waterways at formal sites where it is safer and legal to do so, and they should follow advice in the RNLI's open water swimming guide when they do.[204] Many of London's waterways, including the tidal Thames downstream of Putney Bridge, will never be safe for swimming due to strong currents, cold water and boat traffic.

London is well served by blue spaces, being named a National Park City in 2019. The public demand for improved access to these blue spaces is also evident, with 58 per cent of Londoners identifying a need to increase accessibility to blue spaces such as rivers, lakes and canals.[205] Aligning opportunities for heat-resilience delivery can also be a driver for improving water quality across London's waterways by clearing up road runoff and longstanding sewerage infrastructure issues, through the delivery of wetlands, sustainable drainage and other nature-based solutions.[206]

Potential delivery partners

The **GLA** can support delivery by providing strategic leadership and oversight, with **London Councils** supporting coordination across **boroughs**. Delivery will involve the **Environment Agency, Thames Water** and the **Canal and River Trust**, to address water quality and quantity challenges, as well as projects to restore natural ecosystems. **Boroughs** and **major landowners** such as the Crown Estate are responsible for public access to some blue spaces, as well and maintenance and management. **Sports England** and **developers** can support delivery of new public outdoor swimming facilities.

203 Town and Country Planning Association (2026): The benefits of 'blue spaces' in healthy place-making

204 RNLI (n.d.): RNLI Open Water Swimming Safety Advice And Tips

205 City Intelligence (2025): YouGov Heat Risk Poll (internal document)

206 GLA (2026): **River health**

Implementation pathway and timeframes

Short-term

- Maintain existing blue spaces, improving their ecological condition and water quality, and enhance safe access to rivers, canals, reservoirs, and existing swimming sites, particularly in priority locations.
- Evaluate the evidence of the costs and benefits of public swimming and cooling blue spaces.
- Review all current and planned swimmable blue spaces to ensure they are safe with regards to water quality, awareness and access.
- Review all current and planning blue spaces for habitat creation and possible wildlife protection zones, to protect and enhance nature recovery.
- Assess the need for swimming lessons and water safety awareness to be expanded and targeted to at-risk communities.

Medium and long-term

- Ensure blue spaces consistently function as cooling, accessible and resilient assets that support public use and nature recovery.
- Create and enact a long-term maintenance plan for all blue spaces to ensure they continue to deliver for the needs of Londoners, while maintaining safety with respect to water quality, awareness and access.

Co-benefits

- Improving the quality of natural blue spaces improves biodiversity and the resilience of ecosystems; supports public health and wellbeing; and promotes physical activity.[207]
- Evidence from New York shows that public pools reduce heat-related emergency medical service calls, providing measurable public health benefits during periods of extreme heat.[208]

207 Environment Agency (2020): The social benefits of Blue Space: a systematic review

208 Borsky and Fesselmeyer (2026): Public pool usage as adaptation against urban heat

Relevant existing policies & programmes

- **The Mayor's Clean Rivers and Waterways Plan.**[209]
- The **London Environment Strategy.**[210]
- **The London Plan.**[211]
- **Bathing water classifications.**[212]
- **River basin management plans.**[213]
- The **Thames Tideway Tunnel** is a key enabler, significantly reducing sewage pollution and improving river health.[214]
- GLA-led funding programmes support pollution runoff reduction, river restoration, and habitat improvement measures.[215]
- Swimming Pool Support Fund.[216]

Key considerations for delivery

- Increasing access to blue spaces and outdoor swimming should balance public access with protection of habitats and sensitive ecosystems.
- Delivery should manage risks relating to habitat disturbance, pollution, and ecological pressure.
- Outdoor swimming promotion should be accompanied by programmes to improve swimming skills and water safety awareness, targeting water bodies where communities are most at risk.

Credit: GLA

209 GLA (2026): Cleaning up London's waterways | London City Hall
210 Mayor of London (2018): London Environment Strategy
211 Greater London Authority (2021): The London Plan
212 Environment Agency (2025): Bathing Waters Classifications
213 Environment Agency (2026): River Basin Management Plans
214 Thames Water (2025): Thames Tideway Tunnel
215 Greater London Authority (2025): Mayor brings together landmark coalition to deliver major new improvements to London's rivers | London City Hall
216 Sport England (n.d.): Swimming Pool Support Fund

07

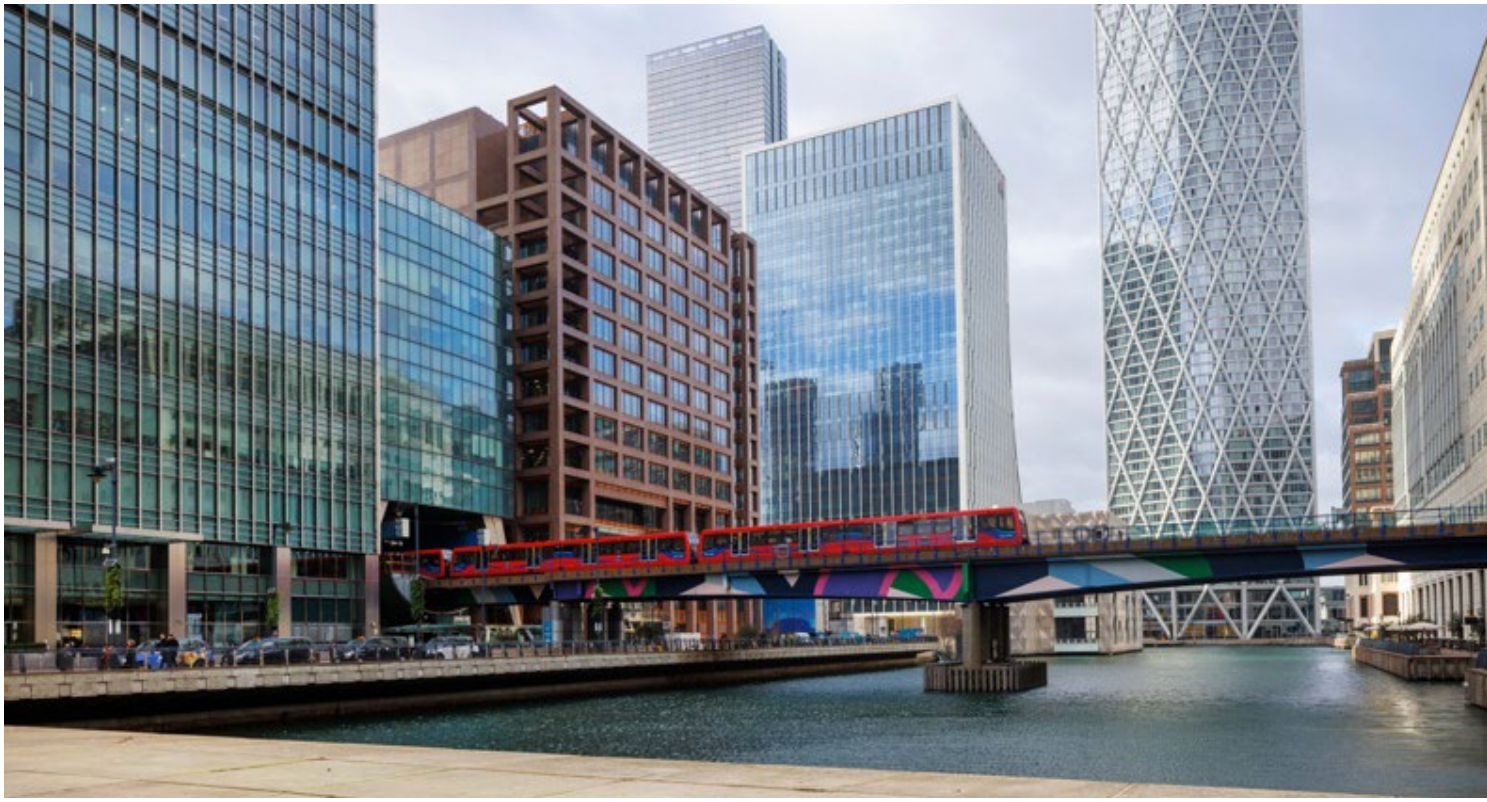
Business & Economy

CONTEXT

London sits at the heart of the UK economy, with the city contributing just under a quarter of the UK's total GDP and supporting more than 1 million private-sector businesses.[217]

It boasts the highest density of businesses anywhere in the UK, with 141 businesses per 1,000 resident adults in 2025.[218] Heat poses an increasing risk to the economy, with productivity losses linked to high temperatures estimated at £577 million each year in the early 2020s.[219]

Heat can disrupt infrastructure, reduce productivity and affect employee wellbeing – particularly for outdoor workers, and people working in physically demanding or hot environments. Businesses may also struggle to adapt to hotter temperatures, particularly small and medium-sized businesses with more limited capacity to respond. These risks **(see Figure 11)** come alongside wider pressures, including rising energy costs and global instability. However, London's growing demand for adaptation solutions and services also presents significant opportunities for businesses, supporting innovation, creating skilled jobs, and contributing to economic growth.



Credit: Transport for London

217 Office for National Statistics (ONS) (2025): Regional economic activity by gross domestic product, UK - Office for National Statistics

218 Department for Business & Trade (2025): Business population estimates for the UK and regions 2025: statistical release

219 Atlantic Council (2023): Hot Cities, Chilled Economies

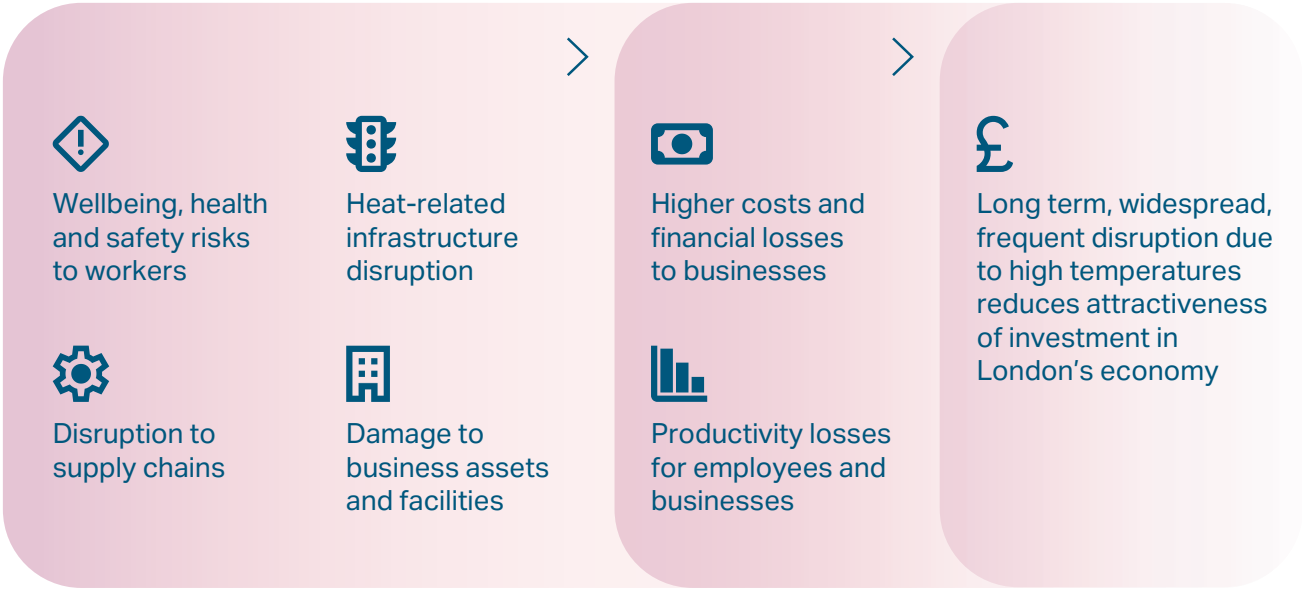


Figure 11: A summary of some of the key ways that high temperatures can affect businesses and the economy in London.

Sector objectives

- Support London's businesses to protect themselves from disruption due to hotter weather, especially those that are smaller or more exposed to risk.
- Protect the health, safety, and productivity of workers across all sectors in London from higher temperatures.
- Ensure London has the skills and resources in place to deliver adaptation action at scale.

Priority areas of focus for this sector

- Supporting businesses to adapt their facilities, working practices and supply chains to heat risk.
- Strengthening heat risk planning for large events and venues.
- Developing skills and supply chain capacity for a heat-resilient economy.

Links to other sectors

The effective functioning of businesses and the economy is essential for the resilience of all other sectors.

Businesses play a key role in delivery and implementation of adaptation solutions in other sectors, including providing the knowledge and skills for retrofitting the built environment and planting and maintaining green infrastructure. Finance, investment and insurance enable resilience in other sectors; and availability of these relies on a well-functioning financial system.

Conversely, businesses and the economy rely on other sectors. For example, adaptation of the built environment, and expansion and maintenance of green spaces, help to keep London's urban environment cool; and hence reduce the risk of businesses' facilities and assets overheating. This in turn reduces the risk of productivity and health impacts on employees who are also protected by a functioning health and care system. Well-adapted infrastructure is also essential for business continuity. It ensures employees can travel to work, allows supply chains to function, and provides necessities like energy, communications and water.

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.

2.1 Supporting businesses to adapt their facilities, working practices and supply chains to heat risk.

Overview and purpose

London's businesses need to become more resilient to heat risk. Programmes of support – including knowledge sharing, guidance, incentives and grants – can empower businesses in London to adapt their own assets and operations.

Communications and knowledge-sharing in partnership with existing business networks in London (such as Grow London Local and Business Improvement Districts (BIDs), the Federation of Small Businesses, and local authorities' business networks) will raise awareness for different aspects of adaptation in line with guidance from the Health and Safety Executive[220], including the following:

- Promoting heat-smart working practices – such as adjusting working hours during hot weather, use of personal protective equipment, flexible working locations (such as allowing workers to work from home during high temperatures if possible), relaxing of dress codes or uniforms, and increasing break frequency and water intake.
- Promoting business continuity planning and supply chain resilience for heat risk.
- Promoting actions businesses can take to safeguard the health, wellbeing and productivity of workers and customers through retrofitting their facilities and buildings with passive and active cooling as needed – including natural and engineered shading. In some industries, changes to process or using physical barriers to reduce exposure to radiant heat from machinery may also be relevant.

Communications should highlight the direct benefits of these measures for businesses, including the potential to save costs associated with disruption and productivity losses, and the potential to increase customer dwell time by adapting hospitality and retail spaces.

Business networks can also facilitate knowledge sharing to build businesses' capacity for adaptation. This could include sharing and promoting tools, templates and resources, such as the Islington Business Resilience Toolkit,[221] that businesses can use to assess their own risks and identify suitable adaptation measures. It could also include knowledge sharing between businesses within networks. Additional programmes may be required to support businesses to put adaptation measures in place, especially expensive retrofit projects. This could include grants, financial incentives, and support to develop business cases for adaptation investments. Priority should be given to smaller businesses with limited resources and those most vulnerable to climate risks.

220 Health and Safety Executive (n.d.): Temperature in the workplace

221 Islington Sustainability Network (2025): The Islington Business Climate Resilience Toolkit

The CCC recommends that by 2030 all businesses should have access to useful climate risk and adaptation information; and by 2035 all large companies should have high-quality adaptation plans integrated into core business functions.[222]

Potential delivery partners

The GLA could have a role in providing consistent, coherent messages for businesses. Messages could be amplified through the wide range of existing business networks and programmes in London, including Grow London, BIDs, London Business Networks for Resilience, and London-wide and borough-level Chambers of Commerce. Businesses will need to play a central role in adaptation. Trade unions could also support amplification of messages targeted towards workers and also support engagement with businesses on worker safety and wellbeing. Employees also have a role to play in adopting heat safe working practices.

Implementation pathway and timeframes

Short-term

Awareness of risk and adaptation actions need to be built as soon as possible to allow businesses to start taking action to manage their heat risk.

Medium-term

Effective channels of communication and support should be maintained and escalated as needed to continue provision of support as the risk evolves.

Co-benefits

- Improved employee health and wellbeing during heat events may support better long term workforce retention.
- Considering heat risks in supply chains can strengthen overall resilience.
- Cooling retrofit measures in retail and hospitality spaces can improve customer dwell time and economic returns.

Relevant existing policies & programmes

- HSE Guidance on temperature in the workplace.[223]
- London Business Networks for Resilience initiative increases risk understanding and adaptation action awareness.[224]
- Borough-level resilience initiatives, e.g. the Islington Business Resilience Toolkit.[225] and Southwark Climate Collective.[226]
- The Mayors Good Work Standard, Criteria E5.7 and 5.8 on managing extreme weather, heat and climate change.[227]

222 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

223 Health and Safety Executive (n.d.): Temperature in the workplace

224 Resilience First (n.d.): London Resilience

225 Islington Sustainability Network (n.d.): The Islington Businesses Climate Resilience Toolkit

226 Southwark Climate Collective (n.d.): Empowering Southwark businesses with practical action to reduce carbon and build business resilience

227 The Mayor's Good Work Standard – Employer Guidance (n.d.): The Good Work Standard (GWS) | London City Hall

Key considerations for delivery

- Reliant on businesses taking effective action in response to guidance and communication.
- Potential need for sector, SME and network-specific incentives, funding, and advice.
- Programmes should be monitored and reviewed to assess effectiveness and drive continuous improvement.

CASE STUDY: ISLINGTON SUSTAINABILITY NETWORK'S BUSINESS CLIMATE RESILIENCE TOOLKIT

The Islington Sustainability Network brings together the private, public and third sectors in Islington to promote best environmental practice; increase social value; and enable the transition to a net zero-carbon Islington.

Developed for the Network, with support from Islington Council, the Business Climate Resilience Toolkit helps businesses of all sizes take practical steps toward building resilience against a changing climate.

The Toolkit offers a simple way to assess exposure to climate risks, prioritise actions, find sector-specific advice, and access practical measures that businesses can implement. Aimed at different types of businesses, from high-street retailers to co-working architectural practices, it contains an overview of climate risks in Islington. It outlines tailored resilience measures across a breadth of sectors, for example: retail, hospitality, IT, social work, education, manufacturing and construction.

The Self-Assessment Tool lets businesses analyse local climate risks, identify the most relevant ones, and prioritise practical actions. The Toolkit also sets out the actions that businesses can take to decarbonise and to involve communities in the climate transition.

Find out more about the Islington Sustainability Network's Business Climate Resilience Toolkit.

Credit: Islington Sustainability Network

2.2 Strengthening heat risk planning for large events and venues.

Overview and purpose

London plays host to a wide range of festivals, sporting events and other cultural events throughout the year. Large gatherings of people in venues that are often outdoors, and have limited access to shade and water, are high risk during high temperatures. For example, during the Wimbledon tennis tournament in 2025, multiple matches were interrupted due to spectators fainting in the heat.[217]

Laws governing health and safety at work require all employers, including event organisers, to 'make suitable and sufficient assessment of the risks' to the health and safety of all people connected to the event, including workers, attendees, and people indirectly affected by the event such as passers-by.[218] Venues and events are also generally required to conduct a risk assessment and risk management planning as a condition of their insurance.[219]

Credit: Nicholas Bullett on Unsplash

However, the extent to which heat is considered in these risk assessments, and the extent to which mechanisms are in place to manage the risk across events in London is not well understood.

In the UK, national guidance for managing heat at mass gatherings and events is available from UKHSA.[220] This should be publicised alongside the national Heat-Health Alert System to ensure event planning is aligned. Communications with event organisers should highlight the lower risk of disruption and reputational damage resulting from advanced planning, as well as the reduction in health risks to attendees.

To strengthen heat risk planning in London and ensure management of events keeps up with increasing risk:

- Guidance should be publicised and strengthened.
- Risk assessment and planning should include effective measures for managing heat risk.
- Submission of an adequate heat-preparedness plan could be made a requirement for event licensing during the summer.
- Event plans should include preparedness, response and recovery measures including:
  - Hydration.
  - Shade provision.
  - Onsite temperature monitoring.
  - Incident response plans.
  - Clear escalation or event modification procedures during high-risk conditions.

217 The Standard (2025): Wimbledon semi-final stopped twice in five minutes for crowd emergencies
218 Legislation.gov.uk (n.d.): The Management of Health and Safety at Work Regulations 1999
219 Insure Our Event (2019): The guide to completing a risk assessment for your event or exhibition
220 UK Health Security Agency (2024): Hot weather advice: mass gatherings and planning events

A review of good practice from other countries, such as Australia and the United States, could be undertaken. The review could consider different event types and settings, as guidance may vary between indoor and outdoor events and across activities. Insights from this review could inform the development of London-specific guidance.

Potential delivery partners

Large event venues in London and event organisers are responsible for ensuring events are safe. Boroughs and emergency services could help to ensure delivery of heat-risk management via licensing conditions and event Safety Advisory Groups.

Implementation pathway and timeframes

Short-term

Review current guidance against good practice and learnings from events around the world with experience of dealing with heat. The review should consider climate projections for London; and use these to identify heat risk measures for events that may be needed in future as maximum temperatures increase.

Medium-term

Incorporate the outcomes of this review into current guidance and planning for London. Multi-agency heatwave exercises may be used to test and refine plans for major events.

Co-benefits

- Reduced likelihood of event disruption and associated costs.
- Improved or maintained event reputation.
- Reduced strain on the emergency services.
- Improved resilience and emergency planning for other risks.

Relevant existing policies & programmes

- UKHSA national guidance.[221]
- Sports Ground Safety Authority extreme heat guidance.[222]
- England Athletics heat stress guidance.[223]
- Heat Adaptation Guide for Arts and Cultural Venues.[224]

Key considerations for delivery

- Boroughs can promote safe and sufficient planning through event licensing.[225]
- Event safety advisory groups allow discussions on public safety between event organisers, local authorities, emergency services, and others.[226]

221 UK Health Security Agency (2026): Beat the heat: staying safe in hot weather – GOV.UK
222 Sports Grounds Safety Authority (2024): Planning for Extreme Heat at Sports Grounds
223 England Athletics (2025): Recommendations for running events in hot weather
224 Shade the UK (2026): Heat Adaptation Guide for Arts and Cultural Venues
225 Home Office (2026): Revised guidance issued under section 182 of the Licensing Act 2003
226 Health and Safety Executive (n.d.): Safety Advisory Group

2.3 Developing skills and supply chain capacity for a heat-resilient economy.

Overview and purpose

Delivering effective heat adaptation across London will require a workforce with the skills and knowledge to implement high-quality measures, alongside access to the technologies and materials needed to support them. Relevant jobs include retrofitting buildings for cooling, planting and maintaining heat and fire-resistant green infrastructure; and improving transport networks. Upskilling of existing workers may be required, as well as an expansion of the workforce and supply chains to able to implement adaptation measures to meet growing demand. This represents an opportunity for London's businesses and workers and aligns with the London Growth Plan's goal to back London's businesses. Climate change adaptation is projected to contribute an additional 5 million jobs globally and be the third-largest contributor to net growth in global jobs by 2030.[227][228]

Adaptation capacity programmes for developing the skills and supply of key technologies should be developed in partnership with employers and trade bodies who provide insight into demand for skills and technologies, as well as opportunities for workers via apprenticeships and mentoring. Relevant skills and knowledge can be integrated into existing training programmes, and new programmes, qualifications and accreditation pathways can be developed in partnership with educational institutions to expand capacity.

Where relevant, skills related to adapting to heat should be developed alongside other green skills, such as retrofitting for energy-efficiency and managing green spaces for biodiversity, to ensure implementation of measures maximise synergies and avoid trade-offs between different policy objectives.

Potential delivery partners

The GLA could lead on developing London-wide programmes for adaptation skills development, in partnership with training and education delivery bodies including colleges, universities, professional institutes and employers. At the national level, trade bodies and professional institutions could help standardise occupational standards, competency frameworks and progression pathways.

For developing supply chain capacity, programmes such as Grow London, part of London & Partners, could help nurture innovation and grow small businesses.

A wide range of business types will be needed to provide this capacity and deliver adaptation, including contractors, designers and technology providers. The GLA, boroughs and the wider public sector could also support expansion of the supply chain as a buyer and supporter of tests and pilots of adaptation measures.

227 World Economic Forum (2025): Future of Jobs Report

228 Jameson et al. (2026): An analysis of the UK's strengths in adaptation technologies and services

Implementation pathway and timeframes

Short-term

- Build understanding of the existing skills gaps for addressing heat risk in London through engagement with industry and employers.
- Review and update existing programmes that offer training and routes to employment.
- Explore opportunities to support expansion of supply chain capacity – for example, funding pilot projects for adaptation measures such as retrofit; and considering how public sector procurement levers could be used to stimulate demand.

Medium and long-term

- Expand training for both existing and new workers, in line with the skills gaps identified for London. This will likely involve ongoing engagement with educational institutions and employers, who can offer apprenticeships and other routes to employment.
- Keep supply chain capacity under review to identify areas where further support may be required and where possible opportunities for businesses delivering adaptation services should be supported as part of the delivery of the London Growth Plan and other programmes.

Co-benefits

- Economic growth opportunities delivered.
- London's businesses will help to meet growing adaptation demand locally and beyond, benefitting other regions.

Relevant existing policies & programmes

- GLA's Inclusive Talent Strategy includes the green economy.[229]
- Mayor's Skills Academies programme supports green jobs.[230]
- Pan-London groundwork hub has a focus on green spaces and climate resilience.[231]
- The London Growth Plan offers opportunities for developing the adaptation supply chain.[232]
- Borough- level green jobs initiatives, such as in Hackney.[233]

Key considerations for delivery

- Promotion of adaptation business opportunities to firms specialising in areas such as retrofit, passive cooling, climate-resilient design, green infrastructure installation.
- Programmes should consider addressing multiple climate risks, such as drought and flooding.

229 GLA (2025): London Inclusive Talent Strategy
230 GLA (n.d.): The Mayor's Skills Academies programme
231 Groundwork (n.d.): Green Space Skills Hub
232 GLA and London Councils (2025): London Growth Plan
233 The Skills Centre (2025): Green Skills Hub Launched in Partnership with Hackney Council

08

Emergency Preparedness, Resilience & Response

CONTEXT

London has multi-agency partnership arrangements in place to prepare for, respond to, and recover from a wide range of emergencies, including heat risks.

The London Resilience Partnership coordinates the activities of more than 170 organisations across London. These organisations have responsibilities, under the Civil Contingencies Act 2004, for assessing risk; developing plans and frameworks; and communicating with Londoners. In addition, each borough has a resilience forum that carries out these activities locally. In 2024, the London Resilience Unit ran a pan-London scenario, Exercise Helios, to test key agencies' response capabilities; and consider longer-term action needed to prepare for a severe multi-day heatwave.

In July 2026, London Resilience partners took part in a multi-regional exercise, testing response capabilities against a concurrent heat and wildfire incident affecting multiple regions.

More frequent and extreme heat events, with associated health risks, wildfires and disruption of infrastructure (as well as other unrelated concurrent incidents), will increase demand and strain on frontline and emergency services, putting Londoners at risk. Frontline staff will also be directly affected – reducing the capacity to respond to incidents, and worsening outcomes for Londoners.

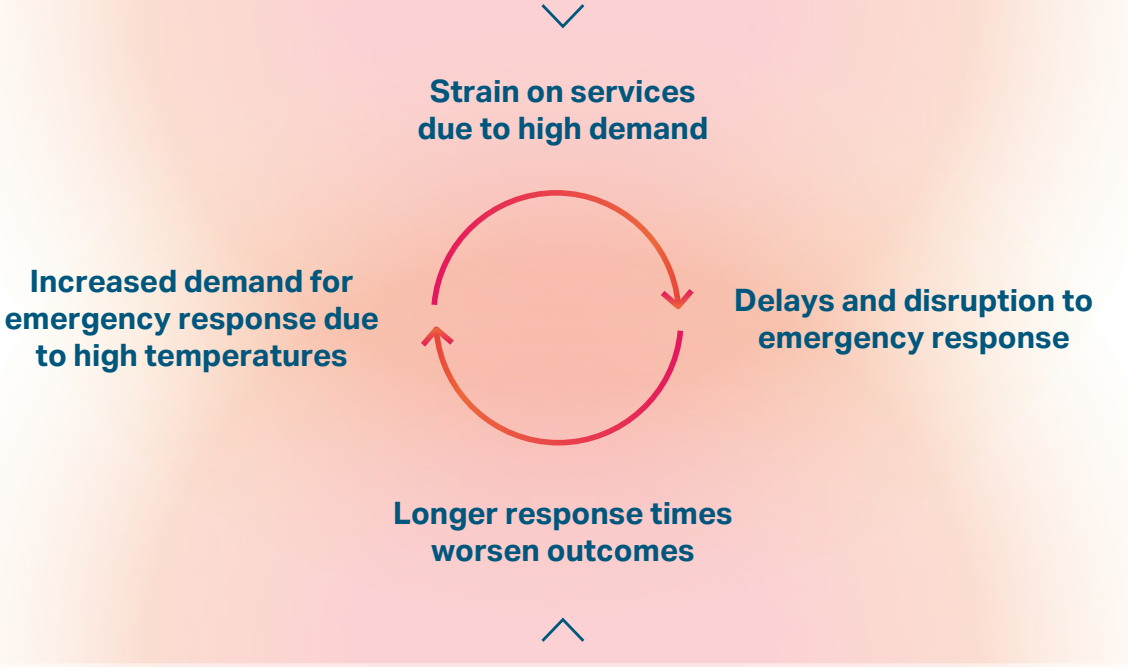
Credit: GLA

Heat Risk Overview

Wildfire impacts

Heat related illness and need for welfare checks, especially amongst the vulnerable

Risk of public disorder and need for multi-agency coordination



Responder welfare risks and fatigue

Heat-related impacts on infrastructure networks

Disruption to business-as-usual operations

Figure 12: A summary of key heat risks to emergency preparedness and response.

Sector objectives

- Maintain the resilience of London's emergency response functions during increasingly frequent and intense heat events; and protect frontline workers from heat-related harm.
- Ensure robust partnership preparedness, coordination and communication for heat related incidents.
- Emergency planning and response supports the safety and dignity of marginalised communities.

Priority areas of focus for this sector

- Enhancing community cool spaces and improving links with community-led initiatives.
- Developing a coherent public communication strategy for extreme heat in collaboration with London Resilience Partners.
- Response partners to consider the impact of heat on their services and users – including on their own capacity to engage in or lead on partnership response arrangements.
- Mitigating risks to emergency responders through existing learning and risk assessment processes – considering changes to uniforms, equipment and processes.
- Enabling statutory responders to support those already facing systemic inequalities and compounding risks during heat emergencies.
- Enhancing partnership working and support between emergency planners and partners from the VCFS; identifying how the EqIA process could be used in developing a response to heat emergencies.

Links to other sectors

A well-adapted **built environment** means homes, workplaces and neighbourhoods that are less likely to expose occupants to dangerous levels of heat. Greening that reduces temperatures and is well managed to reduce wildfire risk can contribute to that outcome, reducing demand for emergency services. Well-adapted **infrastructure** means less disruption, and fewer incidents that require partnership response. Infrastructure that is more reliable in high temperatures can also support a more effective emergency response as transport, water, communications, and energy systems needed for the response are less likely to be disrupted. Preventative measures such as public health campaigns and cool spaces can reduce demand for emergency response by reducing levels of heat-related illness. **Health and care services** play a key role in emergency response and so joined up emergency planning is required between those sectors and other agencies.

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.

3.1 Deep dive: Enhancing community cool spaces and improving links with community-led initiatives.

Overview and purpose

London has a network of cool spaces – buildings where Londoners can seek respite while out and about during high temperatures. The spaces are currently provided free of charge by boroughs, and VCFS and other organisations; and they include community centres and libraries. The spaces provide an opportunity for people to cool down and take shelter from direct sun exposure, reducing their body temperatures and physiological strain, and improving their thermal comfort.[234]

The current network consists of two tiers of cool spaces:

- Tier 1 cool spaces guarantee lower temperatures than outdoors; provide free seating spaces, drinking water and toilets; and are accessible to disabled people. They are staffed at least five days per week, with daily minimum hours of 10am–5pm.[235]
- Tier 2 cool spaces provide free seating space and drinking water but may not have toilets or accessibility for people with a disability. They are staffed and open at least two days a week during specified hours.

Resources and funding are required to maintain and expand the network of cool spaces to support London's resilience to heat risk. Linking up cool spaces with existing community initiatives helps to improve the effectiveness and accessibility of the spaces, as well as resourcing and capacity.

Enhancements to cool spaces have been taken forward in some London boroughs, which have provided a wider range of amenities, advice and signposting to additional support services and health guidance. Some boroughs have trialled branding and distributed leaflets to support awareness and promote use.

Feedback from boroughs indicates the current cool spaces system is insufficiently resourced and not designed for the scale of need during heat emergencies, with fragmented communication between those registering and operating the cool spaces. Resource will be needed to enable wider adoption of the kinds of improvements that some boroughs have started to implement. Stronger links with trusted community groups and local authorities can strengthen physical and digital advertisement of cool spaces. Further improvements could involve spaces supplying "cool kits", which include cooling gels, electrolytes, supplements, basic first aid supplies, and printed leaflets signposting users to additional support services and health guidance.

Credit: GLA

234 London City Hall (n.d.): Cool spaces | London City Hall

235 London City Hall (2025): Cool spaces – criteria for 2025

Building managers may need support to implement adjustments to meet the criteria for cool spaces, or to enhance them to provide cooling.

Evidence about the effectiveness of cool spaces in preventing premature mortality or heat-related health outcomes is currently limited.[236] Further monitoring and evaluation will be necessary to assess their effectiveness.

Potential delivery partners

Boroughs, the cultural sector, and VCFS organisations lead delivery of existing cool spaces, supported by the **GLA**. The London Communities Emergencies Partnership is currently working with the GLA to provide grants to a small number of spaces, which will work in partnership with their boroughs to implement cool space enhancements. Further funding is needed to enable support to spaces across the capital.

Volunteers working with boroughs or organisations such as British Red Cross could support in delivering cool spaces. Volunteers require coordination by partners and must receive suitable training and adhere to safeguarding requirements.

The GLA and the VCFS could support the promotion of cool spaces to increase public awareness; and encourage use during high temperatures.

Implementation pathway and timeframes

Short-term

- Provide resource to support community-led cool space initiatives and enable more robust monitoring and evaluation.
- Ensure effective communication is in place to raise public awareness of existing cool spaces.

Medium-term

- Using evidence, expand and/or adjust the criteria for Tier 1 and Tier 2 cool spaces.
- Expand provision of spaces by working in partnership to designate existing buildings that meet the criteria, prioritising high heat-risk areas that currently lack provision.
- Assess the potential to deliver mobile cooling hubs, co-developed with communities, and piloted in a few selected high-risk areas.

Long-term

- Expansion to enable a London-wide, accessible network of local cool spaces that is integrated fully with existing community initiatives and emergency planning activities.
- Effective communication and accessibility of cool spaces.
- Potential expansion of the mobile cooling hubs scheme following a successful pilot.

236 Dearman et al. (2025): Public health effectiveness of cooling centres during periods of adverse hot weather: a systematic literature review

Key considerations for delivery

- Community-based interventions such as cool spaces, to manage heat risk and support local people, must be developed with communities; and aligned with existing efforts and networks (e.g. VCFS organisations in London are increasingly involved in emergency planning and resilience through London Communities Emergencies Partnership, the London Resilient Communities project and the London Boroughs Faiths Network).
- Evidence of the effectiveness of cooling centres on heat-related public health outcomes needs to be developed.
- Raising public awareness is essential to encourage the use of cool spaces. A variety of communication mechanisms is required to reach vulnerable people.
- Travelling to cool spaces can present barriers for people, as travel may require them to move through spaces and transport modes that are hot or in direct sun exposure.

Co-benefits

- The provision of heat risk preventative measures, guidance, and trained staff able to identify the early onset of heat-related illnesses has the potential to reduce pressure on healthcare and ambulance services, although further research on benefits is required.
- Cool spaces can foster a sense of community for vulnerable, high heat-risk groups, having positive effects on mental health, wellbeing, and social cohesion.[237]

Relevant existing policies & programmes

- London has a network of 250 cool spaces, operating between the 1st June and the 30th September to coincide with the UKHSA heatwave period. However, a period of high temperatures in May 2026 led to the GLA launching the service early.[238]
- Boroughs across London (i.e. City of Westminster, Lambeth) have historically provided 'Cool Kits' during summer).[239][240]
- A wide network of VCFS organisations and boroughs can be deployed to support the provision and capacity building of cool spaces (e.g. London Communities Emergencies Partnership, London Boroughs Faiths Network, Business Networks for Resilience programme, British Red Cross).

Indicative implementation costs

- The capital and operating costs of cool spaces vary widely depending on the type of building and the facilities provided in the cool space. These costs have not been collated across London.
- Capital costs related to improving thermal comfort in cool spaces include upgrades to cooling or ventilation systems, installation of shading, blinds, and heat-reflective films.
- Operational and maintenance costs associated with running cool spaces include utilities, staffing, extended opening hours, promotion of cool spaces, provision of 'Cool Kits', security, toilet provision, volunteer coordination and seating.

237 McGarr et al. (2023): Indoor overheating influences self-reported symptoms and mood-state in older adults during a simulated heatwave: Effects of mid-day cooling centre use

238 London Datastore (2025): Cool Space Data 2025

239 City of Westminster (2025): Delivery of 'Cool Kits' and fans | Westminster City Council

240 Lambeth Climate Partnership (2026): Cooling Fiveways: Heat Risk Research Project

- Grants have been used to support the delivery of cool spaces. In summer 2023 and 2024, Haringey offered grants of up to £1,000 to VCFS organisations to support them to deliver cool spaces. In June 2026, the London Communities Emergencies Partnership committed to provide £2,700 to 10 charities, community groups, faith organisations and existing hubs in London to provide an accessible space that can support local people during extreme heat events.
- Four water fountains were installed in libraries across Barnet at a cost of around £16,000 to allow the libraries to become registered cool spaces during high temperatures.[241]
- For the indicative analysis of costs and benefits, see **deep dive six** in the Funding and Finance chapter.

Barriers and enablers

Barriers

- VCFS organisations are significantly under-funded and often struggle to deliver their core objectives, so any additional expectations will require funding.
- Local authorities may also lack the resources to provide the support, security, first aid, water, and extra toilets required to operate cool spaces.

Enablers

Many VCFS organisations, such as mosques, food banks, and community centres, are already serving as informal cooling hubs during heatwaves, offering shaded areas, hydration, and respite to vulnerable populations. Recognising and resourcing these spaces would enhance their visibility and connections to each other, especially in areas where formal provision is currently lacking.

CASE STUDY: MOBILE COOLING HUBS IN SYDNEY

Mobile cooling hubs were introduced in Sydney, Australia, in summer 2023. The mobile hubs provide bottled drinking water, electric fans, misting fans, and water dousing to groups at risk of or experiencing homelessness.[242] The hubs are powered by renewable energy and they foster community cohesion while providing advice and guidance for keeping cool during heatwaves.[243] Healthcare workers staff the hubs and identify potential early onset of heat-related illnesses.[244]

Activation of the mobile cooling hubs is based on heat health risk alerts from the HeatWatch app and official weather data.[245] The hubs can be set up quickly and relocated as required to highest-risk areas, providing a targeted emergency response for vulnerable populations.[246] The hubs were co-developed with individuals experiencing homelessness to support their inclusivity and ensure measures to raise awareness of the hubs are effective.[247]

241 London Borough of Barnet (n.d): Water Fountains Business Case (unpublished). Carbon Offsets funding was used to fund this
242 The University of Sydney Faculty of Medicine and Health (n.d.): Pop-up mobile cooling hubs
243 The University of Sydney Faculty of Medicine and Health (n.d.): Pop-up mobile cooling hubs
244 The University of Sydney (2023): How researchers designed Australia's first mobile cooling hub
245 HeatWatch (2026): Heat Health Risk Forecast
246 City of Sydney (n.d.): Mobile cooling hubs
247 The University of Sydney Faculty of Medicine and Health (n.d.): Pop-up mobile cooling hubs

3.2 Developing a coherent public communication strategy for extreme heat in collaboration with London Resilience Partners.

Overview and purpose

The lack of a coherent and coordinated public communications strategy based on evidence-based messaging has been identified in post-incident reviews and exercises as a persistent gap in response to heat risk. As a result, the public receives messaging that is confusing or inconsistent, or that minimises the dangers of heat.

Potential delivery partners

- **The London Resilience Communications Group** (LRCG) comprises communications leads from each of the key partners in the London Resilience Partnership.
- **VCFS** partners will be vital to help shape, translate, and disseminate messaging for their communities.

Implementation pathway and timeframes

Short-term

- LRCG members should agree a strategy and supporting messaging ahead of any heat risk period. This messaging should be based on the latest evidence and tailored for London.
- The strategy should be updated and messaging adjusted based on emerging evidence.
- Learning should be gathered following each heat risk period to inform changes to the approach and messaging.

Co-benefits

- A robust communications strategy for heat risk could become a template for similar approaches to communicate about other risks.

Relevant existing policies & programmes

- The Civil Contingencies Act 2004 gives Category 1 responders – including the GLA and the Mayor of London, emergency services, local authorities, and heath sector bodies – a responsibility to warn, inform, and advise the public before and during emergencies.
- The UKHSA's Adverse Weather and Health Plan[248] provides a national framework for protecting health during periods of extreme weather in England. This includes a comprehensive impact-based early warning system, Heat-Health Alerts, guidance on managing heat in different contexts, and messaging on heat safety for the public. The LRCG maintains, facilitates, and coordinates the multi-agency, outward-facing communications in the event of an emergency, to ensure that all agencies are promoting coherent, effective public messaging.

Key considerations for delivery

The strategy will need to be delivered in collaboration with VCFS and equalities partners to ensure that messages are tailored as appropriate and disseminated as widely as possible.

248 UK Health Security Agency (2026): Adverse Weather and Health Plan – GOV.UK

3.3 Response partners to consider the impact of heat on their services and users – including on their own capacity to engage in or lead on partnership response arrangements.

Overview and purpose

Learning from previous heat incidents and exercises has found that pan-London emergency response plans and arrangements would likely be stretched in the case of multiple concurrent and cascading events and impacts triggered by heat events. This was borne out in 2022 when dozens of wildfires, combined with extreme heat, put a critical strain on responders during London's hottest day on record.

In the future, a multi-agency response needs to be brought together quickly, with a wide range of organisations. Partners raised that the leadership of the response may not always be clear, given the need for organisations to balance strategic coordination of an incident with direct involvement in frontline response. They also found that more clarity is needed about coordination where there is heat events but no declaration of a major incident – and therefore no formal trigger for multi-agency response.

Consistent review of capacity will help ensure better coordination and clearer leadership roles in times of multiple cascading and concurrent incidents.

Continuous review of available technology is required to enhance the response, including improving Personal Protective Equipment (PPE), improving staff welfare, and enhancing firefighting and rescue capabilities.

Potential delivery partners

Emergency services maintain capacity to engage in partnership response arrangements.

Implementation pathway and timeframes

Short-term

Capacity reviews on a regular basis and ahead of forecasted heat events.

Medium and long-term

Incorporate learning from incidents and exercises in ongoing resilience practice

Co-benefits

Strengthening coordination and clarifying leadership roles, as well as connecting non-statutory partners to improve their capacity will improve emergency response to other threats as well as heat risk.

Relevant existing policies & programmes

- Resilience partners have standard arrangements for maintaining capacity to engage in partnership response.
- The London Resilience Forum convenes a seasonal preparedness briefing at the beginning of summer.
- The London Communities Emergencies Partnership has previously briefed VCFS and equalities sector partners on potential heat risks over the summer period.

Key considerations for delivery

- There is no formal mechanism for the assurance of single agency preparedness, although London Resilience Forum activities (such as the summer preparedness briefings) do provide a degree of assurance.
- VCFS and equalities sector organisations will need to be resourced to play their part in preparedness and response. Proper resourcing that enables community capacity could release capacity of statutory responders to tend to those most in need.

3.4 Mitigating risks to emergency responders through existing learning and risk assessment processes – considering changes to uniforms, equipment, and processes.

Overview and purpose

The increasing frequency and intensity of heat risk, and concurrent and cascading impacts such as wildfires, will increase pressure not only on emergency services, but also on frontline responders. While responder organisations do learn and implement lessons from heat and wildfire incidents, this will continue to be a crucial part of response planning.

Potential delivery partners

Emergency response organisations conduct risk assessments and learn from incidents and exercises. The **London Resilience Partnership** convenes and shares multi-agency lessons and recommendations.

Implementation pathway and timeframes

Short-term

Learning and review processes occur on an ongoing basis.

Co-benefits

Frontline workers who are better protected in their duties, and whose wellbeing is considered, will be in a better position to respond effectively to other risks.

Relevant existing policies & programmes

- Emergency services and the London Resilience Partnership have processes in place to learn from scenario exercises and incidents, including heatwaves and fires.
- Following the 2022 summer heatwaves and wildfires, LFB made changes to uniforms; and implemented new wildfire equipment and procedures that have since been used successfully.

Key considerations for delivery

Adopting adaptive measures requires consideration of future investment, and understanding of where opportunities exist, to make improvements to equipment within existing budget and replacement programmes.

3.5 Enabling statutory responders to support those already facing systemic inequalities and any compounding risks during heat emergencies.

Overview and purpose

Heat risk combines with existing inequalities and other hazards to create compound risks for marginalised populations. The compounding risks amplify the potential damage from severe heat; and can reduce people's coping capacity. Understanding the disproportionate risks to marginalised communities is fundamental to ensuring that emergency response supports the safety and dignity of marginalised communities. Frontline response organisations can ensure that response systems are fit for purpose before emergencies occur. This can be achieved through inclusive and collaborative scenario planning and response design, and by building trust with marginalised communities through ongoing engagement.

Potential delivery partners

The newly formed **London Resilience Equalities Partnership** will be developing its plans to help build the capacity of frontline responders to understand the diverse needs of communities. It will incorporate that understanding into resilience practice so that response is meaningfully person-centred. The **London Resilience Unit**, the **London Communities Emergencies Partnership**, and other VCFS bodies fund and carry out community resilience engagement programmes that aim to bring VCFS partners into collaborative partnership projects with statutory responders. **The London Health Resilience Partnership** could contribute person-centred approaches to resilience.

Implementation pathway and timeframes

Short-term

London Resilience Equalities Partnership to develop its work plan.

Medium and long-term

Incorporate knowledge and good practice in person-centred resilience into training programmes for statutory responders.

Co-benefits

Enabling statutory responders to support marginalised communities will improve emergency response to other risks as well as heat.

Relevant existing policies & programmes

- Existing training and exercising programmes for responders increasingly include VCFS and equalities sector representation. The London Resilience Equalities Partnership could help enable a step change in good practice in person-centred resilience.
- The London Resilience Severe Weather and Natural Hazards Framework sets out the triggers, roles and responsibilities, and actions for multi-agency partnership response to heatwaves.
- The London Resilience Tactical and Strategic Coordination Protocols, set out the generic response arrangements for emergencies in London.

Key considerations for delivery

- The contribution that equalities organisations, and other VCFS partners, make to EPRR must be valued; and partner organisations must be compensated accordingly. Currently there is no sustainable mechanism for achieving this.

3.6 Enhancing partnership working and support between emergency planners and partners from the VCFS; identifying how the EqIA process could be used in developing response to heat emergencies.

Overview and purpose

Communities feel the impacts of heat first and the strongest. It is within communities that emergency response begins, even before officials arrive to offer help. Neighbours help neighbours; families look in on loved ones; local venues offer a cool space to sit and a drink of water. Still, the learning from incidents and exercises consistently finds that there is a disconnect between statutory emergency response and the VCFS partners who can provide crucial local knowledge and support.[249][250] Responders are unclear about how community partners can contribute. While they understand the concept of unequal risk, they may not have a clear sense of how to put that understanding into practice to support people with diverse needs during an emergency.

Potential delivery partners

The **London Resilience Equalities Partnership** will support capacity building for frontline responders to enable person-centred practice. The **London Resilience Unit** works with VCFS organisations on community resilience programmes that build trust and relationships with statutory responders. **The London Health Resilience Partnership** also supports good practice on person-centred approaches to resilience.

Implementation pathway and timeframes

Short-term

- Resource collaborative working between VCFS partners and statutory responders.
- Trial EqIA to inform severe heat planning in practice.

Medium and long-term

Share knowledge and good practice of EqIA in promoting person-centred resilience as part of training for statutory responders.

Co-benefits

Enabling statutory responders to support marginalised communities to respond to heat risk will improve the emergency response to other risks as well.

249 Moore-Bick, Akbor and Istephan (2024): Grenfell Tower Inquiry Phase 2 Report, Vol. 7 Part 10: Response and recovery

250 Harris (2022): London Prepared: A city-wide endeavour

Relevant existing policies & programmes

- The Community Resilience Fund, run by the London Resilience Unit, explicitly requires local community organisations to develop their proposed projects in partnership with their local authority EPRR teams.
- The London Communities Emergencies Partnership provides London-borough EPRR colleagues the opportunity to network and train with VCFS partners.
- The Climate Connected Communities and London Resilient Communities programmes (delivered in partnership with Groundwork London, Communities Prepared, and British Red Cross) include local EPRR teams in events and training.
- The London Boroughs Faiths Network provides community resilience training for faith leaders in collaboration with response partners.
- The NHS already uses Equalities Health Impact Assessment in developing its EPRR plans and could share this experience.

Key considerations for delivery

- The contribution of equalities and other VCFS partners to the work of EPRR must be valued and partner organisations compensated accordingly. While some funding currently exists, there is no sustainable mechanism for achieving this.

Credit: Mario La Pergolaon Unsplash

CASE STUDY: SUMMER-READY COMMUNITIES: BUILDING COMMUNITY-LED EXTREME HEAT RESILIENCE IN WESTMINSTER

In summer 2025, Westminster City Council trialled a London-first initiative to help vulnerable households stay cool during extreme heat. The pilot introduced 'keep cool kits' – simple, practical packs containing items such as fans and water bottles, alongside easy-to-follow advice on staying safe in hot weather. These were distributed door-to-door to households most at risk, identified through factors such as age, health, income and housing conditions.

Building on this success, the council is supporting Summer-Ready Communities by providing funding in 2026 to community organisations. This will be used to support residents most at risk, alongside capacity-building, training and guidance to build knowledge and confidence in responding to extreme heat.

Through these partnerships, over 700 cool kits are being distributed across Westminster, helping vulnerable residents to stay safe and comfortable during periods of high temperatures. Funded organisations are also delivering additional community-led support, including wellbeing checks during heatwaves, activities in accessible cool spaces, and tailored advice for local communities.

By investing in trusted local networks and strengthening community capacity, the programme ensures support is inclusive, accessible and responsive to those who need it most – helping to build resilience and keep residents safe as temperatures rise.

Credit: Westminster City Council

09

Green space and nature

CONTEXT

Green and blue spaces, and the wider natural environment, play an important role in shaping how heat is experienced and managed across London.

Trees, vegetation and waterbodies help to cool the urban environment through shading and evapotranspiration – reducing surface and air temperatures, and creating cooler microclimates in streets, parks and public spaces. These areas can provide important refuges during periods of hot weather, supporting health and wellbeing and helping Londoners adapt to increasing temperatures.

As well as helping to moderate heat, London's natural environment is itself vulnerable to climate impacts **(see Figure 13)**. Higher temperatures, more frequent heatwaves and prolonged periods of drought can weaken trees or cause tree failure; dry out soils; reduce green cover; increase wildfire risk; and degrade habitats. These impacts reduce the cooling and wider resilience benefits these spaces provide, particularly during periods of extreme heat when they are needed most.

London's natural environment is supported by a comprehensive and evolving policy and delivery framework at city and borough level. The London Environment Strategy provides the overarching vision for improving air quality, green infrastructure, and climate resilience,[251] while the London Plan embeds urban greening, biodiversity and heat-risk management within planning policy, through tools such as the Urban Greening Factor.[252]

More recent spatial frameworks, including the London Green Infrastructure Framework (LGIF)[253] and the London Local Nature Recovery Strategy,[254] provide a data driven approach to identifying where and how investment in greening can have the greatest impact, including addressing social and health inequalities and coordinating nature recovery and wider greening across London. The Mayor's Transport Strategy,[255] and TfL's Green Infrastructure and Biodiversity Plan,[256] embed greening across transport corridors and infrastructure assets. Collectively, this policy framework provides a strong foundation for action.

Access to high-quality, nature-rich environments is not equal across London, with some communities experiencing limited access to well-maintained, resilient green and blue spaces. These spaces play an important role in people's health and wellbeing, including opportunities for rest, recreation, and connection with the natural environment, alongside cooling and shading during high temperatures. Improving the condition and resilience of habitats can help make these benefits more widely available, especially in areas where access to good-quality nature is currently limited. **Figure 14** shows the areas in London in need of the most cooling benefit.

251 Mayor of London (2018): London Environment Strategy
252 GLA (2023): Urban Greening Factor (UGF) guidance
253 GLA (2026): London Green Infrastructure Framework
254 GLA (2026): Local Nature Recovery Strategy
255 TfL (2018): The Mayor's Transport Strategy
256 TfL (2024): Playing our part in creating a greener city for people and wildlife – Green Infrastructure and Biodiversity Plan

Figure 13: Summary of key heat risks to nature and biodiversity.

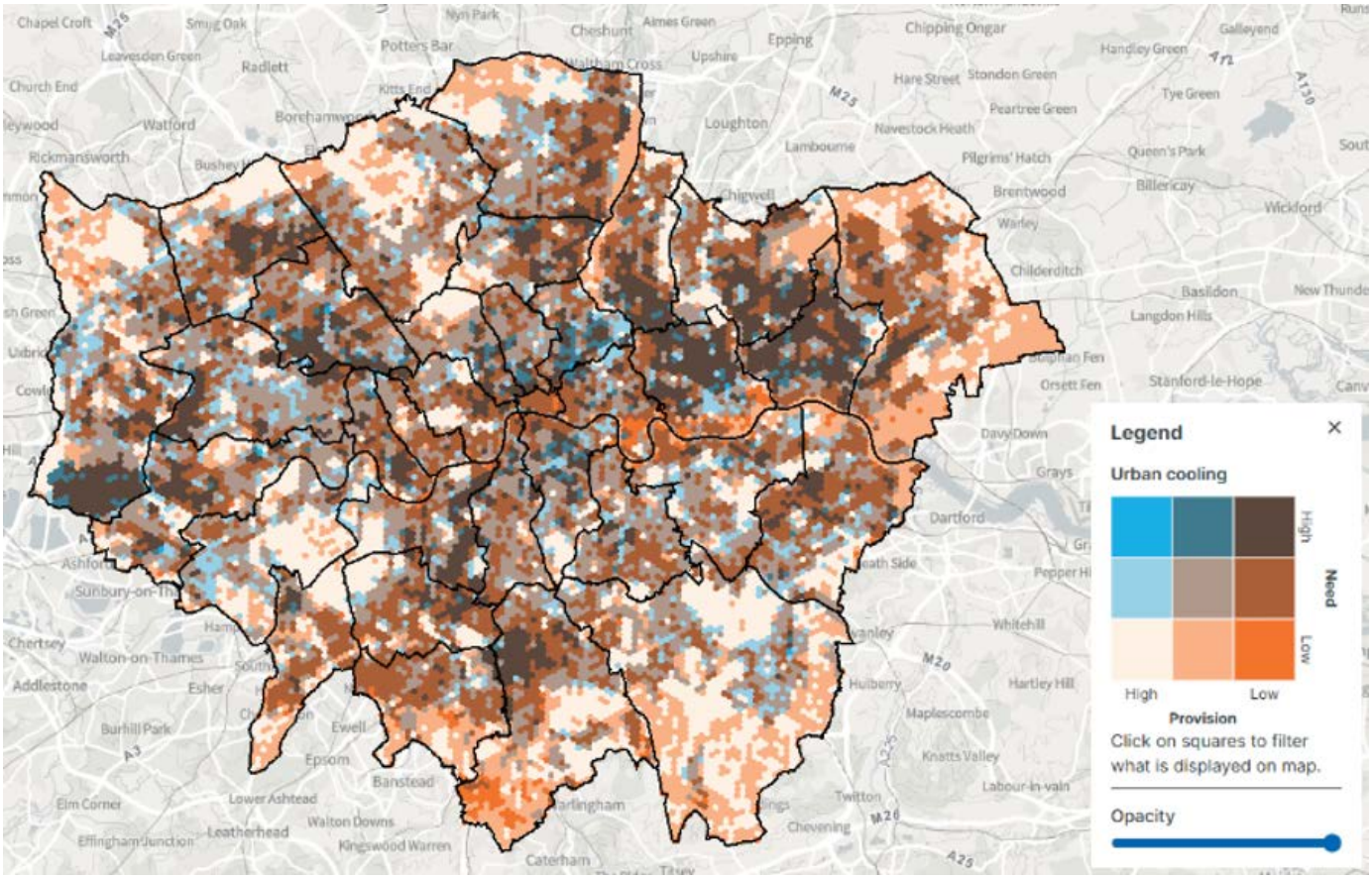


Figure 14: Extract from LGIF showing areas with the most need for cooling benefits.

Sector objectives

- Manage London's green spaces and habitats, to increase their resilience to heat and related risks such as drought, wildfire and invasive species.
- Use climate-resilient green infrastructure to cool areas that need it most – prioritising communities at highest risk from heat, with the least access to green space.
- Increase tree canopy cover to contribute towards the provision of shade and urban cooling, ensuring planting and management choices are climate-resilient.

Priority areas of focus for this sector

- Managing and expanding tree cover and green space in areas of high cooling and shading need; and improving access to London's existing blue-green spaces.
- Ensuring nature and green infrastructure can thrive in future higher temperatures.
- Using greening on and around buildings.
- Improving management of habitats and green spaces to reduce wildfire risk.

Links to other sectors

Green and blue infrastructure interacts with the **built environment** by shaping local microclimates around buildings and public spaces, helping to reduce overheating and improve thermal comfort. In streets and transport corridors, trees and greening support walking and cycling by providing shade and improving the quality of the public realm during hot weather.[257] There are also important links with **health and care**, where access to green and blue spaces can support physical and mental health and wellbeing and provide respite during periods of extreme heat.

London's green infrastructure and vegetation also help to improve London's air, soil and water quality, supporting health and **infrastructure** sectors. In addition, nature-based solutions can intersect with e**mergency preparedness and resilience** (for example, around wildfire risk), and depend on effective water management to maintain vegetation, waterbodies and waterways under hotter and drier conditions. Aligning delivery across these sectors helps ensure that nature-based solutions continue to function as intended and reinforce wider efforts to improve heat resilience across London.

Credit: Transport for London

257 TfL (2018): The Mayor's Transport Strategy

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.

4.1 Deep dive: Managing and expanding tree cover and green space in areas of high cooling and shading need; and improving access to London's existing blue-green spaces.

Overview and purpose

Protecting and actively managing existing parks, trees and green infrastructure will be essential to enhance their long-term climate resilience. Alongside this, expanding tree canopy cover and greening interventions using a diverse range of climate-resilient species and planting methods will be critical to manage heat risk.

Maintaining the existing baseline includes reducing avoidable tree losses, proactive management of tree and vegetation health, and appropriate irrigation and soil management practices. It also includes ensuring shaded travel routes, seating areas and park infrastructure remain accessible and usable during periods of extreme heat.

Protecting, and where possible enhancing, the growing environment of mature trees is a central component of this approach, reflecting their important role in providing reliable near-term cooling benefits, while sustaining wider ecosystem services.[258]

London is already delivering large-scale greening programmes that provide a strong foundation for this action. For example, the Mayor's Greener City and Grow Back Greener Funds supported over 380 community projects; and since 2016 the Mayor has funded more than 640,000 new trees. The £12 million Green Roots Fund is continuing this investment.[259][260]

In areas of highest cooling need, it is necessary to build on the maintained baseline through active management and enhancement of existing parks and trees; and targeted expansion of tree canopy cover and green infrastructure that is resilient to climate change, pests and diseases. This could include diverse, multi-strata climate-resilient tree planting in streets and estates and the creation of pocket parks. These priority areas can be identified using the LGIF, a strategic evidence tool to help plan and prioritise investment in green infrastructure in London.[261] Tools are also available to support species or provenance choice, based on research to better understand the climate vulnerabilities of London's public-realm trees.[262]

Evidence from the survey on Londoners' experiences of heat and priorities for action demonstrates strong public support for green infrastructure as a heat-risk response.

258 Alonzo, Ibsen and Locke (2025): Urban trees and cooling: a review of the recent literature (2018 to 2024)
259 London City Hall (n.d.): Greener City Fund
260 London City Hall (2026): Mayor invests £4.6 million to boost London's green and blue spaces and build a more climate resilient city
261 GLA (2026): London Green Infrastructure Framework
262 GLA (2025): Future Climate Suitability of London's Public Realm Trees

More trees and canopies to increase shade and cool outdoor spaces was the highest-ranked priority for Londoners, selected by 53 per cent of respondents. This reinforces the importance of maintaining and expanding urban greening to manage rising heat risk.[263]

Heat risk rationale and evidence base

Trees and vegetation help cool urban areas by providing shade and cooling the surrounding air, improving comfort during hot weather. However, the effectiveness of canopy cover in reducing heat risk depends not only on the extent of vegetation, but also on how trees are selected, located and managed.[264] Dense, higher canopies are particularly effective at reducing daytime heat, and improving pedestrian-level comfort, by keeping warmer leaf surfaces further from the ground. However, if poorly designed or sited, they may contribute to localised night-time warming.[265] This reinforces the need for a strategic, context specific approach to canopy expansion.

Potential delivery partners

The **GLA** can support on delivering this action through providing strategic leadership, coordination and oversight – aligning delivery with London-wide policy objectives, funding programmes and monitoring frameworks. **London boroughs**, working collectively through **London Councils**, play a central role in local delivery, including the protection, management and enhancement of existing trees, parks and green infrastructure – as well as the implementation of targeted climate-resilient canopy expansion in priority locations.

TfL is responsible for many of London's transport corridors, including London Underground tracks and stations, London's strategic road network and bus stops, which provide opportunities to incorporate climate-resilient green infrastructure, where appropriate. Major landowning and estate managing organisations, including the **Crown Estate, The Royal Parks, the City of London Corporation, and the Lee Valley Regional Park Authority** could play a key role in delivering and maintaining interventions within assets under their management. **Statutory nature agencies** and **NGOs** can also support delivery through guidance, partnership working, and capacity building, helping to embed best practice in climate-resilient greening and long-term stewardship.

Implementation pathway and timeframes

Short-term

- Maintain and protect the existing baseline of parks, trees, and green infrastructure. This includes strengthening proactive maintenance to sustain cooling performance (e.g. ensuring vegetation health, irrigation where appropriate, depaving, decompacting and integrating soil enhancement around vulnerable existing trees in high need locations).
- Use heat risk mapping and the LGIF182 to identify locations with high heat exposure and limited existing cooling provision.
- Embed this evidence and analysis explicitly in planning and delivery processes, to target areas where green infrastructure can deliver the greatest benefit.

263 Hewlett et al. (2026): Londoners' experiences of heat and priorities for action: Survey insights from summer 2025

264 Li et al. (2024): Cooling efficacy of trees across cities is determined by background climate, urban morphology, and tree trait

265 Li et al. (2024): Cooling efficacy of trees across cities is determined by background climate, urban morphology, and tree trait

- Use a diverse range of context-appropriate climate-resilient species and adequate establishment techniques to ensure sustained cooling benefits over time.
- Review evidence and priorities (e.g. every three to five years) to reflect updated evidence, changing climate risk, development patterns, and progress in delivery.

Medium-term

- Plan locally tailored greening and shading interventions with boroughs and delivery partners, aligning need with feasibility (i.e. land availability, physical and operational constraints, timing of regeneration or capital programmes, and opportunities to enhance existing assets).
- Align community-led activities. Many of these initiatives are being led by organisations not traditionally focused on climate adaptation, such as a Jain organisation in Harrow planting trees in their local area every year.[266]
- Leverage regeneration programmes such as the Civic Partnership Programme.[267]

Long-term

- Iteratively refine plans through to 2050 as evidence and local conditions evolve.
- Scale delivery through the phased expansion of tree canopy and green infrastructure in priority locations.
- Secure long-term maintenance arrangements to sustain cooling performance.

Co-benefits

- Supports biodiversity, strengthens ecological connectivity, and improves the condition and functionality of urban ecosystems.
- Enhances flood resilience, and water and air quality.
- Contributes to more attractive, accessible, and usable public spaces.
- Health and wellbeing benefits include support of physical activity, social interactions, and long-term environmental sustainability.

Relevant existing policies & programmes

- The **London Environment Strategy** sets a city-wide target to increase tree canopy cover by at least 10 per cent by 2050,[268] and increase London's green cover to over 50 per cent.
- **London Urban Forest Plan.**[269]
- **London Plan Policy G5** (Urban Greening)[270] embeds urban greening within new development through the Urban Greening Factor.
- **London Plan Policy G7** (Trees and Woodland) embed the principles of tree planting and protection in local plan-making and development management – including the use of valuation methods to secure appropriate mitigation where tree canopy losses are unavoidable.

266 Shade the UK & Love Design Studio (2025): Heat Risk Community Engagement (unpublished)
267 London City Hall (n.d): Civic Partnership Programme
268 Mayor of London (2018): London Environment Strategy
269 Greater London Authority (2025): London Urban Forest Plan 2025 Actions Update
270 GLA (2021): Chapter 8 Green Infrastructure

- The **LGIF** provides a spatial framework for aligning cooling focused greening with other types of greening, such as nature recovery, flood risk, recreation and access, active travel and air quality.
- The **London Local Nature Recovery Strategy**[271] and its associated opportunity mapping provide a spatial framework for biodiversity recovery and ecological connectivity.

Key considerations for delivery

- Embed delivery within public realm, building, and infrastructure renewal programmes to improve efficiency and reduce disruption.
- Coordinate delivery with existing asset renewal and maintenance cycles to support cost-effective implementation of tree canopy and green infrastructure.
- Consider approaches to long-term maintenance and management of tree canopy and green infrastructure to maintain cooling benefits.

Indicative implementation costs

The ecosystem services provided by London's urban trees – including carbon sequestration, rainwater interception, air pollution reduction, building energy savings, and avoided energy-related carbon emissions – were valued at approximately £132.7 million per year in 2015.[272]

Indicative evidence suggests that the BCR for urban greening is positive but highly context-dependent. Net benefits are driven primarily by amenity, recreational and cultural values rather than cooling alone.[273] London-specific metrics are limited, but related evidence points to very high returns overall: natural capital accounting estimates a BCR of around 27:1 for London's parks, with total benefits of approximately £91 billion over 30 years compared to costs of around £3.3 billion, including around £0.6 billion attributed to temperature regulation.[274] Additionally, the establishment of new green infrastructure in Westminster, Brent and Hackney had estimated BCRs of between 5.6 and 6.9.[275]

Cooling from green and blue infrastructure is estimated to have avoided around £14 million in lost worker productivity in London in 2015,[276] while existing tree cover may have prevented 153 heat-related deaths between 2015 and 2022 (around 16 per cent of UHI-attributable mortality).[277]

Further analysis on the costs, benefits and wider case for investment can be found in the Funding and Financing section, **Deep Dive 3.**

271 GLA (2026): Local Nature Recovery Strategy
272 Treeconomics London (2015): Valuing London's Urban Forest. Results of the London i-Tree Eco Project
273 CCC (2019): Urban Green Infrastructure
274 Vivid Economics (2017): Natural capital accounts for public green space in London, for the Greater London Authority
275 Vivid Economics (2021): Greening Streets within London
276 Jones et al. (2024): Economic value of the hot-day cooling provided by urban green and blue space
277 Taylor et al. (2024): The potential of urban trees to reduce heat-related mortality in London

Greening and green infrastructure interventions	Indicative cost range within London
Tree planting and establishment (streets and estates): Targeted tree planting in streets and housing estates to expand canopy cover.	Indicative costs for street tree-planting and establishment maintenance in London typically range from **£1,200 to £1,800** per tree.[278] However, large-scale delivery programmes can reduce unit costs.
Protection and management of mature trees and new planting.	Indicative annual maintenance cost for urban trees post establishment: **£15 to £30 per tree per year**. The London Borough of Camden reports average annual tree maintenance costs of around £27 to £31 per tree, based on approximately £1.2 million of spend across a managed stock of around 39,000 to 44,000 trees.[279] This includes inspection, higher-risk management regimes, and reactive works; however, other evidence suggests that once established, baseline maintenance of a healthy tree can be as low as around £15 per year.[280]
Pocket parks (creation of new small green spaces).	Examples suggest a broad unit-cost envelope of approximately £700–£1200 per m^2.
Parklets (temp structures in parking spaces).	Parklets are typically lower-cost interventions as they are temporary, and usually do not require breaking ground. Cost: between £15,000 and £40,000.
Ongoing maintenance of existing parks and green spaces.	Maintenance requirements and delivery costs vary significantly between boroughs depending on the scale, condition and management approach of green space assets.

278 Startwithlocal (2018): Trees for Streets – a case study – Start With Local

279 London Borough of Camden (2023): 04. CE Scrutiny September 2023 Tree Maintenance Policy Update

280 GreenBlue (2024): Who Will Maintain Green Infrastructure, and at What Cost?

Barriers and enablers

Barriers

- Limited capacity and funding for long-term maintenance and management could reduce the effectiveness of canopy cover over time if not sustained.
- Newly planted trees require significant establishment periods before they provide meaningful shade and cooling, highlighting the importance of protecting existing mature trees.
- In dense urban areas, physical constraints and competing land uses limit opportunities for new tree planting.
- Capacity constraints are further compounded by skills and recruitment challenges within London's arboricultural and urban forestry workforce, which can limit the ability to deliver, maintain and adapt green infrastructure at scale.[281]
- Supply-chain constraints limit the availability of tree species and provenances suited to London's future climate. Evidence suggests that, without adaptation, over 70 per cent of London's public realm trees could become vulnerable to climate change by 2090.[282]
- Tree producers are not consistently able to identify or supply trees by provenance, and there are limited incentives to shift production without clear long-term demand and investment.
- Increasing heat and drought risks raise concerns about the sustainable use of water for tree and vegetation management, particularly during extended dry periods.

Enablers

- London benefits from a strong enabling context for delivery at the strategic scale. High quality spatial datasets (including the LGIF,[283] climate risk mapping,[284] London's Public Realm Tree map[285]) support city-wide prioritisation by identifying areas of highest heat risk, lowest existing provision, and higher tree vulnerability.
- A supportive policy framework is already in place, including the London Environment Strategy[286] and London Urban Forest Plan.[287]
- Guidance, such as Dig Once, Green Twice: A GLA Guide to Retrofitting Green Infrastructure in Utility-Constrained Streets,[288] combined with programmes such as the SuDS (and trees) through Streetworks initiative[289] also facilitate overcoming some of the costs and space limitations outlined above.

281 Parks for London (2023): London Trees and Woodland Skills Survey Report
282 GLA (2025): Future Climate Suitability of London's Public Realm Trees
283 GLA (2026): London Green Infrastructure Framework
284 GLA (2024): Climate Risk Map | London City Hall
285 GLA (2024): London's Public Realm Trees
286 Mayor of London (2018): London Environment Strategy
287 Greater London Authority (2025): London Urban Forest Plan 2025 Actions Update
288 GLA (2026): Dig Once, Green Twice
289 GLA (2026): SuDS through streetworks

CASE STUDY: THE CITY OF LONDON'S COOL STREETS AND GREENING PROGRAMME

The Cool Streets and Greening Programme is a flagship initiative of the City of London Corporation. With a total investment of £7.8 million, the programme is transforming the Square Mile's streets and public spaces to address the growing risks of climate change, such as overheating, flooding, and biodiversity loss; while enhancing the quality and resilience of the urban environment.

The programme is delivering 50 projects across five phases. To date, completed projects have led to the enhancement of 19,346 m² of public space, equivalent to 74 tennis courts, and the assessment of over 500 locations for tree planting.

The interventions include drought-tolerant planting, climate-resilient trees, rain gardens, and permeable paving – all contributing to cooler, greener and more accessible public spaces.

The programme is underpinned by an interdisciplinary, collaborative, cross departmental approach and supported by leading experts from a range of fields. It not only addresses climate risks, but also embeds long-term resilience, sustainability and inclusivity into the fabric of the Square Mile, ensuring it remains a thriving place for generations to come.

To monitor the effectiveness of interventions, the City is using an integrated climate sensor network. This data is being used to model environmental impacts and inform future planning, ensuring that the programme remains adaptive and evidence-led. Over 25 sensors have been installed, providing data on temperatures and soil moisture, to help monitor street level overheating and understand microclimates. Residents and visitors can access the data through a live dashboard.[290]

Find out more about the City of London's Cool Streets and Greening Programme

Credit: City of London Corporation[291]

290 City of London (n.d): Climate Sensors

291 City of London (2025): Cool Streets and Greening Progress Report

4.2 Ensuring nature and green infrastructure can thrive in future higher temperatures.

Overview and purpose

Heat risk is an increasing ecological pressure that is reshaping London's green spaces and nature.

In practice, this means shifting from one-off habitat enhancements; and instead managing habitats over the long term to create a range of conditions that support different species. Priority should be given to habitats that reduce temperatures and retain moisture. These include dense vegetation, shaded ground, scrub, deadwood, undisturbed soils, and wetlands. These conditions create microclimatic refuges where temperatures are lower and humidity higher, helping species cope with extreme heat.

Water availability is critical during heat events. Strengthening resilience means restoring and managing wetlands, ponds, rivers, and other wet habitats so they retain water, maintain water quality, and reduce ecological stress – including heat related impacts such as algal blooms – while providing cooling and hydration for wildlife. Improving soil condition to increase water retention, and using landscapes to slow and store water, will further support habitats during drought and heat.

Management must also respond to the way heat is reshaping species communities. Increasing temperatures give an advantage to generalist and heat tolerant species while disadvantaging more sensitive or specialised species. This requires monitoring and management of heat related biological risks, including invasive non native species, pests, pathogens, and disease vectors. Improving ecological connectivity is essential to help species move in response to heat and access cooler habitats. This includes strengthening habitat networks, including green and blue corridors, reducing fragmentation, and creating a range of refuge features such as deadwood, sheltered edges, and varied vegetation structures. Careful design and management will be needed to minimise unintended effects, including the spread of invasive or opportunistic species, which may be increasingly common as temperatures rise. These actions should draw on and align with the London Local Nature Recovery Strategy.[292]

A stronger climate lens must also be embedded within existing nature recovery and land management activity. While London already has a wide range of strategies, plans, and maintenance regimes, these are not always explicitly designed to respond to heat risks (chiefly increasing temperature, wildfires and water stress). Strengthening resilience will require reviewing and updating these approaches to reflect climate pressures and managing habitats in a way that provides thermal buffering and stability.

Together, these measures will support more resilient, diverse ecosystems that are more able to withstand and recover from heat stress, maintain biodiversity and the cooling, shading, and wider regulating benefits that nature provides during extreme heat events.

292 GLA (2026): Local Nature Recovery Strategy

Potential delivery partners

Delivery at scale would require a partnership approach, including **the GLA, London boroughs, London Councils** and other significant landowners (e.g. City of London, Royal Parks etc.). **Natural England**, the **Environment Agency**, and **London Wildlife Trust** (among others) could provide valuable guidance and support on habitat management, monitoring, and ecological resilience. **Local authority** parks and green space services, **landowners** and **estate managers, environmental and conservation organisations**, and **green-space management contractors** will play a key role in implementation, maintenance, and long-term stewardship.

Implementation pathway and timeframes

Short-term

- Use the Local Nature Recovery Strategy[293] and LGIF[294] to identify areas where greatest need for urban cooling coincides with relevant opportunities for nature recovery. Share results with relevant partners to encourage climate-resilient nature recovery projects in priority locations.
- Share and raise awareness of climate-resilient habitat management (including, for example, suitable species planting for a changing climate) by sharing and promoting relevant research, guidance, and case studies.

Medium-term

- Encourage land managers, including those responsible for parks and public open space, to review and strengthen current management practices to determine how habitat management can improve climate resilience. This includes consideration of water quality and quantity, soil quality, variety and connectedness of habitats, and considering the risk of invasive species and disease.

  This could be included into existing programmes that are aiming to strengthen biodiversity and green infrastructure. For example, TfL is delivering its Green Infrastructure and Biodiversity Plan, which includes expanding street trees, installing sustainable drainage, and delivering large scale wildflower verges and habitat improvements across its estate.[295]

Co-benefits

- Supports healthier, more connected and resilient ecosystems that can deliver environmental benefits and reduce pressures (e.g. poor water retention / excessive runoff, pests, and invasive species) whilst supporting biodiversity recovery and ecosystem function.
- Higher-quality green and blue spaces support environmental sustainability, public wellbeing, and long-term climate resilience.

293 GLA (2026): Local Nature Recovery Strategy

294 GLA (2026): London Green Infrastructure Framework

295 TfL (2024): Playing our part in creating a greener city for people and wildlife – Green Infrastructure and Biodiversity Plan

Relevant existing policies & programmes

- London Environment Strategy.[296]
- London Local Nature Recovery Strategy.[297]
- LGIF.[298]
- Borough-level biodiversity and parks strategies.[299][300]
- Natural England guidance and programmes.[301]

Key considerations for delivery

- Effective delivery of this action depends on long-term, adaptive management.
- Interventions should be informed by local ecological conditions and prioritise habitat quality and connectivity at scale.[302]
- Ongoing maintenance and monitoring are essential to ensure habitats remain resilient under increasing risks.[303]
- Coordinate delivery across borough boundaries and landownerships to support connected ecological networks and species movement.

Credit: City of London Corporation

4.3 Using greening on and around buildings.

Overview and purpose

This action aims to reduce building overheating and local heat exposure through the deployment, retrofit and long-term maintenance of greening measures located on and around existing and new buildings, such as green roofs, planted podiums, and courtyard planting. Measures should be incorporated through new development or retrofitted within existing buildings and sites where feasible. All greening must be compliant with the contemporary fire safety regime and managed in light of increasing drought and heat risk.

London already has more than 700 green roofs covering over 17.5 hectares, with notable examples including the Barbican Estate roof gardens[304] and large-scale installations on major commercial developments. Such interventions deliver cooling primarily through shading and evapotranspiration – helping to lower roof and courtyard surface temperatures, and to improve thermal comfort in dwellings and enclosed outdoor spaces during hot weather.

Evidence indicates that green roofs have outdoor and indoor cooling effect ranges between 0.05-0.6°C (outdoor) and 0.4-1.4°C (indoor) through added insulation, shading, and evapotranspiration.[305]

296 Mayor of London (2018): London Environment Strategy
297 GLA (2026): Local Nature Recovery Strategy
298 GLA (2026): London Green Infrastructure Framework
299 GLA (2026): Parks, green spaces and biodiversity | London City Hall
300 The Royal Parks (2026): How The Royal Parks helps nature thrive | The Royal Parks
301 Natural England (2025): Natural England's Strategy: Recovering Nature for Growth, Health and Security – GOV.UK
302 Climate ADAPT (2019): Enhancing Ecological Networks
303 Climate-ADAPT (2016): Adaptive management of natural resources | Adaptation options | Discover the key services, thematic features and tools of Climate-ADAPT
304 Pritchard and Pritchard (n.d.): Landscaped podium | Barbican Centre | case study
305 Morakinyo et al. (2017): Temperature and cooling demand reduction by green-roof types in different climates and urban densities: A co-simulation parametric study

Larger reductions in urban ambient temperatures generally require widespread, city-scale implementation of various nature-based solutions, which could include street trees, sustainable drainage systems (SuDS), green spaces, green roofs and green walls.[306]

By targeting roofs and internal courtyards, including retrofit opportunities on existing buildings, the action promotes heat-risk mitigation in dense urban areas where ground-level greening opportunities are limited. By prioritising resilient planting and management approaches, including species and systems suited to hot and dry conditions, the action seeks to ensure that greening continues to deliver cooling benefits during heat events and over the lifetime of the development.

Potential delivery partners

Strategic direction and policy are established by the **GLA** within the national context, with **London boroughs** managing planning and building control approvals. Implementation would be delivered by **developers, housing associations**, and including their architect/ landscape architect design teams.

Implementation pathway and timeframes

Short-term

- Continue to ensure that building and site-wide greening is embedded as a fundamental component of site layout and building design at planning stage, shaping massing, roof design, and courtyard configuration from the outset. This can be progressed under existing London Plan policy (notably Policy G5 and G7).[307]
- Support retrofit greening on existing buildings and sites where structurally and operationally feasible. This could include courtyard planting, rain gardens, and shaded communal spaces delivered through refurbishment and estate improvement programmes.

  This may include replacing hard surfacing with planting, introducing planters and shade trees, and integrating greening into ongoing asset maintenance and renewal works. Retrofitting green roofs onto existing buildings is likely to be more limited and opportunistic, potentially occurring alongside major refurbishment works.

Medium-term

- Develop an enabling framework that should include clear low-fire-risk greening standards, alignment with building safety and fire risk governance, and engagement with residents and building users to ensure safe use and ongoing management.

306 University of Salford (2020): Green Infrastructure Evidence Base – IGNITION

307 GLA (2021): Chapter 8 Green Infrastructure

Co-benefits

- Reductions in cooling energy demand.
- Improvements to local air quality.
- Enhanced biodiversity and habitat provision.
- Attenuation of surface water runoff where blue-green systems are used.
- Improved quality and usability of shared amenity spaces.
- Support for physical and mental wellbeing, particularly in high-density areas with limited access to ground-level green space.

Relevant existing policies & programmes

- The London Plan.[308]
- Policy G5 (Urban Greening Factor)[309] requires boroughs to apply an Urban Greening Factor tailored to local circumstances.
- Policy G7 (Trees and Woodlands) requires the retention of healthy mature trees on development sites; and the use of valuation method to secure commensurate compensation when losses are unavoidable.
- Policy SI4 (Managing heat risk)[310] identifies shading as a mechanism for reducing overheating.
- The Green Roof Organisation Fire Performance and Best Practice Guidance.[311]

Key considerations for delivery

- Long-term management is critical to ensure greening measures deliver sustained cooling benefits.
- Define clear responsibilities for maintenance, irrigation, plant replacement, and ongoing performance from the outset.
- Target measures to building type and scale, recognising that structural capacity and cost constraints may limit feasibility in smaller or existing buildings (e.g. green roofs more suited to larger buildings).
- Assess heritage and structural constraints early, as these may restrict feasibility.

4.4 Improving management of habitats and green spaces to reduce wildfire risk.

Overview and purpose

Hotter, drier summers are increasing wildfire risk across London's green spaces, particularly during prolonged heatwaves when vegetation becomes dry and more easily combustible. Recent data from LFB illustrates the scale of this growing risk: 117 wildfire incidents were recorded in 2025, more than double the 2023 total and a 32 per cent increase on 2024, though still below the 207 incidents recorded during the extreme 2022 heatwave when temperatures exceeded 40°C.[312]

308 Greater London Authority (2021): The London Plan
309 GLA (2021): Chapter 8 Green Infrastructure
310 GLA (2021): Chapter 9 Sustainable Infrastructure | London City Hall
311 Green Roof Organisation (2025): Fire Performance and Best Practice Guidance
312 LFB (2025): London Fire Brigade had its busiest summer since extreme wildfires of 2022

The trends in incident data are towards more volatility, and these recent events have demonstrated that grass and vegetation fires pose a growing threat to people, property, infrastructure and the natural environment, especially at the urban-rural interface and around large open green spaces.[313][314]

This action focuses on strengthening London's resilience to wildfire risk through ecological management of habitats and landscapes. The aim is to ensure that green spaces continue to provide essential cooling, health and biodiversity benefits, while reducing the likelihood, spread and impact of fires. This requires managing landscapes in ways that both reduce fire risk and support long term ecological stability.

It is important to note that wildfire incidents are most often caused by human activity rather than natural ignition sources.[315] These can include the use of disposable barbecues, open flames, and other ignition sources in green spaces, including where these activities are not permitted.[316] During hot, dry conditions, even small ignition sources can quickly start fires in dry vegetation. Therefore, strengthening resilience depends not only on effective habitat and land management, but also on public awareness, behaviour change, and measures to reduce ignition risks, particularly in high risk locations and during heatwaves. LFB advises Londoners to take simple pro-active steps to reduce the risk of starting wildfires.

Relevant measures for green space management focus on managing fuel load, vegetation structure, and moisture conditions, alongside landscape design that reduces fire spread.[317][318]

This includes:

- Reducing fuel continuity by breaking up continuous areas of vegetation so fires are less able to spread across the ground or into taller vegetation, particularly near buildings and infrastructure.
- Managing vegetation through seasonal cutting, grazing, or thinning to prevent the build up of dry, combustible material.
- Managing scrub, grassland, and edge habitats to avoid large, continuous areas of highly flammable vegetation, while maintaining their ecological value.
- Maintaining soil condition and site hydrology to retain moisture and reduce vegetation dryness during high temperatures.
- Measures should prioritise high risk locations, particularly where continuous vegetation connects open landscapes to built areas. In these areas, interventions should be designed to slow or interrupt fire spread while maintaining habitat function.

313 For example in July 2022 the summer heatwave, the Wennington wildfire spread across 40 hectares, damaging 17 houses, five garages, 12 stables, a car repair workshop and several vehicles, as well as numerous sheds and outbuildings (BBC News (2023): Wennington wildfire). During the same heatwave period, the LFB received 740 calls relating to wildfires (The London Climate Resilience Review – July 2024)

314 LFB (2023): Major Incident Review Extreme Weather Period 2022

315 Surrey Wildlife Trust (2022): Wildfires: An Introduction

316 LFB (n.d.): Grass and Wildfires

317 Forestry Commission (2014): Building wildfire resilience into forest management planning

318 Natural England (2020): Climate Change Adaptation Manual – NE751

Scrub and grassland habitats are important for biodiversity and should not be removed as a default response to wildfire risk. Management should instead focus on their structure, extent and arrangement to reduce fire spread while maintaining habitat quality.[319]

Interventions should prioritise high risk areas, particularly where continuous vegetation connects open landscapes to built areas. Measures should be carefully timed to reflect seasonal growth, wildfire risk periods, and biodiversity requirements, including avoiding impacts on nesting and other sensitive life stages.

Potential delivery partners

Delivery could be coordinated in collaboration with **LFB, boroughs, landowners**, and **green space management contractors**. Boroughs and land managers are responsible for site-specific implementation and ongoing management, with LFB providing specialist wildfire risk expertise.

Implementation pathway and timeframes

Short-term

- Identify high-risk locations and sites with a history of grass or vegetation fires.
- Review adequacy of current hazard reduction activities (e.g. grass cutting, vegetation clearance) delivered by boroughs, landowners and parks managers, in collaboration with LFB, in light of changing wildfire risk.[320]
- Review effectiveness of public awareness and behaviour change campaigns led by LFB (in collaboration with the Met Office and the Natural Hazards Partnership) to reduce ignition risks.

Medium-term

- Modify processes to manage green space to ensure they adequately incorporate the changing wildfire risk profile.

Co-benefits

- Reduces likelihood and severity of fires during periods of extreme heat – helping to protect homes, infrastructure, and critical services from fire and smoke-related disruption.
- By lowering the frequency and intensity of vegetation fires, this supports improved air quality and associated public health benefits. Well designed and managed measures support healthier, more resilient habitats which contributes to improved biodiversity and long-term ecological conditions.
- Reduces future pressure on emergency response services.

319 Rewilding Britain (n.d.): How rewilding reduces wildfire risk

320 Harrow Online (2025): Fire Brigade urges councils to create 'fire breaks' to reduce wildfire risk in London

Relevant existing policies & programmes

- LFB prevention programmes.[321]
- Borough level land management.[322]
- LFB Borough Risk Management Plans (BRMPs).
- Emergency planning.
- Existing operational arrangements led by major landowners and estate managers.

Key considerations for delivery

- Target interventions in highest-risk areas to maximise effectiveness.
- Embed delivery interventions into existing parks management, estates maintenance, and emergency planning processes.
- Coordinate planting choices, vegetation management, access routes, and maintenance regimes with borough teams and LFB.
- Align delivery with wider objectives for biodiversity, public access, and heat resilience.
- Integrate measures into existing processes to support long-term sustainability and avoid short-lived interventions.
- Effective delivery relies on coordination with emergency response and fire services to support prevention, preparedness and early intervention.

Credit: Transport for London

321 GLA (2023): Barriers to wildfires

322 LFB (2025): Brigade calls for urgent action to help protect communities from wildfires this summer

10

Health & Care

CONTEXT

The health and care system in England is complex, bringing together the DHSC, the NHS, the UKHSA, local government (public health, social care), and VCSF to improve health outcomes, support wellbeing, and reduce avoidable health inequalities across populations.

In addition to the well-documented pressures across all parts of the health and care system, the NHS is currently undergoing extensive reform as NHS England is integrated with DHSC and the system re- orientates to deliver the NHS 10 Year Plan.

Exposure to high temperatures is an increasingly significant public health risk for London. Climate change is driving more frequent, intense and prolonged heat events with escalating impacts on premature mortality, ill-health and widening health inequalities.

In addition to increasing levels of exposure to heat, London's population is also becoming more vulnerable to heat risk – while an ageing population will put increasing strain and additional costs on health and care services.[323] The health conditions forecast to drive the largest burden of premature mortality and healthcare demand to 2040[324] include cardiovascular disease, neurological disorders, mental health conditions, and diabetes. All are exacerbated by high temperatures.

The CCC has estimated that UK-wide heat-related hospital attendances and admissions could triple by 2050 compared to current levels with these impacts disproportionately concentrated in London **(see Figure 15)**.[325] In recent years, around 300 excess deaths during UKHSA Heat-Health Alerting periods have been reported in each of 2020, 2023 and 2025, but this is the tip of a public health 'iceberg'.[326]

Whilst the risk of heat-related deaths and ill-health rises sharply above 32°C (London's threshold for an Amber Heat-Health Alert), in a typical summer relatively few days reach these temperatures. However, days where the daily maximum temperature is over the threshold at which heat-related harms occur (25–32°C) are much more frequent in London. Although the mortality risk is lower at these temperatures and do not trigger emergency response mechanisms, the exposure is much more frequent. It is estimated that approximately 90 per cent of the overall burden of harm from heat is due to this chronic exposure. Therefore, any approach to addressing the health burden of heat will need to extend beyond the acute response to extreme temperatures to a more strategic, prevention focused approach that addresses the population-level drivers of harm.

323 NHS London Healthy Urban Development Unit (n.d.): Ageing population

324 The Health Foundation (2024): Health inequalities in 2040

325 Edge Health and Greencroft Economics (2026): Risks to Health and Health Services from Extreme Heat

326 UK Health Security Agency (2025): Heat mortality monitoring reports

The health burden of heat is not distributed equally: people of older age, the very young, those with a physical or mental health condition and those experiencing social vulnerability are among those disproportionately affected.

Heat-related illness ranges from mild, easily treated conditions such as dehydration and heat exhaustion through to life-threatening heatstroke and premature mortality. Most premature deaths from heat exposure are due to the exacerbation of existing cardiovascular and respiratory conditions but there is increasing evidence that many health conditions are heat sensitive (i.e. heat exposure increases the risk of premature mortality or ill-health) including neurological disorders (e.g. Epilepsy, Parkinson's disease) and diabetes. There is now strong evidence that people with Severe Mental Illness are at significantly higher risk, whilst those with common mental health disorders, such as depression and anxiety, are also heat-sensitive.[327]

There is some evidence that Londoner's exposure to heat risk is not typical of the wider population. In London, age is a less useful proxy for increased vulnerability to heat, compared to the national population. Londoners aged 45 – 65 years have approximately the same level of heat-risk as those aged 65+ years nationally.[328] This is likely due to the conditions in which Londoners live and work. The causal factors for heat–health outcomes, including premature mortality and ill health, are inequitably distributed across the city: income deprivation, housing conditions, poor physical and mental health, poor working conditions, social isolation, and barriers to adaptation (economic, practical and behavioural).

This evidence strengthens the case for a Health in all Policies approach to Heat Ready London.

In addition to the direct impacts of heat on health and wellbeing, rising temperatures will have important indirect effects on health outcomes through a range of pathways, including concurrent air pollution events, infectious diseases, and fungal infections, antimicrobial resistance, and vector borne disease.

As with other essential services, high temperatures also affect health and care estates and the workforce, particularly those who deliver frontline care and services. As London adapts to a warming climate, the health and care sector has a critical role in identifying those at greatest risk, preventing avoidable harm, preparing for additional demand for services and planning for increasing impacts on health and care infrastructure, staff and delivery.

Credit: SolStock on Getty

327 Thompson et al. (2024): Individual level risk factors associated with episodes of heat as recorded within primary care records: a time-stratified case-cross over study - PMC

328 Thompson et al. (2025): Social determinants of heat-related mortality in England: a time-stratified case-crossover study using primary care records

Heat Risk Overview

Additional welfare checks, outreach and changes to business–as–usual operations require additional resource

Heat related illness and need for welfare checks, especially amongst the vulnerable

Strain on services due to high demand

Increased demand for health and social care due to high temperatures

Delays and disruption to health and social care services

Longer response times worsen outcomes

Impacts on staff productivity, health and wellbeing

Overheating of care settings including care homes, hospitals and households

Heat-related impacts on infrastructure networks

Figure 15: Pathways through which high temperatures can affect health outcomes.

Sector objectives

- Strengthen health and care system heat-risk management to reduce avoidable impacts on health and wellbeing.
- Build the foundations for a more climate-resilient health and care system.
- Develop a climate-smart health and care workforce.
- Ensure health and care services maintain service delivery during hot weather.

Priority areas of focus for this sector

- Work collaboratively to address heat-related health risks and embed heat-risk management within emerging health system structures and partnership arrangements.
- Strengthen health system capabilities to protect those at highest risk from heat-health harms.
- Mobilise health system levers to reduce indoor overheating.
- Establish the foundations for a climate-resilient health system for London.
- Strengthen outreach and welfare checks for vulnerable groups during heat risk events, including people experiencing rough sleeping, by utilising the Hot Weather Rough Sleeping Guidance.

Links to other sectors

Heat-health outcomes are the result of intersecting system drivers and individual level risks – prevention of these impacts will require action across many other sectors. The health and care sector itself also plays a critical role in managing public health risks – preventing avoidable impacts on health; reducing health inequalities; in **frontline response** during emergencies; and providing ongoing care to affected communities.

A Health in all Policies approach has been adopted to embed health equity in the other sectors in this report. This reflects the Mayor's statutory responsibilities to reduce health inequalities.[329] For example, a well-adapted built environment that reduces exposure to indoor overheating is essential to preventing heat-health outcomes. High-quality green and blue spaces will reduce ambient temperatures, and support better physical and mental health. Adaptation measures implemented by businesses can help to create safer, more comfortable workplaces and practices. Actions supporting the development of resilient infrastructure can deliver reliable IT and communications to keep our healthcare systems operational; resilient transport systems can support essential workers to attend work during extreme weather.

329 GLA Act (2007): Greater London Authority Act 2007 – Explanatory Notes

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.

5.1 & 5.2: Work collaboratively to address heat-related health risks and embed heat-risk management within emerging health system structures and partnership arrangements.

Overview and purpose

Health and care system organisations have shared responsibilities to reduce health inequalities. This overarching purpose is embedded in legislation, policy and practice, and requires organisations to identify, prevent and address unfair and avoidable differences in health outcomes, access, and experience across populations.

As with other national and city-level systems globally, clarity on governance around heat-risk has been identified as an urgent need in London.

Roles and responsibilities for managing heat-health risk in London[330] were mapped using the World Health Organization Heat-Health Action Plan framework,[331] along with an assessment of strengths and gaps using the UN Extreme Heat Risk Governance Framework and Toolkit as a guide.[332]

UKHSA lead the health system response to hot weather; however, analysis and engagement with stakeholders identified significant challenges around system complexity, ongoing organisational and system change, and shifting roles and responsibilities around shared health outcomes.

These challenges will be addressed by embedding heat-risk management within emerging health system structures and partnership arrangements through two priority areas of focus:

- **5.1: Establishing a cross-system heat-health partnership** to inform decision-making and embed heat-health across clinical, operational and strategic functions.
- **5.2: Identifying approaches to enable oversight, coordination, and implementation of heat-health actions** within London's existing and emerging governance structures for health. For example, the London Health Inequalities Strategy,[333] London Health Improvement Plan, the Neighbourhood model and ICB Blueprint.[334]

330 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

331 World Health Organization (2026): Heat–health action plans: guidance, second edition

332 UN Office for Disaster Risk Reduction (2025): Extreme Heat Risk Governance Framework and Toolkit | UNDRR

333 GLA (2018): The London Health Inequalities Strategy (2018-28).

334 NHS England (2025): Update on the draft Model ICB Blueprint and progress on the future NHS Operating Model

Potential delivery partners

The **GLA Health Unit** will support delivery of these actions through strategic leadership and coordination, working in partnership with representatives from **Local Authority public health teams, UKHSA, the Office for Health Improvement and Disparities / DHSC** and the **NHS**.

Additional partners could include **Local Authority social care teams** and the **VCFS**.

Implementation pathway and timeframes

Short-term

Integrating heat-risk management into new health system structures and partnership arrangements will be implemented in the short term (2027 to 2030), pending health system reforms.

Medium and long-term

Partnership working to address the drivers of heat-health risk in London will begin in 2026–27 and continue into the long term (to 2050 and beyond).

Co-benefits

- Working in partnership will make more effective use of the limited resources and expertise in the system.
- A strengthened partnership will provide a foundation for building resilience for a wider range of climate threats, e.g. vector-borne diseases.

Relevant existing policies & programmes

- London Health Improvement Plan and London Health Improvement Board (in development).
- London Health Plan (in development).
- The GLA Act (2007).[335]
- UKHSA Adverse Weather and Health Plan.[336]
- NHS Green Plan: Climate Adaptation Framework.[337]
- The NHS ICB Blueprint.[338]

Key considerations for delivery

- Proactive consideration of opportunities and risks from health system organisational change.
- The absence of dedicated resource, programmatic support, and funding for delivery is a risk to delivery.

335 GLA Act (2007): Greater London Authority Act 2007 – Explanatory Notes

336 UK Health Security Agency (2026): Adverse Weather and Health Plan – GOV.UK

337 NHS (2025): Climate Adaptation Framework for NHS

338 NHS England (2025): Update on the draft Model ICB Blueprint and progress on the future NHS Operating Model

5.3, 5.4 & 5.5: Strengthen health system capabilities to protect those at highest risk from heat-health harms.

Overview and purpose

The responsibility for preventing harm to populations at higher risk of heat-related harms is shared across the London system. There is currently no strategic, system-wide coordination to assess population vulnerability; identify priority actions for prevention of health impacts; or target support for high-risk groups to manage heat risk in the community, and avoid the need for urgent and/or unplanned care.

Significant increases in excess avoidable mortality are observed in care homes, hospitals and domestic housing during heat episodes. Where vulnerability is well defined and associated with a specific setting (e.g. care homes, hospitals), the responsibility for taking action to avoid harm during UKHSA Heat-Health Alerting periods is clear. Additionally, the NHS holds statutory responsibilities to ensure patient safety and safeguarding, while the Care Quality Commission includes thermal comfort as a requirement for care settings.

However, the responsibility for ensuring that those settings become more resilient and adapt to increasing heat hazards and chronic exposure is less clear. For vulnerable populations in the community the responsibilities are also less readily delineated or defined.

UKHSA provides evidence-based guidance on vulnerable groups and actions to reduce heat-health harms; however, engagement with system partners identified gaps around the accessibility of this guidance for the groups at highest need (e.g. low levels of health literacy, people with Severe Mental Illness, households where English is not the main language).

Additional gaps were identified around advice and guidance for frontline health and care workers to protect their own health and wellbeing whilst delivering care during hot weather.[339]

There is now good evidence that high temperatures increase the risk of mortality and ill health in people with certain physical and mental health conditions. Many of these conditions are common and are themselves associated with deprivation and health inequalities (e.g. diabetes).

People with a heat-sensitive health condition may need support to manage their heat risk safely at home – both in preparation for, and in response to, hot weather. These priority areas of focus will support those at highest risk from heat-harms and address inequitable heat-health outcomes:

- **5.3: Developing and disseminating targeted resources,** for the health and care system, on priority actions **to support at-risk groups.**
- **5.4: Developing and disseminating tailored guidance, to help frontline staff manage their own heat risk** while providing care.
- **5.5: Embedding heat-risk management in routine care through pilot pathways for priority heat-sensitive conditions** – including severe mental illness, neurological disorders and diabetes.

339 UK Health Security Agency (2024): Research exploring the experience of care practitioners in relation to extreme temperatures

Potential delivery partners

The **Heat-Health Partnership for London** working in collaboration with **patient groups, frontline staff**, and **clinical leads**.

Implementation pathway and timeframes

Short and medium-term

Develop and disseminate resources on how to support people at risk (including patients and workforce).

Long-term

Build a heat-smart workforce and embed heat-risk management into care pathways over time.

Co-benefits

- Retention of staff may improve where health and wellbeing are protected during high temperatures, and where staff feel they have the knowledge to carry out their roles.
- Mainstreaming the management of heat risk within existing care pathways will build capacity and strengthen the resilience of the health care system.

Relevant existing policies & programmes

- Core20PLUS5,[340] a national approach to reducing health inequalities.
- The GLA Act 2007 includes statutory responsibilities for addressing health inequalities.[341]

Key considerations for delivery

- The absence of dedicated resource, programmatic support and funding for delivery is a risk to delivery.
- Reduction in healthcare system capacity to support regional and place-based partnership work is also a risk for delivery.

Credit: Amir Arabshahi on Unsplash

340 NHS England (n.d.): Core20PLUS5 (adults) – an approach to reducing healthcare inequalities

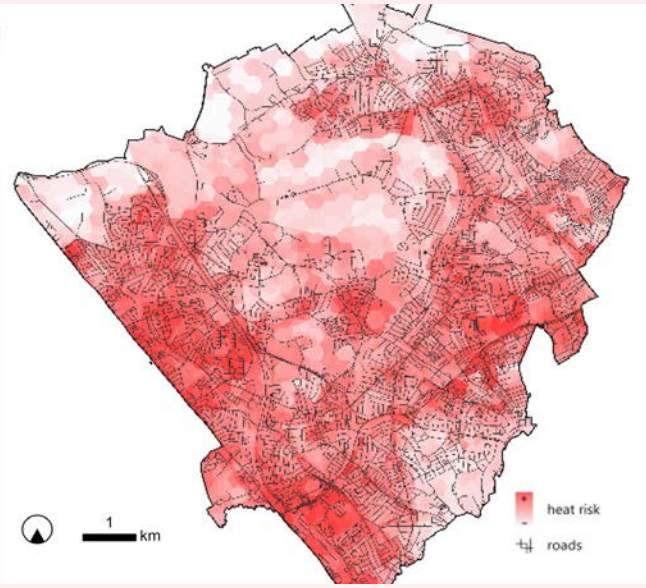
341 GLA Act (2007): Greater London Authority Act 2007 – Explanatory Notes

CASE STUDY: BARNET COUNCIL'S "HEAT CAN HARM" CAMPAIGN

Barnet Council's campaign explored residents' attitudes to heatwaves, ensuring that the Council's strategy and its heatwave communications were shaped by residents' lived experience. The campaign laid foundations for a community led response to extreme heat and improved population level prevention by increasing health literacy so residents can act early.

Working with the University of Derby's Social Higher Education Depot (SHED), the Council delivered two days of resident engagement at Brent Cross Shopping Centre, coinciding with a heatwave. Council officers spoke with residents about how heat affects them, how they cope during hot weather, and who may be most at risk during heatwaves. To support the engagement, council officers used interactive tools – including a garden shed panel, heat related objects (such as hats and sunscreen), Barnet's bespoke heat risk map, and newspaper headlines from the 2022 heatwaves. The council also brought together community leaders from across the borough to take part in a discussion on how extreme heat impacts communities in Barnet; and how closer collaboration with the council could help to protect vulnerable residents.

The engagement helped to create Barnet's borough-wide "Heat can harm" communications campaign – with tailored messaging for older people; individuals with long-term health conditions; parents and carers of young children; and the wider public. Campaign assets were designed for repeat use during Yellow and Amber Heat-Health Alerts, embedding heat readiness into routine preparedness rather than treating heatwaves as isolated events.



Credit: Barnet Council

The Council also strengthened local heat resilience through designating 'Cool Spaces' in the borough, creating Barnet specific branding, improving signposting, and installing drinking water fountains in four libraries. Priorities for Barnet's Public Health team now include identifying community needs through a Climate Change and Health Needs Assessment on heat risk, improving heatwave resilience in primary care, and strengthening public health messaging.

Credit: Barnet Council

5.6 & 5.7: Mobilise health system levers to reduce indoor overheating.

Overview and purpose

The levers and responsibilities for addressing indoor overheating risk through building regulations and urban planning sit outside of the health and care system. These are addressed through a Health in all Policies approach to the Built Environment sector in this report. The process of mapping roles and responsibilities for managing heat-health risk in London identified specific opportunities for the health system to support action, particularly for high-risk households.

UKHSA provides advice on behaviours and actions that individuals, or those caring for them, can take to reduce individual exposure, such as using a fan.[342] However, there is evidence that those at risk do not identify themselves as heat-sensitive,[343] may lack adaptive capacity, and many require support to understand and act on this advice.

Two priority areas of focus were identified to address this:

- **5.6: Developing guidance for using the Disabled Facilities Grant (DFG)[344] for housing interventions to reduce indoor overheating,** including low-cost options such as indoor blinds. This action provides a test case for accessing routine sources of funding specifically for adapting housing to reduce overheating. The DFG is not currently used to support housing adaptations for heat-risk management in London, but this is allowable under the grant's guidance.
- **5.7: Using learning from care pathways work to inform a system-wide, evidence-based approach to implementing Awaab's Law**, including individual risk factors for heat-harm.

Credit: Darren Richardson on Unsplash

342 UK Health Security Agency (2024): Beat the heat: advice for hot weather

343 Turner et al. (2024): Health perceptions of adverse weather in older adults in England: analysis of 2019/20 survey data

344 GOV.UK (n.d.): Disabled Facilities Grants

Potential delivery partners

The **GLA Health Unit** will support delivery of these actions through strategic leadership and coordination, working in partnership with representatives from **NHS organisations**, and **local authority public health and social care representatives**.

Implementation pathway and timeframes

Short-term

- Develop DFG guidance in 2026-27.
- Establish the Heat-Health Partnership as the system point of contact for expertise on indoor overheating and health; engage London health determinants research collaboratives and housing leads to scope health system input (2026-30).

Medium-term

- Apply learning from the application of Awaab's Law to the implementation of the Decent Homes Standard when it comes into force in 2035.[345]

Co-benefits

Effective implementation of Awaab's Law in London will help protect tenants from a wide range of hazards in the home.

Relevant existing policies & programmes

- Awaab's Law.[346]
- The Decent Homes Standard.[347]
- Housing Health and Safety Rating System.[348]

Key considerations for delivery

- Use of the DFG for housing adaptations to manage heat risk will require the development of a new process for London.
- The criteria and process for heat-risk assessment and management for Awaab's Law are not yet finalised; and may evolve over the timeframe for delivery.

5.8, 5.9 & 5.10: Establish the foundations for a climate-resilient health system for London.

Overview and purpose

The UK government is a founding member of the Alliance for Transformative Action on Climate and Health, which works to build resilient and sustainable health systems globally.[349] The Alliance has committed to the delivery of a climate-resilient and low-carbon health system. However, healthcare system reform in London has resulted in a significant reduction in capacity, capability and leadership to support NHS green plans and related adaptation planning processes.

345 MHCLG (2026): The New Decent Homes Standard: policy statement
346 MHCLG (2025): Awaab's Law: Guidance for social landlords – Timeframes for repairs in the social rented sector
347 MHCLG (2026): The New Decent Homes Standard: policy statement
348 MHCLG (2006): Housing health and safety rating system (HHSRS): guidance for landlords and property-related professionals
349 World Health Organisation (n.d.): Alliance for Transformative Action on Climate and Health (ATACH)

Recent activities to support healthcare service organisations to carry out climate change risk assessments using the recommended approach have highlighted challenges; and clarified the need for heat-risk and population vulnerability assessments to be carried out in partnership with place-based leads.

Healthcare-system resilience is essential for the delivery of effective patient care, and the productivity and safety of the healthcare workforce. A resilient healthcare system will support the most vulnerable Londoners when they need it most.

The priority areas of focus under this theme will establish the foundations for a climate-resilient health system:

- **5.8: Identifying options to integrate clinical and public health expertise in risk and vulnerability assessments**, including a 'once for London' approach to inform Trust, ICB and borough adaptation plans.
- **5.9: Clarifying governance and delivery functions for NHS Green plans at regional, ICB and Trust levels.**
- **5.10: Characterising the scale and extent of overheating in London's healthcare estate.** This will include supporting recruitment for the HEARTH research project (National Hub on Net Zero, Health and Extreme Heat) to assess overheating in healthcare estates,[350] and using the findings to develop a standardised approach to assessing overheating in healthcare estates. It will also include collating evidence from NHS Emergency Preparedness Resilience and Response Core standards reports to inform an assessment of system heat risks.[351]

Credit: Abhijit Chirde on Unsplash

350 HEARTH (n.d.): National Hub on Net Zero, Health and Extreme Heat. The HEARTH project is an academic research programme that aims to understand the full range of health impacts associated with net zero targets and climate adaptation in the context of extreme heat in vulnerable settings including homes, care settings, prisons, and hospitals

351 NHS England (2025): Emergency preparedness, resilience and response: core standards

Potential delivery partners

Led by the **NHS** at regional level, working in partnership with the **GLA** and **health and care organisations** at sub-regional level.

Implementation pathway and timeframes

Short-term

Implementing action in these priority areas to provide the foundation for supporting longer-term decision-making and adaptive planning. This will help strengthen the climate resilience of the healthcare sector.

Co-benefits

- Build capacity and capabilities in the healthcare workforce.
- Efficient evidence integration into risk assessment and adaptation planning can support management of other climate risks, such as flooding and vector-borne disease.

Relevant existing policies & programmes

- NHS Green Plans.[352]
- The Health and Care Act 2022 places a legal duty on NHS organisations to consider the impact of their decisions on inequalities and population health.[353]

Key considerations for delivery

The system faces challenges from reduced capacity for coordination and subject matter expertise to support the delivery of NHS Green plans due to healthcare system reform.

5.11: Strengthen outreach and welfare checks for vulnerable groups during heat risk events, including people experiencing rough sleeping, by utilising the Hot Weather Rough Sleeping Guidance.

Overview and purpose

When Heat-Health Alerts are triggered, UKHSA guidance recommends that action is taken to protect vulnerable people. There is evidence that timely action can reduce premature deaths and ill health. In the 2022 heatwave, there were around 1,000 fewer heat-related deaths in the UK than models predicted – likely due to an effective cross-agency response and behaviour change in response to public messaging.[354]

Multi-agency responses could include outreach and welfare checks on vulnerable individuals and implementation of the Hot Weather Rough Sleeping Guidance[355] to support people sleeping rough. Currently, Heat-Health Alerts trigger some activity across London; but further work and resources are needed to ensure they are consistently implemented across boroughs and can scale as heat risk escalates.

Outreach and welfare checks for vulnerable people

Welfare checks on high-risk individuals can be undertaken via door knocking, phone calls, street outreach, and text messages.

352 NHS England (2025): Green plan guidance
353 Legislation.gov.uk (2022): The Health and Care Act 2022
354 Thompson et al. (2025): Turning Warnings into Action: The UKHSA Weather-Health Alerting System Success Story
355 GLA (2024): Protecting People Sleeping Rough During Hot Weather: Guidance for London

As well as checking for indoor overheating (where applicable), providing advice and support, checks may provide an opportunity for early intervention should the individual need it. Other practical measures can be taken, such as providing cool kits. These kits could include things such as fans, gel packs, cool mats, electrolyte gels, and window screens.

The initial priority is to expand capacity of existing systems to provide outreach. This could include multi-agency planning and coordination groups that operate locally, expanding the role of VCFS organisations and ensuring they are supported and coordinated to provide welfare services during extreme heat. Digital tools, such as the NHS app, could also be used to efficiently reach and communicate with vulnerable people. However, many individuals at high risk from heat also have low levels of adaptive capacity, with low levels of health literacy and a high potential for digital exclusion.[356] A wide range of opportunities for contact and communication should be explored.

Using the Hot Weather Rough Sleeping Guidance

There is guidance available for local services to support people sleeping rough in hot weather, as well as those in emergency accommodation. The guidance includes the provision of necessary support to homeless people, such as water, sun cream, hats and advice; and welfare checks on those in accommodation and short-term cool accommodation when Heat-Health Alert thresholds are reached.

There are some concerns from the VCFS that hot weather responses for people sleeping rough are inconsistent between boroughs.[357]

A first step towards delivery of a more consistent service could include a review of provision across boroughs to identify gaps and good practice. This review should include engagement with people sleeping rough, and those in emergency accommodation, to understand their needs and perspectives.

Potential delivery partners

Borough social care teams, and **housing and rough sleeping teams**, are generally responsible for providing outreach and support to vulnerable people. The **VCFS**, and its existing relationships with vulnerable people, are key to effectively identifying people in need and delivering trusted communications, welfare checks and outreach. **Water and energy providers** also have priority registers that could support outreach, although use of these may be limited by data quality and data sharing issues.

London Councils and the **GLA** have updated hot weather guidance for rough sleepers for summer 2026.

Users of outreach and rough sleeping services should be involved in the design and co-development of provision to ensure their needs are met.

356 Good Things Foundation (2025): Our Digital Nation

357 Museum of Homelessness (2026): Severe Weather Emergency: Second Edition

Implementation pathway and timeframes

Short-term

- Consider how to best ensure that all relevant partners have access to the Hot Weather Rough Sleeping Guidance.

Medium-term

- Implement additional, effective solutions at scale as the evidence-base for these improves. For example, the use of mobile cooling units, cooling centres or personal devices to provide real-time biometric monitoring of heat strain and potentially harmful exposure to indoor overheating.

Co-benefits

- Improved community cohesion and resilience to other risks where community networks are built upon and strengthened.
- Opportunities to build connections with and multi-agency support for vulnerable people which can be used to address other health and wellbeing issues.

Relevant existing policies & programmes

- GLA and London Councils' guidance for protecting people sleeping rough during hot weather.[358]
- The London Resilience Unit Community Resilience Toolkit.[359]
- UKHSA guidance for the VCFS[360] and health and care services.[361]
- The London Community Resilience Fund.[362]

Key considerations for delivery

- Welfare checks can be delivered via existing networks and services.
- The number of vulnerable people far exceeds the existing capacity to deliver individual welfare checks, and morbidity and mortality start to increase within 24 hours, so scaling the response is a major challenge.
- Accurate identification of households most vulnerable to heat is challenging given the complexity of risk factors that are contextual in nature. This is compounded by long-standing barriers to data-sharing, especially with non-government agencies such as the VCFS.

358 GLA (2024): Protecting People Sleeping Rough During Hot Weather: Guidance for London
359 London Resilience and Groundwork (2025): London Community Resilience Toolkit
360 UK Health Security Agency (2024): Heat-Health Alerting system – guidance for voluntary and community sectors
361 UK Health Security Agency (2024): Heat-Health Alerting system: guidance for health and social care providers
362 GLA (n.d.): London Resilience Communities

11

Infrastructure

CONTEXT

London's infrastructure systems underpin the city's economy and quality of life.

Transport, energy, water, communications, and waste management services are vital to activities across the city, and they are increasingly under pressure from heat **(see Figure 16)** and other climate risks. Climate risks are identified as a major theme affecting system resilience and security in the London Infrastructure Framework, which recognises that existing infrastructure requires investment to ensure that it can meet the needs of residents and visitors by 2050.[363]

London's infrastructure systems face risks relating to service failures, asset deterioration, reduced operational efficiency, as well as health and safety impacts on infrastructure users and workers. A key example is the London Underground. Temperatures on the Victoria line between June and October average above 30°C.[364] TfL reported £8.4 million in lost revenue across operations during the July 2022 heatwave, due to some services being delayed and others closed.[365] The true cost is likely to be higher due to infrastructure damage, staff-related costs, and additional operational responses.[366]

Infrastructure systems rarely operate in isolation; their interdependent nature means that there is also the risk of cascading impacts across sectors. For example, the transport sector relies heavily on the energy, communications and water sectors.

System-wide heat risk planning must balance immediate adaptation measures with longer-term structural transformation of infrastructure networks to ensure systems are resilient, reliable, and can meet current needs as well as support future growth.

Many of London's infrastructure operators have been working on climate adaptation for decades, providing Adaptation Reporting Power submissions to the Department for Environment, Food and Rural Affairs (Defra) approximately every five years. However, gaps exist in reporting – particularly in the telecommunications and waste management sectors, and for the management of local roads. Both investment and the pace of delivery on adaptation need to ramp up.[367]

363 GLA and London Councils (2026): London Infrastructure Framework
364 BBC News (2024): Victoria line hottest on London Underground
365 TfL (2023): Annual Report and Statement of Accounts 2022/23
366 UK Health Security Agency (2026): Interim heat mortality monitoring report, England: May and June 2026 - GOV.UK
367 CCC (2025): Progress in adapting to climate change: 2025 report to Parliament

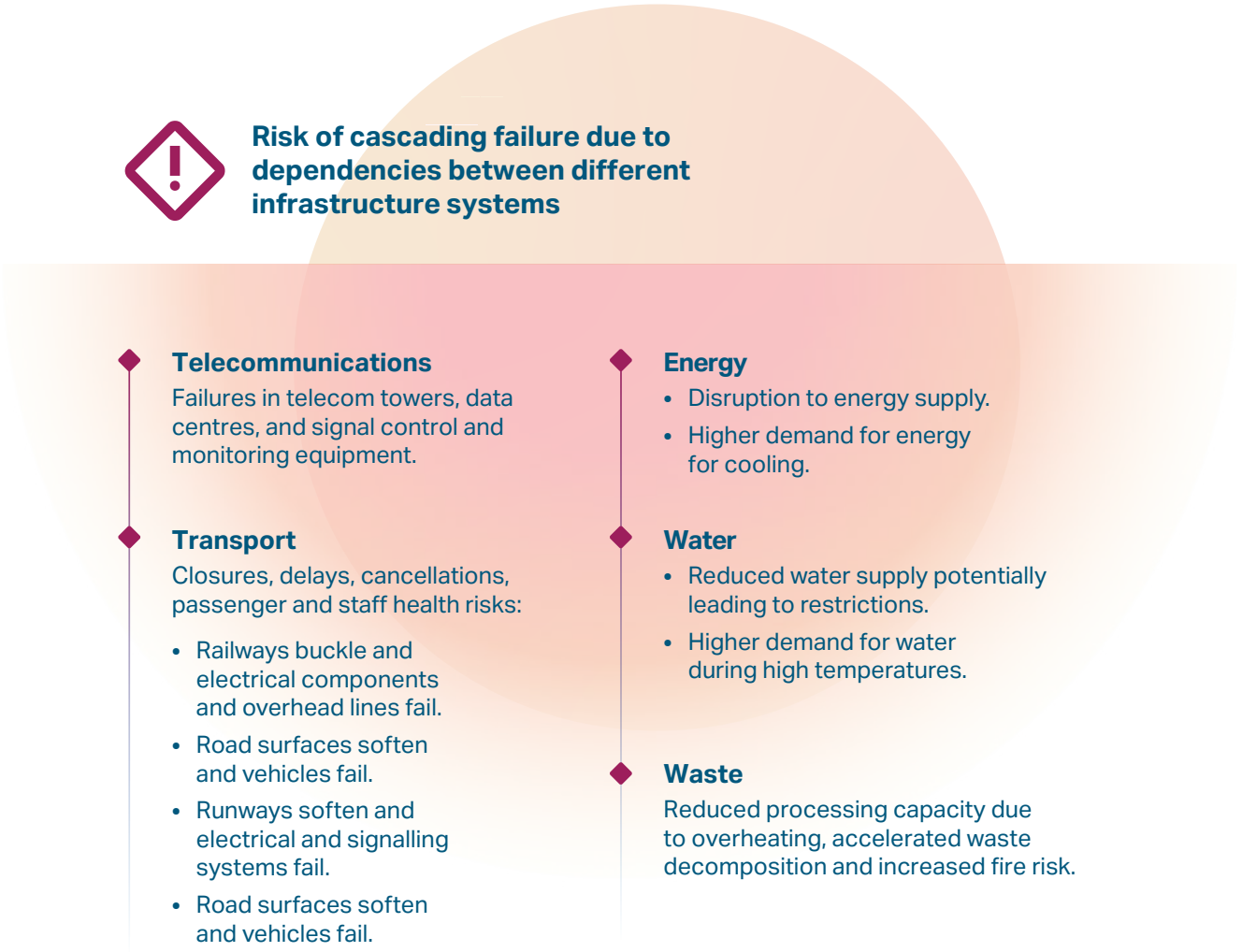


Figure 16: Summary of key heat risks in the infrastructure sector.

Sector objectives

- Maintain London's essential services (such as transport, power, telecommunications, water and waste management) safely, and as reliably as operationally feasible during hot weather.
- Ensure that resilience to hot weather, and to more frequent and severe heatwaves, is embedded in infrastructure upgrades and future investment planning.
- Help reduce inequalities by ensuring that London's most vulnerable people and communities experience less disruption from infrastructure failures.

Priority areas of focus for this sector

- Improving the transport sector's understanding and management of direct heat-related risks to infrastructure assets and services by, for example, exploring the use of heat-resilient materials and technology.
- Continue ensuring safe working conditions for transport workers, and journeys that are as comfortable as operationally feasible for passengers.
- Reducing strain on water and wastewater systems during high temperatures and peak demand.

- Enhancing phone and internet networks to avoid disruption caused by high temperatures.
- Making electricity and gas networks reliable during hot weather and peak energy demand.
- Reducing the impacts of hot weather on waste management services, including fire risk.

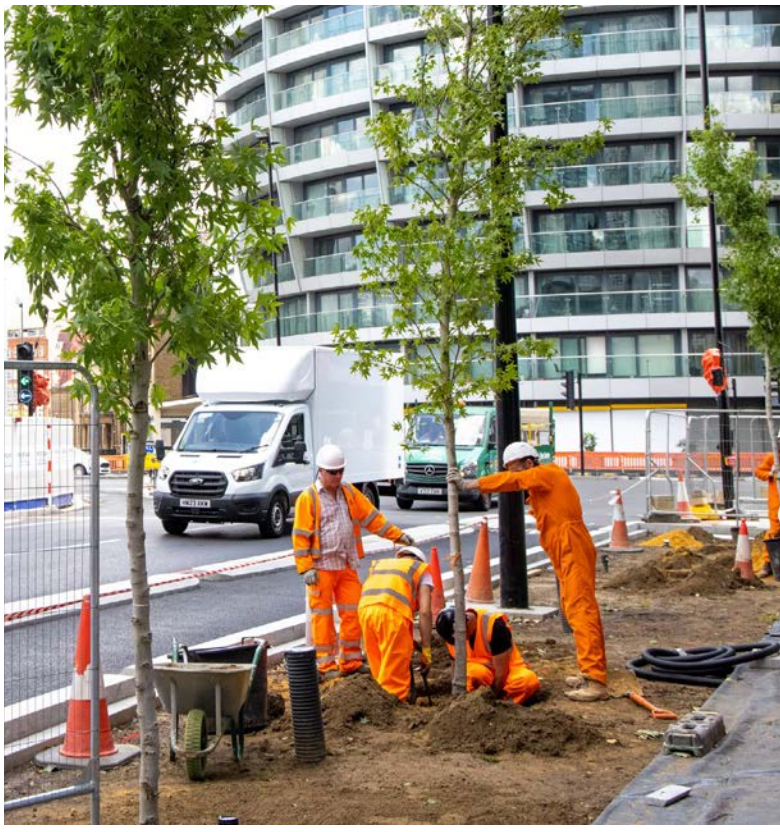
Links to other sectors

London's infrastructure is essential to the overall resilience of the city, and the effective functioning of other sectors during heatwaves and hot weather. For example:

- **Built environment –** resilient energy systems that power cooling and ventilation systems, preventing buildings from overheating during extreme heat.
- **Economy and business –** resilient infrastructure networks that reduce economic losses for businesses from heat-related disruptions. Reliable energy, water and digital networks allow businesses to continue operating. Resilient transport systems allow people to reach work, support the timely deliveries of goods, and the smooth running of supply chains.
- **EPRR –** resilient road networks allow emergency services to minimise their response times, as they experience fewer delays and closures. This is critical during heatwaves as emergency services experience higher demand. Resilient telecommunications networks improve the reliability of emergency communications and prevent outages that can disrupt operations.
- **Green space and nature –** resilient water infrastructure supports the irrigation of urban trees, parks, and green infrastructure.
- **Health and care –** reliable energy supply and digital connectivity ensure that hospitals, care homes, and care services remain operational during heat events. Resilient water infrastructure supports hydration and sanitation during heat events, improving public health outcomes. Resilient and efficient public transport helps to reduce pollutant emissions from vehicles, which otherwise can create air-quality concerns when combined with heat.

Priority areas of focus

For each of the priority areas of focus below, this report includes a possible sequence in which actions and activities can be delivered, looking out to 2050. Further engagement with partners is required before structures, roles and commitments are finalised.



Credit: Transport for London

6.1 Improving the transport sector's understanding and management of direct heat-related risks to infrastructure assets and services by, for example, exploring the use of heat-resilient materials and technology.

Overview and purpose

London's road, rail, port, and airport infrastructure must be adapted to ensure safe and reliable services during high temperatures. The CCC recommends that from now through to 2050, disruption to high-priority road and rail routes from climate hazards should be as low, or lower, than today's level.[368] Infrastructure operators are already taking action, but investment and the pace of delivery will need to ramp up. Additionally, transport providers need to work together with other infrastructure providers to ensure interdependencies are managed.

Road networks face a range of risks, including softening road surfaces, traffic light signal failure, battery failure in electric vehicles, and health risks to road workers.[369] Rail network impacts include buckling of tracks, sagging of overhead electrical lines, failure of electrical components, and health and wellbeing risks for rail workers and passengers.[370]

For London's port and airports, heat can cause deterioration of airport runways, quays, and loading equipment, increase the failure risk of electrical and signalling equipment, and present health and safety risks to workers and users.[371][372]

Potential delivery partners

Infrastructure providers are the primary potential partners for this area of focus, and they are overseen by the **Department for Transport and regulators**. They include **TfL, National Highways, London borough highway teams, Network Rail, HS1, HS2, train operating companies, the Port of London Authority, and London's airports.**

Implementation pathway and timeframes

Short-term

- Improve data collection and heat-risk forecasting to inform operational responses – for example, speed restrictions and changes to work patterns.
- Integrate climate resilience into business planning and maintenance programmes.
- Continue monitoring of critical infrastructure.
- Determine how best to integrate climate resilience into engineering standards.

368 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee
369 National Highways (2024): Climate change and the strategic road network: fourth round adaptation reporting power
370 Network Rail (2024): Network Rail Fourth Adaptation Report
371 Port of London Authority (2024): Climate Change Adaptation Report
372 Heathrow Airport (2026): Climate Adaptation Strategy

Medium and long-term

- Use improved data to identify the most critical heat-vulnerable assets.
- Prioritise these for renewal in business planning.
- Use the Sustainable Drainage Systems (SuDS) for Streetworks Market to deliver SuDS at scale by leveraging streetworks carried out across London each year, incentivising promoters to install SuDS in place of traditional asphalt and concrete.

Co-benefits

- Reduced cascading disruption, ensuring reliable freight logistics, essential good deliveries and waste management.
- Reduced journey times, congestion and emergency response times.
- Safe, reliable and comfortable public transport networks help encourage mode shift away from cars, helping to reduce congestion, air pollution, GHGs, and road collisions.

Relevant existing policies & programmes

- The Department for Transport has published a Climate Adaptation Strategy for the transport sector.[373]
- The transport sector's Adaptation Reporting Power submissions to Defra set out each organisation's strategic objectives and policies in relation to climate change adaptation.[374]
- TfL's Climate Change Adaptation Plan.[375] TfL is assessing operational heat risks, and aims to integrate adaptation into business planning by the end of 2026.
- Transport providers have adverse weather management plans.[376]
- Network Rail Extreme Heat Taskforce aims to improve understanding of heat risks and adaptation actions.[377]
- National Highways updated design standards, monitoring, and additional research.[378]
- Heathrow Airport is integrating adaptation into net-zero infrastructure projects and enhancing monitoring.[379]
- The Port of London Authority aims to develop extreme weather contingency plans.[380]

373 Department for Transport (2025): Climate adaptation strategy for transport

374 Defra (2025): Climate change adaptation reporting: fourth round reports

375 TfL (2023): Climate Change Adaptation Plan

376 GLA (2025): Background on the Mayor and the GLA's work on managing heat risk and cooling in London in the context of climate change. Internal working paper (unpublished)

377 Network Rail (2024): Network Rail Fourth Adaptation Report

378 National Highways (2024): Climate change and the strategic road network: fourth round adaptation reporting power

379 Heathrow Airport (2025): Heathrow Climate Adaptation Report

380 Heathrow Airport (2026): Climate Adaptation Strategy

Key considerations for delivery

- The planning and delivery of adaptation measures to manage heat risk should also consider other climate risks, inequalities, and other issues as part of a holistic, place-based approach to adaptation.
- Resilience measures should be embedded in regular maintenance and renewal programmes to limit disruption.
- Improving data on the impacts of current weather conditions on transport personnel, infrastructure and customers will help make an evidence-based business case for adaptation.

6.2 Continue ensuring safe working conditions for transport workers, and journeys that are as comfortable as operationally feasible for passengers.

Overview and purpose

The high temperatures experienced on London's public transport systems during periods of hot weather present risks to passenger and staff safety and comfort.

Passive cooling, ventilation, and in some cases active cooling should be prioritised in the hottest and most heavily used stations and services. Consistent and clear passenger and staff guidance should maximise cooling effectiveness and reduce heat risk. This includes when and how cooling measures should be used, such as operation of windows and air-conditioning; and protocols for providing drinking water.

The removal and recycling of secondary waste heat from the Underground's tunnels and stations could be further explored, improving conditions on the network itself and contributing to net-zero objectives.[381]

Potential delivery partners

TfL, Network Rail, Train Operating Companies and bus operators are the primary potential delivery partners. **Public transport users** also have a role to play by staying hydrated and safe in hot weather.

Implementation timeframes

Short term

- Continue to review and update communications to passengers and staff on staying safe during hot weather.
- Continue to explore how best to adapt work practices to reduce heat risks, such as scheduling work during cooler periods, adjusting shift times, taking frequent breaks in cool areas, and enhancing hydration to improve staff safety and productivity.
- Continue testing and piloting measures to ventilate and cool key stations and services.

Medium to long term

- Integrate air conditioning into new rolling stock as part of major line upgrade programmes, incorporating designs and lessons learned, such as from the Piccadilly line upgrade.
- Continuously review and seek to improve the thermal comfort of other passenger vehicles, such as buses.

381 Arup (n.d.): Reusing waste heat from the London Underground rail network

Co-benefits

- Environmental and social benefits from safe and comfortable public transport use over private vehicles.
- A safe and healthy workforce is more effective and efficient, resulting in improved transport services.

Credit: Transport for London

Relevant existing policies & programmes

- The Department for Transport has published a Climate Adaptation Strategy for the transport sector.[382]
- The transport sector's Adaptation Reporting Power submissions to Defra set out each organisation's strategic objectives and policies in relation to climate change adaptation.[383]
- TfL's Climate Change Adaptation Plan.[384]
- Air conditioning systems, openable windows, white roofs, tinted windows, roof and engine insulation on some public buses.[385]
- Incorporation of air conditioning into new London Underground rolling stock, such as S-stock trains on sub-surface lines.[386]

Key considerations for delivery

- High costs associated with major infrastructure upgrades.
- Physical and design limitations at older Tube stations with deep-level assets.
- Impacts on temperatures at station platforms as heat is displaced elsewhere from carriages.
- High energy demand and potential carbon emissions of cooling systems.

382 Department for Transport (2025): Climate adaptation strategy for transport
383 Defra (2025): Climate change adaptation reporting: fourth round reports
384 TfL (2023): Climate Change Adaptation Plan
385 TfL (2019): FOI request detail: air pollution and temp devices
386 TfL (2025): State-of-the-art Piccadilly line trains to begin operating in 2026

CASE STUDY: TFL'S APPROACH TO HEAT-RISK MANAGEMENT

Every day, TfL handles millions of customer journeys across its network, which includes the Tube and London buses. Ensuring the safety of customers and staff during hot weather is a priority for the organisation.

There are 192 air-conditioned Tube trains, covering approximately 40 per cent of the network; and all London Overground and the Elizabeth line trains are air-conditioned. On older parts of the Tube network, TfL has introduced station-cooling systems including industrial-sized fans, and a number of stations have water refill points. Every bus has a reflective roof and insulation, while new double-decker buses have air cooling. TfL also monitors track temperatures, air conditioning faults, and moving parts of tracks and crossings.

During the July heatwave in 2022 there were 5 million fewer passengers on the London Underground, leading to a revenue loss of approximately £8 million.[387] However, costs are likely much higher, with other impacts including asset failures, delays in transport services and construction work, and adverse health and wellbeing impacts on staff and customers.

In response, TfL has improved its risk assessments and adverse weather plans. To give customers the best service, TfL is also working to update operational procedures, telling customers about changes during weather disruption, and repairing damage quickly after extreme weather events.

TfL's 2023 Climate Change Adaptation Plan[388] sets out the actions TfL is taking to adapt its network, improve resilience, and create a more attractive, nature-rich, liveable city with stronger communities.

Key areas of focus are on the following:

Leadership and governance – TfL has updated its Safety, Health and Environment Management System to include climate risk and adaptation guidance for staff.

Organisation and people – TfL developed bespoke training in 2025 and has now trained more than 700 staff on climate risk and resilience.

Risk management – TfL is cascading climate risks across all levels of its Enterprise Risk Management Framework.

Information management – TfL has amended a key incident reporting system to assess the incidents that can be attributed to weather events.

Capital and operational delivery – TfL has targets for delivery of SuDS, which help cool the city as well as preventing flooding.

Collaboration, communication & reporting – TfL works with a wide range of organisations, for example, on its groundbreaking climate interdependencies project.[389]

387 TfL (2023): Annual Report and Statement of Accounts 2022/23

388 TfL (2023): Climate Change Adaptation Plan

389 Mott MacDonald (2024): Climate change and interdependency risks for London's land-based transport sector

6.3 Reducing strain on water and wastewater systems during high temperatures and peak demand.

Overview and purpose

Prolonged high temperatures drive increased water demand. This often co-occurs with periods of dry weather, reducing water supply and further increasing the strain on water systems. As summers become hotter, they are also expected to become drier, increasing the risk of water shortages. In the July 2022 heatwave there was a 50 per cent increase in water consumption in London, and reservoirs were at their lowest for 30 years.[390] Without further action, Thames Water have estimated that they could face a shortfall of over 1 billion litres per day by 2050,[391] while estimates suggest that not having enough water to go around could cost London's economy £500 million per day.[392] Not only does water scarcity pose a risk to the economy, nature and communities, but it also creates a challenge for managing fire risk during hot weather. These challenges indicate the need for water companies to work together with other stakeholders when designing and implementing adaptation measures.

System capacity should be enhanced so that water supply, treatment works, pumping stations, and distribution networks can operate reliably during peak summer demand and heat driven supply constraints, including ensuring sufficient supply and pressure for firefighting. The CCC recommends that by 2040, water supply should be resilient to a one-in-500-year drought.[393]

Alongside infrastructure upgrades, changes in behaviours and system operation are essential to reduce pressure on water supplies. To enhance long-term water security, investment should be scaled up through a portfolio-based and integrated water management approach, recognising that no single intervention can address future challenges in isolation. A balanced portfolio of measures – including smart meters, active leakage reduction, water-efficiency initiatives, water recycling and reuse, rainwater harvesting, and targeted new supply schemes – should be implemented in a coordinated manner to deliver greater resilience and adaptability across the entire water system.

Wastewater treatment systems should be adapted to perform effectively in high temperatures, ensuring treatment processes remain reliable and safe, and gas accumulation is prevented in sewers.

Heat resilience should be integrated into asset condition monitoring and renewals, to safeguard service delivery, as well as protect public health, worker safety, and the environment during heat events.

Potential delivery partners

London's water companies are the primary potential delivery partners, supported and overseen by the **Environment Agency, Ofwat, Drinking Water Inspectorate,** and **Defra.**

390 Howard-Boyd, Leigh and Sutton (2024): The London Climate Resilience Review

391 Thames Water (2024): Water resources management plan 2024

392 Thames Water (2025): Thames Water launches consultation on vital project to safeguard London from drought

393 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

The boroughs, homeowners, developers and businesses play important roles in implementing water-efficiency measures in homes, buildings and on construction sites, as well as by using water wisely during hot weather.

The **GLA** is working with partners including **boroughs, Environment Agency** and **Thames Water** to deliver Integrated Water Management Strategies across London. This includes the Subregional Integrated Water Management Strategy,[394] an approach endorsed in the LCRR.

Implementation pathway and timeframes

Short-term

Continue to deliver water-use education programmes and smart meter rollout; and support water-efficiency measures, and rainwater harvesting, to increase drought and heat resilience.

Medium and long-term

- Deliver nature-based and grey engineering approaches to enhance water-system capacity at catchment scale, including building reservoirs, large-scale water transfer projects, and new water recycling plants.
- Identify and work to remove bottlenecks in water distribution networks.
- Identify the most critical assets across the water and wastewater systems and ensure appropriate upgrade plans are in place.
- Adopt an integrated water management approach that coordinates interventions to maximise system-wide benefits and resilience.

Co-benefits

- Enhanced system capacity, water efficiency and water quality deliver economic (e.g. reduced workplace disruption), environmental (e.g. reduced risk of river over-abstraction) and social (e.g. maintained water supply for vulnerable individuals and communities) co-benefits.
- Wastewater treatment facilities have the potential to produce low-grade heat for district networks.

Relevant existing policies & programmes

- Thames Water, Affinity Water, and Essex & Suffolk Water 2024 adaptation reports submitted to Defra.[395]
- Climate-scenario analysis incorporated into future water and wastewater company investment and business planning.
- GLA's Integrated Water Management Strategies aim to embed climate resilience into London's water networks.[396]

Key considerations for delivery

- High upfront and ongoing costs.
- Some measures have a long lead time to benefits.
- Align water efficiency upgrades with planned maintenance to minimise disruption.
- Consider opportunities to address other risks and taking a portfolio-based approach.

394 Mott MacDonald (2023): Subregional integrated water management strategy – East London

395 Defra (2024): Climate adaption reporting fourth round: water

396 GLA (2024): DD2727 Infrastructure Coordination Service – Integrated Water Management Strategies Programme

6.4 Enhancing phone and internet networks to avoid disruption caused by high temperatures.

Overview and purpose

High temperatures increase the failure risk of electronic components and are a critical driver of telecoms outages. The CCC recommends that, from now through to 2050, there should be no losses of service to Critical National Infrastructure functions, including emergency calls, due to climate-related hazards.[397]

There are a range of solutions for this issue, including changing equipment specifications to be more heat resilient. For example, the roll-out of full-fibre networks should be accelerated, as these networks contain fewer active electronic components that can fail in extreme heat.

Network upgrades should be coordinated with the retirement of legacy infrastructure to reduce the number of physical sites vulnerable to extreme heat.

Additional solutions include upgrading cooling and ventilation for telecoms infrastructure, such as cabinets, data centres, and mobile base stations; and installing cabinets in cooler areas where possible, and painting them in lighter colours.

Finally, the expansion of backup battery power capacity at critical mobile sites and network hubs could help enable the continuity of essential services following heat-induced power outages.

Potential delivery partners

Infrastructure providers who deploy fibre networks and mobile networks, overseen by the **Department for Science, Innovation & Technology** and **Ofcom.** London benefits from a wide range of infrastructure providers who are the primary potential delivery partners. Data centre operators and electricity distribution network operators also have opportunities to support this priority area of focus.

Organisations providing critical services, such as hospitals, that rely on in-house data centres on their premises also have a role to play in increasing resilience.

Credit: Olanma Etigwe-uwa on Pexels

397 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

Implementation pathway and timeframes

Short-term

- The roll-out of resilient full-fibre networks is already under way, expected to reach almost the entire country by 2032.[398]
- Further analysis of the risk of heat to telecommunications, to better understand the potential consequences.
- The expansion of backup battery power capacity and installation of new, lighter-painted cabinets in cooler locations can also begin to be implemented in the short term.

Medium and long-term

- Further upgrading of cooling and ventilation for telecoms infrastructure and data centres.
- Legacy infrastructure should continue to be retired.
- Existing cabinets should be repainted in lighter colours, in alignment with planned maintenance and investment cycles.
- Organisations providing critical services should ensure, where possible, that their data servers and/or data centres are resilient to heat risk. This includes considering where any back-up data is located, to help reduce the likelihood of services being impacted by a single weather event.

Co-benefits

- Reduced economic losses from outages and disruptions.
- Increased reliability of emergency communications and transport signalling.
- Improved asset resilience extends long-term asset lifespan, reducing maintenance and upgrade requirements.
- Backup power supports resilience against other hazards.

Credit: Brett Sayles on Pexels

398 GOV.UK (2025): Project Gigabit

Relevant existing policies & programmes

- Telecommunication providers have reported no current material risk to operations from climate change.[399]
- Adaptation reports developed by industry associations.[400]
- BT and Openreach resilient full-fibre networks, closure of legacy infrastructure, and cooling upgrades.[401]

Key considerations for delivery

- Infrastructure upgrades must consider other hazards.
- Align upgrades with planned maintenance and renewal to minimise disruption.

6.5 Making electricity and gas networks reliable during hot weather and peak energy demand by, for example, ensuring Local Area Energy Plans (LAEPs) are implemented.

Overview and purpose

Electricity and gas networks face pressures during heat events, particularly from high demand for electricity. There are also direct and indirect risks to network asset function, as well as energy sector worker health, safety and wellbeing.

High temperatures drive peaks in electricity demand related to refrigeration and cooling. The UK experienced a six per cent rise in energy demand during the 2022 heatwave period, equating to an extra 120Gwh of electricity demand.[402]

Heat also reduces asset efficiency and increases pressure on infrastructure and networks. The system's ability to manage resilience and peak electricity demand during heat events should be enhanced, including contingency capacity, infrastructure upgrades, and operational and demand flexibility to reduce strain on networks.

Opportunities exist for implementing cooling systems at building and district levels that could reduce demand on electricity networks compared to if air-conditioning was installed, and in some cases these could also act as heating systems or heat networks in winter.

Credit: Oladimeji Ajegbile on Unsplash

399 Ofcom (2024): Resilience to climate change in the telecoms sector
400 ISPA UK (2024): Climate adaptation in the telecommunications sector
401 BT Group (2025): Climate transition plan 2025
402 England et al. (2026): The economic costs of the 2022 heatwaves in London

The CCC recommends that from now through to 2050, the electricity system should maintain service levels at current levels of resilience or higher.[403]

Advanced monitoring and climate informed analytics support the early identification of heat-related faults and guide proactive maintenance, upgrades, and inspections, reducing costly disruption and emergency repairs.

The most critical heat-sensitive assets (such as transformers, substations, overhead lines, and cables) should be upgraded, where possible, to withstand the increased degradation and reduced capacity that can occur under sustained high temperatures.

Climate adaptation and resilience should be a consideration for the development and implementation of future LAEPs to strengthen local energy resilience and sustainability.

Potential delivery partners

Energy security is the responsibility of **DESNZ**, and **Ofgem** is the regulator of energy markets. **The National Energy System Operator (NESO)** is responsible for planning the country's energy networks. **National Grid** manages electricity transmission; **UK Power Networks** and **SSEN** manage electricity distribution in Greater London.

Electricity generators also play a key role. **National Gas** manages gas transmission. **Cadent Gas** and **SGN** manage gas distribution in Greater London. **London boroughs** lead on the development of LAEPs, with support from **GLA** for subregional LAEPs and some phase two LAEPs.

Implementation pathway and timeframes

Short-term

- Identify which critical facilities most require strengthened back-up power provision, contingency capacity, and operational flexibility.
- Continue implementing LAEP recommendations.
- Assess how best to protect energy infrastructure workers from heat-related risks.

Medium and long-term

- Strengthen back-up power provision, contingency capacity, and operational flexibility at critical facilities, in line with investment and renewal cycles.
- Upgrade critical heat-sensitive assets, incorporating heat resilience into investment and renewal cycles.
- Expand electricity network capacity to enable higher demand from cooling in London and consider cooling in the context of new heat networks.
- Continue implementation of LAEP recommendations and measures to manage and reduce energy demand.

Co-benefits

- Improved energy supply and resilience for active cooling.
- Service continuity for critical infrastructure and services, such as health and care facilities, is supported.
- Enhanced monitoring and analytics support the sector's learning for other climate hazards.

403 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

Relevant existing policies & programmes

- LAEPs support London's net-zero objectives, and have informed distribution network operators' investment cycles.[404]
- Energy operators are strengthening infrastructure resilience and planned investment to maintain reliable supply and meet future demand forecasts.
- Cadent Gas reviewed network impacts from the July 2022 heatwave.[405]
- National Grid recognises rising temperatures may reduce distribution and transmission network resilience.[406]
- UK Power Networks assesses heat impacts on equipment and upgrades infrastructure based on future demand forecasts.[407]
- GLA's Cooling Roadmap plans for energy network expansion.[408]

Key considerations for delivery

- Infrastructure upgrades must account for other hazards.
- Upgrades should be aligned with planned maintenance and renewal to minimise disruption.
- The shift to net zero and increased vehicle electrification present opportunities to integrate climate resilience.

CASE STUDY: COOLING ROADMAP FOR LONDON

The demand for cooling is expected to increase dramatically due to climate change. Future energy demand in London could double by 2050 relative to a 2025 baseline, posing pressure on electricity system capacity and distribution networks.[409] To help address this, the Cooling Roadmap for London (CRL) was developed.

The CRL, developed in partnership with C40 Cities, provides a strategic framework for sustainable cooling in London over the next 25+ years.

The CRL shows that a future scenario that prioritises passive cooling measures, nature-based cooling, efficient systems, and equitable deployment could result in cooling energy demand in 2050 being 15 per cent lower than under a business-as-usual scenario, where demand is expected to double. This illustrates how future cooling demand can be managed, while also improving heat-related health outcomes, particularly for those communities who are disproportionately impacted.

404 Buro Happold (2024): CIEN London Subregional Local Area Energy Plan
405 Cadent Gas (2024): Climate Change Adaptation Report
406 National Grid Electricity Distribution (2024): Climate Change Adaptation Report
407 UK Power Networks (2024): Climate Change Adaptation 4th Round Report
408 Love Design Studio and Shade the UK (2026): Cooling Roadmap for London
409 Love Design Studio and Shade the UK (2026): Cooling Roadmap for London

Credit: Jagjeet Dhuna on Pexels

6.6 Reducing the impacts of hot weather on waste management services, including fire risk.

Overview and purpose

High temperatures put strain on waste collection services and waste management facilities, including impacts on workers and equipment, increased odour and pests, and increased fire risk.

Strengthened prevention and response controls should be triggered during high temperatures and elevated fire-risk periods. These could include targeted collections for high-risk waste streams and hotspots, and adjustments within waste bulking and haulage facility operations, as well as enhanced monitoring and inspection regimes.

Waste management facilities should also strengthen fire-prevention measures by, for example, improving separation, controlled storage, and safe handling of combustible materials. Staff should be trained to understand safe operation procedures during high temperatures – for example, how to recognise early indications of heat-related fire risk, and methods to prevent or reduce safety risks and disruptions. Monitoring data collected and lessons learned can help continuously refine operational thresholds and preventative measures. The CCC recommends that, by 2030, all waste management sites should have been assessed and categorised by risk level to determine where adaptation is most needed.[410]

410 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

Potential delivery partners

Boroughs are responsible for waste collection and often contract services to **waste management companies. Waste disposal authorities** coordinate with individual borough councils. **The Environment Agency** oversees licensing of waste treatment facilities alongside **Defra. LFB** leads on fire response.

Implementation pathway and timeframes

Short-term

Review existing operational measures to identify where strengthened prevention and response controls, for periods of high temperatures and elevated fire risk, are most needed.

Medium and long-term

Adapt waste management facilities to ensure resilience to heat risk and the protection of workers.

Co-benefits

- Cleaner streets and reduced risk of fire, environmental contamination, and adverse health impacts.
- Improved health and wellbeing of the waste management workforce.
- Less frequent and severe waste fires reduce pollution and greenhouse gas emissions.
- More reliable waste-management services.

Relevant existing policies & programmes

- Waste-management company climate adaptation programmes and resilience-focused investment plans, such as Veolia's.[411]
- London's Waste Policy, which supports London's zero waste city aim.[412]
- The ban on disposable vapes was partly motivated by fires at waste management sites, which rose by 70 per cent from 2022-2023.[413]

Key considerations for delivery

- Align operational escalation with UKHSA Heat-Health Alerts/Met Office National Severe Weather Warning System, and LFB risk levels.
- Build flexible workforce capacity for targeted collections in high-risk areas, while prioritising worker wellbeing.

411 Veolia (n.d.): How do we adapt to climate change?

412 London Assembly (n.d.): Waste policy

413 Defra (2025): Single-use vapes: why it's time to ditch them for good

12

Funding and Financing

THE NATURE OF THE CHALLENGE

The gap between the action required. and available financial flows, is large. Delivering the priority areas set out in the Heat Ready London Technical Report will require significant investment.

So far only a small share of public and private finance has been put towards adaptation projects. To deliver the change needed, London will need financing solutions to meet upfront capital costs; and sustainable funding models to pay for operation and maintenance, and to generate investor returns that enable investment where needed.

Several cross-cutting challenges make this extremely challenging. Adaptation often has high upfront costs, while awareness of its benefits remains limited among decision-makers. Many benefits, while highly valuable to society, are also difficult to monetise. Many actions need long-term maintenance, which is costly and can be harder to fund than installation. Addressing these barriers, as well as a range of others, will be critical to scale up the response to rising temperatures.

Despite these challenges, considerable progress has been made both in London and elsewhere. London has the advantage of being able to draw on the experience and capital pools of one of the world's leading financial centres. As London scales up its response to heat risk, it will need to build on existing good practice, while testing and expanding innovative funding and financing models that address barriers, crowd-in new actors, and support delivery at the pace and scale required.

This will require approaches that are both fair and realistic, recognising the financial pressures facing public bodies, businesses and communities. The costs and benefits of adaptation should be distributed in ways that reflect who benefits from action, while ensuring that those least able to pay are not disproportionately burdened.

Credit: Edgar on Unsplash

The overall case for investment

As already highlighted in this report, the cost of inaction is high. The 2022 heatwaves alone are estimated to have cost London £1.5 billion,[414] and these costs will continue to rise without accelerated adaptation. Investing in heat resilience helps Londoners stay safer, healthier and more productive. It also helps the city's critical systems to work better in hotter weather, reducing disruption to services, education, travel, and keeping public spaces usable in higher temperatures. Cooler homes can improve sleep and productivity – while shade, trees and cool spaces can make streets, parks and public places more accessible as temperatures rise. Ultimately, London's economic and social objectives for the coming decades depend on the city being resilient to the higher temperatures, and other climate risks, associated with a changing climate.

There is a wealth of evidence that adaptation represents good value for money; but will require significant investment in the short-to-medium-term.[415] Adaptation provides benefits that are shared widely. Londoners gain directly through safer homes and cooler public spaces. The public sector – including the NHS, social care, boroughs and emergency services – benefit when fewer people need urgent support. Employers and businesses benefit when heat causes less disruption to staff, customers and services while infrastructure operators (including transport and utility companies) benefit from reduced disruption and damage. By protecting economic activity and reducing losses, adaptation can also help safeguard tax revenues, generating a direct fiscal benefit for central government.

How does Heat Ready London respond to the finance gap?

Recognising the challenge, Heat Ready London has been supported by an analysis of funding and financing for six **deep-dive** priority areas of focus within this report. These were selected because they are likely to have significant funding and financing needs; and because there may be opportunities to complement conventional approaches with more innovative models. They are not, however, necessarily more important or urgent than other areas.

For each of these deep di.e. a structured process was followed **(see Figure 17)**:

- First, and in line with UK government appraisal practice,[416] a benefits register was developed. This identified the main types of value generated by each priority area of focus and, in turn, facilitated an assessment of the key beneficiaries. Understanding what these benefits are, their possible scale, and who they reach, helps identify the stakeholders London needs to consider and engage with to develop fair and effective funding and financing models that are suitable for delivery at scale. It also helps indicate where private investment may be leveraged and where public funding and/or finance is likely to be required.
- The next step was to review the existing literature to identify the key barriers that are currently preventing funding and financing to be delivered at scale.

414 England et al. (2026): The economic costs of the 2022 heatwaves in London

415 Watkiss (2022): The Costs of Adaptation, and the Economic Costs and Benefits of Adaptation in the UK. Policy Paper

416 HM Treasury (2018): Guide to Developing the Programme Business Case

- Together, these two steps informed the development of a long list of potential funding and financing models. This drew on existing practice, proposals put forward to date, including those that respond to known barriers, and consideration of the key beneficiaries.
- The long list of models was then assessed against five criteria:[417]
  - The alignment between those who benefit from the outcome and those who would fund it.
  - The expected scale of resources that the model could mobilise
  - Its distributional implications.
  - Its expected acceptability, including among public bodies, political leaders and affected communities.
  - Its expected ease of delivery.
- This assessment enabled the identification of the most promising models; and provided insight into the enabling conditions needed to support their implementation.

This analytical approach is not intended to replicate the level of detail required for a full business case, which may be needed at a later stage. Instead, it provides a proportionate framework for identifying the most promising funding and financing models for each priority area of focus, and the enabling conditions needed to support their development.

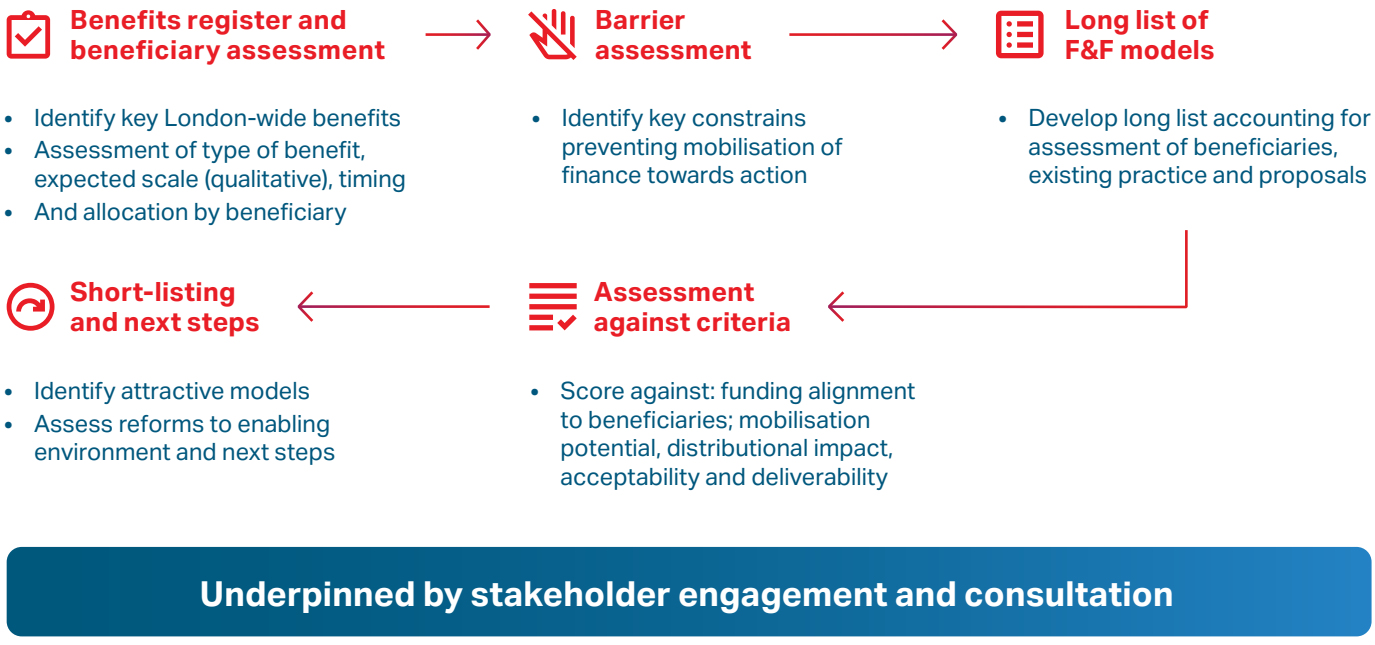


Figure 17: Methodology for funding and financing analysis.

417 See Technical Annex, 'Annex B: Funding and financing assessment' for more detail.

Each step in the methodology drew on a combination of literature review and structured economic reasoning. Crucially, the analysis was also tested and refined through a stakeholder workshop, helping to ensure that the findings reflected practical delivery challenges, existing constraints, and opportunities for collaboration across public, private and community partners.

In addition, for the home retrofit priority area, a new London-focused economic cost-benefit analysis was undertaken to further clarify the value of this work and its key beneficiaries.

The remainder of this chapter draws out the key insights from this analysis. For each priority area deep dive, it first sets out the investment case, followed by the barriers currently preventing finance from flowing at scale. It then discusses the models that, based on the multi-criteria analysis, appear to have the greatest potential to help close this gap, recognising that some may only be feasible in the medium to long term. Finally, it identifies the key enabling conditions likely to be needed for these models to be successful, along with specific next steps that London could consider.

Further details on the methodology, including tabular versions of the benefits register, beneficiary assessment, description of the long list of models, and assessment against the criteria, is provided in the Technical Annex.

Overall, the analysis shows that delivering heat adaptation will require a diverse mix of funding and financing models. It provides a strong foundation for developing these opportunities further and for moving from analysis to implementation.

However, more work is needed across London to establish viable funding routes for the measures required to adapt to rising temperatures. This includes fully costing adaptation measures, more detailed quantification of economic and financial benefits to support the investment case, identifying revenue streams, and testing financing approaches in practice.

Credit: Adil Sattarov on Unsplash

Deep dive 1: Retrofitting the highest-risk homes to reduce the risk of indoor overheating – for example, installing shutters, insulation and ventilation, and air conditioning.

The investment case for London

Bespoke analysis suggests that retrofitting London's most heat-vulnerable homes with passive and active cooling measures could require upfront cost of between £9 billion and £45 billion over the next 10-15 years, depending on the interventions and levels of overheating reduced.[418] However, if delivered at scale and alongside planned works, these measures could deliver benefits between 1.2 and 1.8 times the cost through fewer deaths, and better health, sleep and productivity. **Box 2** discusses the results of the cost-benefit analysis developed for this report in more detail. New evidence from the CCC, although with a somewhat different scope, suggests benefits might be even higher.[419][420]

The low end of this investment range focuses on a relatively modest set of passive retrofit measures that are cost-effective but do not fully eliminate overheating; the high end of this range has a much more extensive range of passive retrofit measures, and also uses active cooling as a residual measure to eliminate overheating.

In both cases, it assumes that cost efficiencies in delivery can be found compared to earlier cost estimates for cooling retrofit **(see Box 2)**. More generally, costs will depend on the measures included, the dwellings targeted, and the extent to which economies of scale and scope can be achieved.

This investment could deliver significant benefits for occupants, employers, the health and care sectors, taxpayers and, where passive cooling is prioritised, the energy system. Occupants would be more comfortable and less likely to experience heat-related health impacts; those in work may be more productive; and households may see lower energy bills.

Credit: Antony Hyson Seltran on Unsplash

418 These are the cumulative costs without any discounting i.e. without taking into account that costs in the future are usually treated as worth less than costs today.

419 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

420 Arup (2026): Heat risk and adaptation in the urban built environment. This analysis considers across the built environment including homes but also workplaces (that do not already benefit from such measures). It also uses lower cost numbers for key retrofit actions than in our analysis. See Box 1 for more details.

Box 2 – Cost-benefit analysis of retrofitting London's homes

A bespoke cost-benefit analysis was developed to assess the business case for retrofitting some of London's most heat-exposed homes. The analysis drew on London-specific intervention cost and effectiveness data developed for the CCC in 2022,[421] UKCP temperature projections, and wider evidence. It estimated benefits from reduced mortality and illness, improved productivity for people working from home, and improved productivity from better sleep. Detailed findings and methodology are provided in the Technical Annex.

Based on cost estimates developed in 2022, most retrofit packages have BCRs below 1. In other words, the expected value of their benefits is outweighed by their expected costs. The main exception is a package that relies heavily on active cooling.

However, these earlier cost estimates are based on works being carried out to individual homes in isolation, with no savings from combining measures, integrating them with other maintenance works, or delivering them at scale. To test the potential impact of lower delivery costs, the analysis considered a sensitivity case in which capital costs were reduced by 50 per cent. This reflects both the stated cost tolerance provided in the 2022 cost estimates used and the potential for economies of scale through coordinated delivery. Even with this reduction, the resulting cost assumptions often remain above the unit cost estimates reported by the CCC in its Well-Adapted UK report, suggesting that the resulting BCRs may be conservative. Further detail is provided in the Technical Annex.

Under this assumption, most of the modelled packages have BCRs above 1, showing that the benefits of the actions outweigh the costs. A moderate passive retrofit package, combined with active cooling to address remaining heat risk, has an estimated BCR of 1.21. For houses, this would combine active cooling with measures such as roof insulation, low g-value window film, external shutters, ceiling fans, and solar reflective walls. For flats, active cooling would be combined with external shutters, low g-value window film, and ceiling fans.

Given the extent of climate change that is now inevitable, the important role for active cooling as part of the package of interventions to address the effects of heat risk in buildings aligns with the recent findings from the CCC.[422] However, the analysis does not capture the wider social costs and risks of active cooling, including additional pressure on electricity networks, worsening the UHI effect, and exacerbating energy poverty for some households.

The analysis also helps demonstrate the importance of joining up heat-risk retrofit with energy-efficiency programmes. Where measures that deliver both cooling and energy-efficiency benefits are funded entirely through energy-efficiency programmes, BCRs increase further, reaching up to 2.7:1. In this scenario, the strongest results come from deep retrofit of passive measures without active cooling.

421 Arup (2022): Addressing overheating risk in existing UK homes

422 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

The analysis further shows that value for money improves when measures are targeted at homes most exposed to heat risk. Given that harm from overheating is shaped by both exposure and household vulnerability, this suggests that a targeted approach is likely to maximise public health benefits and strengthen the investment case.

Based on this analysis, the case for extending support to homes facing more moderate heat risk appears weaker.

Overall, the analysis highlights three key points:

- Costs need to be carefully managed by bundling adaptation measures and delivering them across multiple homes at the same time.
- Heat-risk retrofit should be closely integrated with energy-efficiency programmes to minimise costs and avoid unintended consequences.
- Action should be carefully targeted at the homes and households most vulnerable to heat risk.

Key barriers for funding and financing

Stakeholder feedback and existing literature[423] identify that investing in these measures faces several barriers:

- Homeowners are put off by the high upfront costs to deliver benefits that are not fully understood and are only partly financial. This is particularly challenging given the lack of evidence that properties will increase in value when they are adapted to reduce overheating.
- Rented homes face a classic split-incentive problem. Landlords would typically incur the cost of retrofits, but most benefits such as reduced overheating and lower energy bills accrue to tenants.
- The supply chain remains immature. It is hard for households and landlords to identify measures, find contractors, and have confidence that works will deliver the intended benefits.

Potential funding and finance models

To meet funding and financing required for this deep-dive, there is a need to combine several models, reflecting the diversity of housing tenures and the need for fairness.

As heat risk becomes even more evident, the **private market** is likely to (continue to)[424] respond. Homeowners will become more willing to invest in passive retrofit and/or active cooling depending on costs and incentives, particularly if they expect improvements to increase property values or support higher rental income. This could be further encouraged by private lenders if extensions are made to existing **green mortgages** to include cooling measures. This could allow homeowners to access preferential mortgage rates or additional borrowing for approved cooling measures, helping spread upfront retrofit costs over time and rewarding homes that are more resilient to overheating. Lenders will be more likely to do this if there is clearer evidence that cooling measures are effective at reducing the health and productivity risks from heat risk, which could reduce the likelihood of borrowers falling into arrears.

423 See, for example, CCC (2026): A Well-Adapted UK; Palmer, Poku-Awuah, Adams and Webb (2018): What are the barriers to retrofit in social housing? and Energy Security and Net Zero Committee (2025): Retrofitting homes for net zero. While the latter two sources are focused on retrofit for energy-efficiency and net zero, stakeholder feedback confirmed that they also applied to retrofit for cooling.

424 Wood (2026): Number of air conditioned UK homes doubles to more than 4m in three years

In the future, **national policy** may also support the extension of these products for this purpose i.e. through schemes similar to the Green Home Finance Accelerator. [425]

However, while reliance on the private market is attractive for ensuring buy-in and minimising fiscal pressures, it is, by itself, unlikely to fully overcome the key barriers and deliver retrofit at the scale or pace required. It also risks concentrating benefits among more affluent households. To extend reach, **blended finance and grant-based mechanisms** are important. This could include **targeted grants** to reduce costs for low-income and vulnerable households, alongside **concessional loans or guarantees** that lower the cost of private finance and help make retrofit affordable for a wider range of residents. However, these will place a demand on fiscal resources and will require careful design to ensure they are both effective yet appropriately targeted.

Given that the public sector, including the NHS, is likely to be a major beneficiary of reduced indoor overheating through lower pressures on health services, there is a strong case for **integrating grant and low-cost finance support within the UK Government funding frameworks and programmes.** Central government released the Warm Homes Plan in January 2026, which includes £15 billion funding to improve the energy-efficiency of five million homes and lift one million households out of fuel poverty by 2030. The Plan includes the £5 billion Warm Homes Fund, which will provide **loans and financial assistance** for households and sector investment. The English Devolution and Community Empowerment Act 2026 gives mayors and strategic authorities new powers and devolved funding to meet statutory duties including net zero, reduction in fuel poverty, and improvements in energy-efficiency. This provides an opportunity for funding to be used to also mitigate overheating in homes. **A blended finance home retrofit one-stop shop** is another opportunity for further scaling delivery of home retrofits **(see Box 3)**.

In social housing, scaling retrofit beyond pilots is likely to require **national regulation** targeted at the homes most vulnerable to overheating. Clearer regulatory requirements would give registered social housing providers a stronger basis for investing directly in cooling measures, either through their **capital budgets or additional borrowing**. This would be particularly important where such works help providers meet their legal obligations, including under Awaab's Law which is planned to be extended to require social landlords to address excess heat. Some of the costs may be met by tenants, but affordability concerns imply that **public grant support** is also likely to be needed. To further improve affordability, **public guarantees** currently provided by the **National Wealth Fund (NWF)** to registered social housing providers for energy-efficiency retrofit could play a role by being extended to cooling measures, although this would require engagement with central government to expand the mandate of the NWF.

For private rented homes, energy-efficiency retrofit experience suggests that **regulation** will ultimately be a key part of the solution to the split incentives between landlord and tenants. However, to enhance acceptability, landlords could be supported through access to **grants and blended finance** mechanisms, as discussed above. To minimise disruption, requirements should be phased in over time, starting with the highest-risk properties.

425 Department for Energy Security and Net Zero (2023): Green Home Finance Accelerator: Discovery and Pilot Phase projects

Box 3 – Blended finance home retrofit one-stop shop

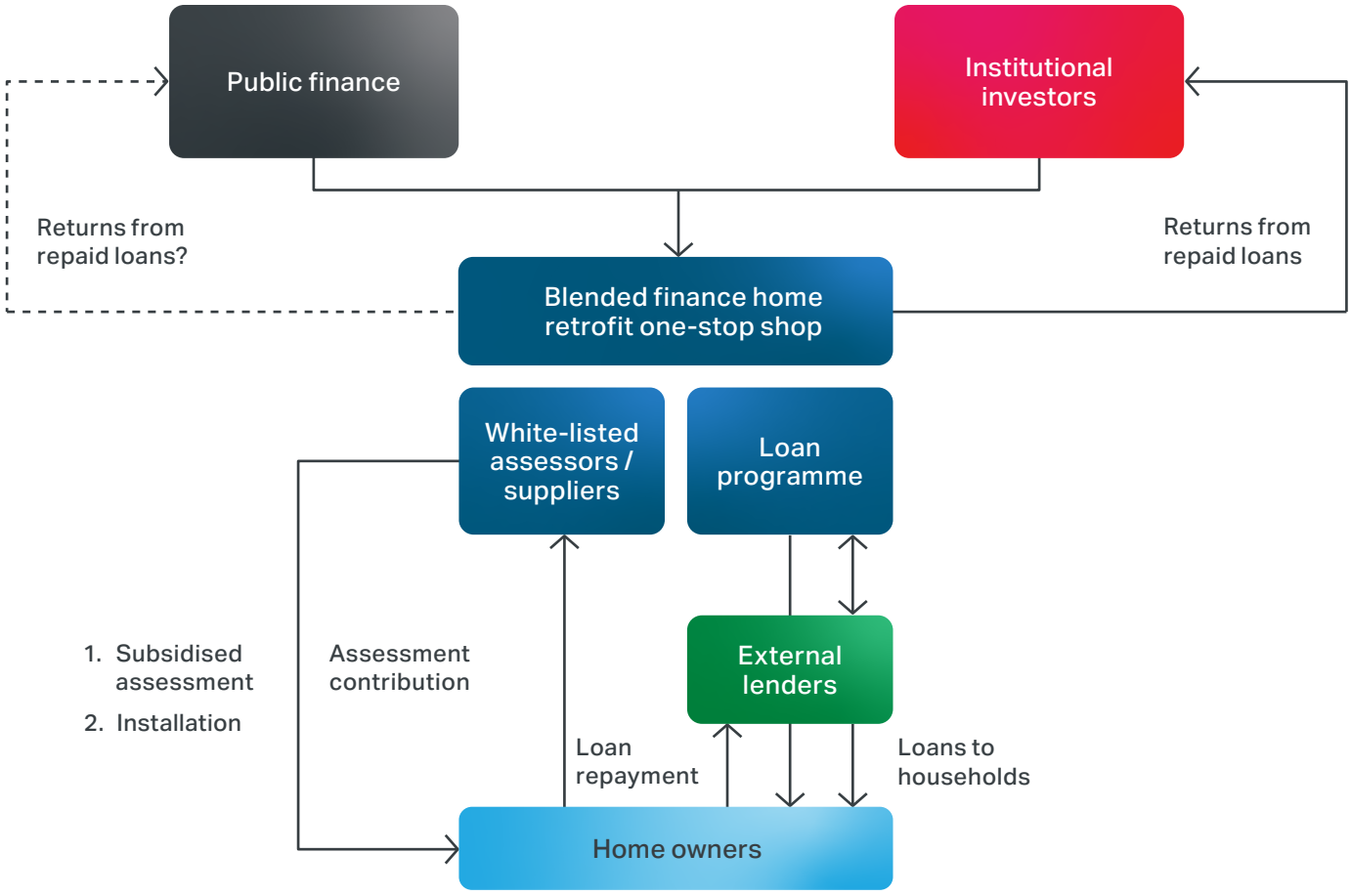
Under this potential model, London homeowners wishing to undertake retrofit for heat resilience and energy-efficiency could **access advice, trusted contractors, and lower-cost finance** through a single organisation. The aim would be to make retrofit simpler, more trusted and easier to finance, building on similar one-stop-shop models used for energy-efficiency retrofit in Ireland[426] and elsewhere.

The one-stop shop could use **public grant funding or subordinated capital** to reduce risk and attract private investment.

It could then support household lending in several ways, including by lending directly, providing credit enhancement to existing lenders, or refinancing eligible retrofit loans.

This model would require more design work and engagement with stakeholders to test – for example, which financing modalities would be most appropriate; how the approach could integrate most effectively within London/UK's residential mortgage market and potential sources of public capital.

Figure 18 summarises some of the key advantages and disadvantages of these different funding and financing models.[427]



426 More information on this scheme is available here: https://www.seai.ie/grants/home-energy-grants/one-stop-shop?

427 See technical Annex, 'Annex B: Funding and financing assessment' a long list of models assessed.

Housing retrofits

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
Private market (including green mortgages)	High acceptability No fiscal impact	Concentrates action among most affluent
Central government grants	Extends reach to more households	Fiscal strain may limit acceptability Requires careful targeting
Social housing provider borrowing (with credit enhancement)	Can target most vulnerable households	Impact on affordability for tenants and/or requires fiscal support which can limit acceptability
Further options available in the longer term		
Blended finance one-stop shop	Extends reach to more households with lower fiscal impact than grants	Needs careful design to integrate with market

Figure 18: Summary assessment of funding and financing models for housing retrofit.

Enabling conditions to scale finance

Several steps will be required to ensure that these funding and financing models are successful, helping to address both the financing and non-financing barriers that could otherwise prevent capital flowing towards this deep dive:

- **Better integration of cooling into existing national, London-wide and borough retrofit schemes is needed to scale delivery.** Fragmented or duplicated retrofit support for heating and cooling separately is unlikely to succeed, as most owners and occupiers are unlikely to undertake several rounds of retrofit works for different objectives. Integration of cooling into retrofit schemes is currently being tested and explored by the GLA.
- **Better information and clearer market signals are needed to help catalyse private investment from property owners and investors.** Owners are more likely to invest where they are confident that cooling measures will be reflected in property values or rental income. At the national level, expediting the planned inclusion of addressing overheating risk within Energy Performance Certificates would support better decision-making.

- **Stronger evidence on the financial value of reducing overheating is also needed** (and correspondingly the financial risks of failing to address this). Scaling cooling retrofit will depend on better information about how heat-resilient homes affect risks for lenders, insurers, property owners and residents, including mortgage arrears, insurance claims and property value. Over time, this could support market-led incentives for cooling retrofit, particularly as heat is expected to be included as a Category 1 housing hazard under Awaab's Law from late 2026.
- **Supportive fiscal incentives for cooling retrofit.** Scaling investment could be helped by central government fiscal measures that make cooling and energy-efficiency retrofit more attractive and affordable. This could include exploring tax incentives to encourage landlords to invest in cooling measures, for example, extending reduced VAT for energy-efficiency retrofit to cover cooling measures. Given the productivity benefits of cooler homes, extending salary sacrifice schemes to support cooling and energy-efficiency retrofit could also be explored,[428] alongside engagement with employers to help them better appreciate these benefits.

Credit: GLA

Future opportunities to be explored in London

1. **Integrating cooling into existing retrofit programmes.** Public authorities at national, regional, and local levels could work together to help ensure that existing funding frameworks are used to deliver heat-risk measures by embedding these within existing retrofit programmes such as the Warmer Homes Plan, Warmer Homes London, and Net Zero Neighbourhoods. Fiscal devolution, from government to the GLA, relating to domestic decarbonisation is expected by 2028, providing an opportunity for funding to be used to also meet Londoners' needs for cooler homes.
2. **Exploring a proposition for a blended finance home retrofit one-stop shop to leverage private investment.** This could include testing demand from homeowners, lenders, and contractors; identifying the level and form of public capital needed; and clarifying how the model could prioritise the most heat-vulnerable homes.
3. **Engaging lenders, insurers, and property valuers on the financial case for cooling retrofit.** There is an opportunity for public authorities to convene institutional investors and lenders, including public bodies such as the NWF, to explore whether heat-resilient homes that improve health, productivity and reduced contents damage could reduce financial risks, such as mortgage arrears, insurance claims, or loss of property value. Better evidence on these links could help lenders, insurers and property valuers understand whether new or adapted finance products could support cooling retrofit.

428 This mechanism has already been proposed in relation to domestic energy-efficiency retrofits see Topuzi (2023): Retrofit Salary Sacrifice: A financial incentive to help decarbonise owner-occupied homes

Deep dive 2: Retrofitting the high-risk non-residential buildings that deliver essential public services, e.g. schools.

Given the acute risks faced by care home residents, and the urgent need for action, the funding and financing analysis focuses specifically on care homes.

The investment case for London

Existing analysis suggests that investing in measures to reduce heat risk in care homes can provide good value for money, but measures need to be carefully tailored to the characteristics of individual facilities.

A recent analysis of three care home case studies found that BCRs of different packages of measures across homes varied significantly, from 0.17 to 11.22, with a median of 1.26.[429] The analysis finds that some of the highest-value measures include solar-control window film combined with night ventilation in key areas (though this is only possible in secure and quiet areas); exposing existing high thermal mass materials alongside night ventilation; installing phase-change material panels combined with night ventilation; and portable air-conditioning units in lounges. This analysis only considered benefits from improved health outcomes; the investment case is likely to be even stronger considering wider benefits such as improved staff productivity, greater resident comfort, and reduced disruption to care services.

Benefits accrue to residents, care providers, staff,[430] London boroughs, and the health and care system. Residents gain from safer, more comfortable environments; providers and boroughs benefit from reduced disruption and emergency-response costs; staff may be more productive and comfortable; and pressure on the health system will decrease.

Key barriers for funding and financing

Stakeholder feedback and wider literature identify that investing in these measures, particularly those requiring significant upfront capital, faces several challenges:

- The most significant is the wider budget pressure and funding shortfall facing much of the care system. This limits the ability of care providers and public bodies to invest, even where measures may provide good value for money over time.[431]
- A further challenge is that the benefits of measures are shared across several actors. Investment therefore requires close coordination, particularly when no single actor can capture enough of the benefits to justify acting alone.[432]

Potential funding and finance models

In some cases, **the existing care home funding model** may help mobilise resources. This includes resident and local authority payments that support investment by predominantly private-sector care home providers. However, this is unlikely to provide a sufficiently reliable or consistent model to deliver action at the scale required. It may also skew provision towards care homes serving more affluent residents.

429 Ibbetson et al. (2025): Cost-benefit analysis of interventions to protect care home residents in England against heat risks

430 UK Health Security Agency (2024): Research exploring the experience of care practitioners in relation to extreme temperatures

431 Bottery and Jefferies (2026): Social care 360

432 NHS England (2025): 4th Health and climate adaptation report

One potentially important near-term funding source is the **Better Care Fund**. This pooled local fund – agreed between local authorities, ICBs, and Health and Wellbeing Boards – is intended to support more integrated health, care, and housing-related services, providing a natural platform to address the problem of fragmented beneficiaries. While this funding window is expected to be heavily over-subscribed, limiting the scale of resources it may be able to mobilise, there is an opportunity for London boroughs to explore how the Fund can support targeted cooling measures in care homes, where those measures help reduce heat-related illness and avoid hospital admissions.

Over the medium term, London could also explore more innovative models, including a dedicated care home window within the **blended finance home retrofit one-stop shop**, discussed in Deep Dive 1 above.

Public-private partnership models may also have potential in some circumstances, particularly for publicly owned care homes. Under this model, a private company or investor consortium would finance retrofit works across an aggregated portfolio of assets and receive repayments over time. These repayments could be linked, at least in part, to the performance of the retrofit measures. This could help reduce the immediate capital financing requirement for the public sector, although it would not remove the underlying funding obligation. Any such model would therefore need careful assessment to ensure that individual transactions provide value for money. This is more likely where a sufficient pipeline of suitable assets can be aggregated into a single contract, helping to reduce transaction costs and improve investor interest.

The model is likely to be more difficult to apply to privately owned care homes, where ownership is fragmented and repayment routes may be less clear. A further model that warrants exploration is cooling and heating as a service, discussed in **Box 4** below.

Box 4 – Cooling and heating as a service

Under this model, care homeowners and/or operators, potentially alongside other interested organisations, would form a buyer group that would contract a third-party provider to deliver cooling and heating services across multiple buildings. The provider would assess what measures are needed, arrange the finance, and install and manage the equipment or interventions required to maintain safe and comfortable indoor temperatures. Payments would then be made by the buyer group to the cooling and heating technology provider, over time; and could be based on use, availability, or agreed performance outcomes.

This would help building owners avoid large upfront costs, spread payments over time, and transfer some delivery and performance risk to a specialist technology provider. International experience with this model is growing including both for hospitals in India and commercial buildings in Malaysia.[433]

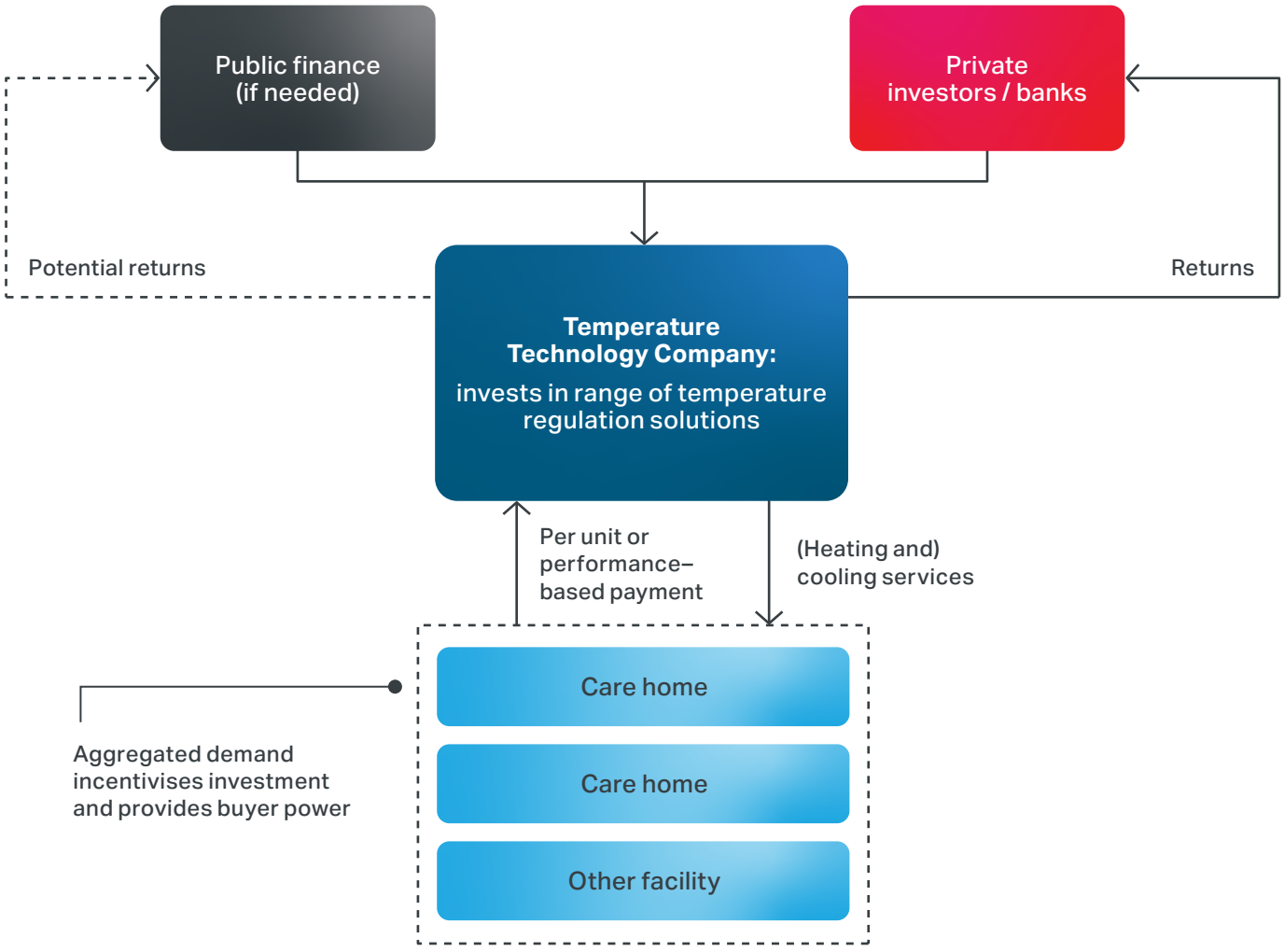
Creating a buyer group would also give providers confidence in the scale of demand and give building owners greater purchasing power.

While there are international precedents for this model, further work would be required to test its applicability in the London care home context.

433 SET Alliance (2024a): CaaS in the New Heart of Kuala Lumpur: Malaysia's TRX Exchange; SET Alliance (2024b): Hospital Chain in India turns to Cooling-as-a-Service

A critical next step would be to develop a payment structure and risk allocation framework that is attractive to both care home owners and operators and technology providers. This would need to clarify ownership rights and responsibilities, including where buildings are leased, and consider how the model would interact with existing energy contracts, maintenance obligations, care quality requirements, and any current or future service-level agreements.

Figure 19 summarises some of the key advantages and disadvantages of these different funding and finance models, in the context of the main benefits and beneficiaries of the action.[434]



434 See technical Annex, 'Annex B: Funding and financing assessment' a long list of models assessed.

Care home retrofits

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
Existing care home funding model (corporate finance with funding from residents and London Boroughs)	Well established/easy to implement	Low resource mobilisation potential
Better Care Fund	Good match between beneficiaries and funders	Many competing demands for funding
Public Private Partnerships (for public care homes)	Removes short term fiscal impact	Needs careful checks to ensure value for money
Further options available in the longer term		
Blended finance one-stop shop	Will ease financing challenges for resource constrained care sector	Needs careful design to integrate with market
Cooling (and heating) as a service	Removes upfront costs for all participating care homes	More design work required to test feasibility

Figure 19: Summary assessment of funding and financing models for care home retrofit.

Enabling conditions to scale finance

The success of the more innovative funding and financing models discussed depend on several factors:

- **Establishing clear processes that systematically assess and incentivise the care home sector to address overheating risk.** For publicly owned care homes, and potentially other public buildings, this could be supported by requirements to undertake overheating audits and, over time, stronger duties on public bodies to implement appropriate adaptation measures. This aligns with the recent CCC recommendation to set a legal maximum temperature in workplaces.[435] These wider changes would need to be taken forward by central government.

435 Climate Change Committee (2026): A Well-Adapted UK – Climate Change Committee

- **Building on existing research to strengthen the evidence base on why, where and how to act.** Many care home providers are likely to be concerned about the additional resources required, regardless of the funding and financing models adopted. These concerns could be partly addressed by building on existing academic and applied research – including University College London's work, GLA's Care Home Overheating Audit Pilot,[436] – and the current HEARTH project[437] to further quantify the risks associated with care home overheating and the health, productivity and operational benefits of retrofit and other measures.

Credit: Age Cymru on Unsplash

Future opportunities to be explored in London

1. **Developing a prioritised pipeline of care homes for overheating audits and interventions.** There is an opportunity for the GLA, London Councils and London boroughs to build on existing evidence – such as the GLA's Care Home Overheating Audit Pilot and HEARTH research project – to identify settings at greatest risk, likely measures, indicative costs, and potential delivery constraints.
2. **Exploring the role of the Better Care Fund.** Public authorities could pilot an approach for London boroughs, ICBs, and Health and Wellbeing Boards to explore whether targeted cooling measures in care homes could be considered as health interventions and therefore be supported under the Better Care Fund, especially where shown to reduce heat-related illness, prevent hospital admissions, and support continuity of care.
3. **Undertaking early market engagement on Cooling and Heating as a Service.** London could test whether care home providers, public building owners, and potential service providers would be willing to participate in a buyer group or aggregated procurement model to leverage private investment for retrofit.

436 Greater London Authority (2020): Care Home Overheating Audit Pilot Project

437 HEARTH (n.d.): National Hub on Net Zero, Health and Extreme Heat. The HEARTH project is an academic research programme that aims to understand the full range of health impacts associated with net zero targets and climate adaptation in the context of extreme heat in vulnerable settings including homes, care settings, prisons, and hospitals

Deep dive 3: Managing and expanding tree cover and green space, in areas of high cooling and shading need; and improving access to London's existing blue-green spaces.

The investment case for London

There is strong evidence that investment in London's green infrastructure can deliver significant value. For example, London's natural capital account estimates that the city's parks provide present value benefits of more than £90 billion over 30 years, compared with the present value of ongoing costs of around £3.3 billion.[438] This implies a BCR of around 27:1 for already established parks.[439] Complementing this, analysis looking at the establishment of new green infrastructure in Westminster (Westminster Green Spine), Brent (Brent Church Road) and Hackney (Hackney Chart Street) found BCRs between 5.6 and 6.9.

Looking specifically at the temperature regulation benefits of green infrastructure, one recent study found that London's urban forest helped avoid 153 heat-attributable deaths between 2015 and 2022, including 16 excess deaths during the 2022 heatwaves. This represents around 16 per cent of UHI-related mortality.[440]

Londoners benefit from amenity, recreation, comfort, health (both from cooling and air quality), and productivity. Property owners may see some of these benefits reflected in higher values near green space. Visitors to London and associated businesses also benefit, particularly when the visits are in warmer months.

Alongside these private benefits, green infrastructure delivers wider public and economic benefits. By lowering temperatures and improving air quality, it can reduce pressure on the health system. In many cases, measures that provide shading and cooling can also improve the public realm, help reduce flood risk, improve water quality, and support drought resilience – benefiting water companies, wildlife and the wider community.

Key barriers for funding and financing

Despite these large benefits, stakeholder reports and corroborating literature[441] suggest that securing investment in new and existing green infrastructure remains challenging for several reasons:

- Benefits are long-term and difficult to convert into reliable revenue streams, especially as green spaces are generally free to access (and intended to remain as such).
- Delivery often benefits multiple landowners, public bodies and private stakeholders, and may depend on co-ordination between these. This makes it difficult to agree who should lead, who should pay, and how costs and responsibilities should be shared.

438 Vivid Economics (2017): Natural capital accounts for public green space in London, for the Greater London Authority

439 Vivid Economics (2017): Natural capital accounts for public green space in London, for the Greater London Authority

440 Taylor et al. (2024): The potential of urban trees to reduce heat-related mortality in London

441 See, for example, Crowley (2026): From Barriers to Drivers – Financing Urban Green Infrastructure through Innovation and Partnership: A Practical Guide for Cities under the Urban Agenda Partnership on Greening Cities

- Green infrastructure can require significant ongoing maintenance, although this can be reduced through careful design. Without a long-term funding plan, there is a risk that assets decline over time, reducing the benefits they could deliver. Moreover, the prospect of unfunded maintenance liabilities can make partners reluctant to support investments.

Potential funding and finance models

The scale of investment needed for London's green infrastructure means that no single funding or financing model will be sufficient. A combination of public, third-sector, community, and private-sector models will be needed, with different models playing different roles across the city.

Public financing models

Given that many benefits accrue locally, **public funding and financing** will remain important, including both revenue spending and borrowing where fiscal space allows. However, given competing spending priorities, this is unlikely to mobilise resources commensurate with London's needs. In addition, other potential revenue sources for boroughs, such as Community Infrastructure Levy (CIL) payments, are limited due to development viability concerns. Substantial reliance on local government funding may also raise distributional concerns, given the regressive nature of some local government revenue sources, such as council tax.

Over time, additional local government revenue sources could help increase the resources available. The intended **overnight visitor levy** – which would allow the Mayor to apply a modest levy on overnight stays in London – is particularly attractive in this context, because visitors benefit directly from the green infrastructure provided in the city. However, while these powers are anticipated, they would still require legislative change, and there are likely to be many competing claims on any new revenue generated from this levy.

The eligibility of the **Mayor's Green Finance Fund** could also be expanded to allow boroughs to access low-cost finance, but this would depend on boroughs being willing to borrow for these types of projects, which has not been clearly expressed to date.

A more innovative model that warrants further consideration is an **outcome bond** issued by a London entity with an investment-grade credit rating. This could raise upfront capital for green infrastructure, with returns linked to the delivery of agreed outcomes. This model is discussed further in **Box 5**.

Other public funding routes can also play a complementary role. These include **central government programmes**, such as the England Woodland Creation Offer and the Water Environment Improvement Fund. Subsequent **investment-readiness support** (such as the previous Natural Environment Investment Readiness Fund) can help develop the evidence base, business cases, and project pipelines needed to attract subsequent private investment.

TfL Local Implementation Plan funding – through which boroughs propose plans to TfL that are consistent with Mayor's Transport Strategy – could also be used where green infrastructure supports walking, cycling or other active travel objectives.

Many of these funding and financing models are likely to be better suited to new green infrastructure than to long-term maintenance, which remains a key challenge. One option that could be explored is a **blended finance endowment fund**, drawing on concepts similar to the emerging Tropical Forest Forever Facility.[442] This fund could be capitalised through a mix of public and private finance, invested in fixed-income securities, and use the returns both to support maintenance and provide investor returns. The key question is whether such a model could attract the investor interest to reach sufficient scale to make a material contribution to London's green infrastructure maintenance needs.

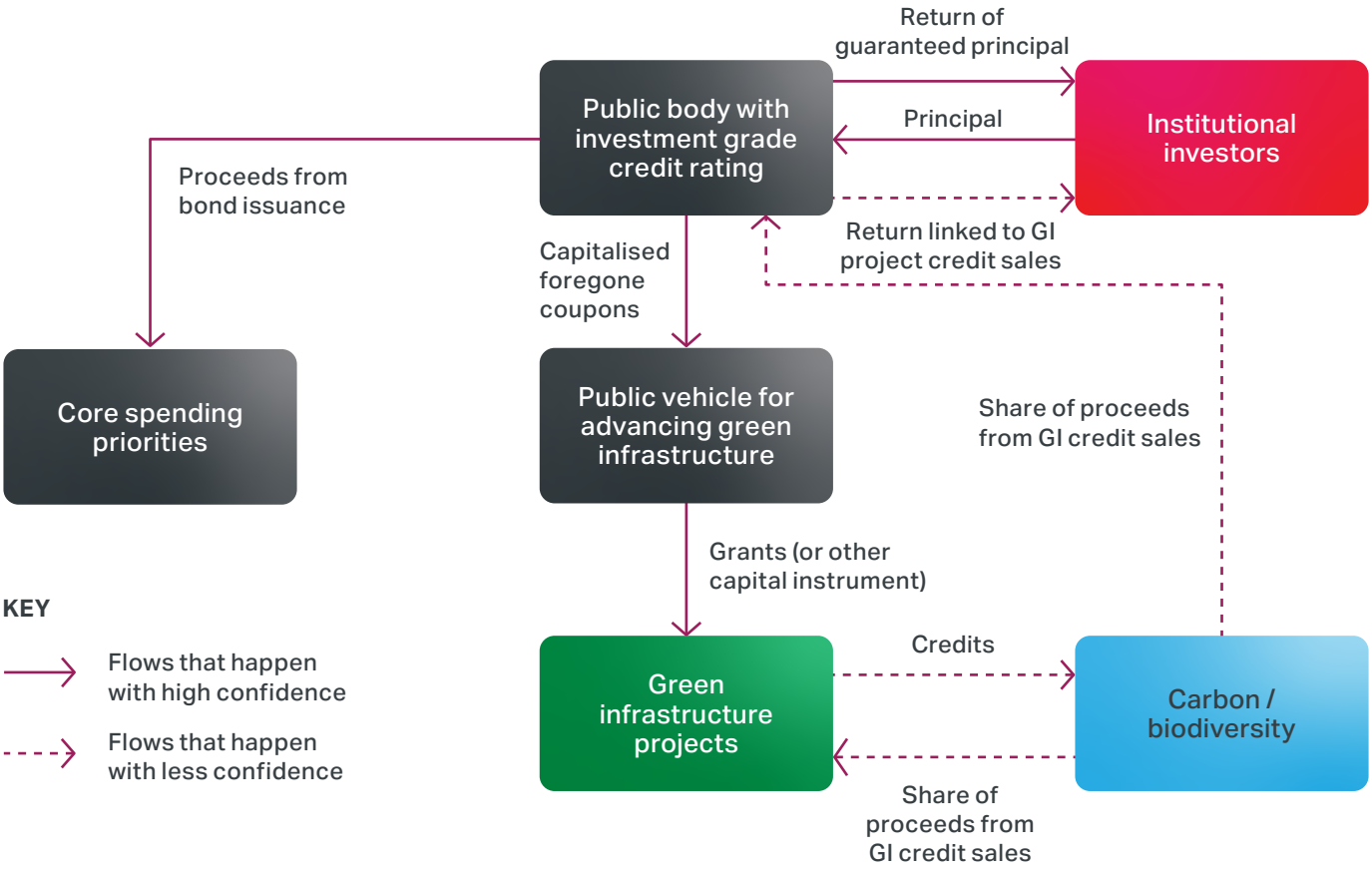
Credit: Samuel Regan-Asante on Unsplash

442 Tropical Forest Forever Facility (2025): An innovative financing mechanism to incentivize long-term forest conservation at scale. While the geographic and ecosystem context of this scheme is very different to London, the underlying financial structure (as explained in the body of the text) might still be applicable.

Box 5 – Outcome bonds

Under an outcome bond, a public body with an investment-grade credit rating would issue a bond and use either part or all of the coupon payments to support green infrastructure projects. Investors would still have the protection associated with lending to the public body, while receiving returns that are linked, at least in part, to the outcomes or revenues generated by the projects. These could include, for example, income from carbon, biodiversity or other environmental credits. In this way, the model provides a route for using a relatively secure public-sector bond structure to support green infrastructure projects delivering measurable environmental outcomes.

The model has been tested by the World Bank for environmental projects, including forest restoration and plastic waste reduction. It could give investors exposure to green infrastructure while limiting credit risk; and provide projects with access to institutional capital. However, it would involve significant transaction costs and is likely to be suitable only for larger projects or portfolios with clear revenue streams.



Philanthropic, charitable and community funding

Philanthropic, charity and community funding already supports green infrastructure in London. London might consider exploring the potential to make this funding more strategic through establishing a **centralised fund**, building on the experience of the Greater Manchester Environmental Trust.[443] Sponsored by the Greater Manchester Combined Authority, but attracting additional corporate and other support, the Trust provides grants of £2,000 to £40,000 to community groups to create or improve accessible, nature-rich green space in areas of need, through its Green Spaces Fund. Corporate and other supporters can provide general funding to the Trust or support specific projects in the Green Spaces Fund pipeline.

Private-sector models

Conventional private finance is constrained by the difficulty of generating direct revenues from green infrastructure. However, the private sector can still play an important supporting role through several models.

Developer contributions can continue to play some role in funding this action, primarily through direct provision of greening as part of the development. Where this cannot be met, **section 106 agreements** can support off-site green infrastructure, such as improvements to nearby parks, with potential for contributions to fund both capital works and ongoing maintenance. However, there is limited potential for this model to scale, especially given concerns around development viability.

A complementary route would be to use **social value commitments** linked to public procurement and delivery partnerships to attract additional investment or in-kind support for green infrastructure.

Building on the experience in Victoria, **Business Improvement Districts (BIDs)** could also help fund greening measures. BIDs are defined areas in which local businesses pay an additional levy to fund improvements in the local trading environment. Where BIDs are already in place, existing levy income might be redirected or expanded to further support green infrastructure. In cases where new or existing districts focus largely or exclusively on green infrastructure, these could be branded as **'Green Infrastructure Investment Districts'**. This model is attractive because there is a close link between those who benefit from greening and those who fund it, while the requirement for a majority vote in favour of the levy helps build acceptability. However, there is a risk that this approach attracts investment to the most affluent parts of the city, rather than to the areas where addressing heat risk through green infrastructure is most urgent. This implies that, while an important opportunity, it will need to be complemented by other models.

Corporate sponsorship may be appropriate for some assets, where businesses provide financial support in return for branding or naming rights, without any transfer of ownership or control to the private sector. This model is likely to be most suitable for discrete, visible assets or programmes with a clear public identity and typically in locations with high footfall. London can leverage the experience gained from the Santander cycle scheme.

443 See https://gmet.org.uk/

While this model has potential, as with BIDs, its usefulness will depend on the extent to which there is alignment between where corporate interest is greatest and where green infrastructure is most urgently needed to address heat risk.

Some green infrastructure may also generate flood reduction, water quality, air quality, biodiversity, or carbon benefits. Where these benefits are material and measurable, there may be scope to develop **business models based on revenues from environmental credit sales** such as biodiversity units, nutrient credits, or carbon credits. However, these revenue streams remain relatively uncertain, both in terms of the volume of credits that can be generated and the prices they may achieve. Where regulatory frameworks allow, combining or "stacking" different revenue streams may therefore be necessary to support a viable investment case. [444] The challenges associated with attracting private capital into nature-based solutions that use credits as a revenue source are reflected in the UK Government's recent launch of the UK Nature Impact Fund, a blended finance vehicle that combines public and private capital to invest in high-integrity nature projects supported by revenues from environmental credit sales.[445] This may create a valuable opportunity for project development in London.

A further consideration is that there may be trade-offs in project design: if schemes are designed primarily to maximise credit generation, this could lead to less emphasis being placed on the cooling and heat-reduction benefits that green infrastructure can deliver.

Finally, green infrastructure that addresses heat risk while also improving water quality or regulating water flows may be relevant to **water company investment priorities**. Where these solutions help manage surface water, reduce pressure on drainage and wastewater systems, improve river quality or strengthen catchment resilience, they could potentially be supported through water utility investment programmes, subject to alignment with the water industry's regulatory settlement.

Figure 20 summarises some of the key advantages and disadvantages of these different funding and finance models, in the context of the main benefits and beneficiaries of the action.[446]

444 Defra guidance clarifies that it is normally acceptable to stack – i.e. sell multiple credits or units associated with different nature markets from the same activity on a piece of land – when a landowner is seeking to sell both biodiversity units and nutrient credits, but that either of these should not be combined with the sale of voluntary carbon credits unless the carbon credits derive from additional habitat enhancement and this does not affect the carbon value. See Defra (2023): Combining environmental payments: biodiversity net gain and nutrient mitigation

445 UK Nature Impact Fund & Finance Earth (2026): UK's First Blended Finance Fund for Nature Restoration Reaches £65m First Close. Defra has provided a £30m cornerstone investment in this fund, structured in a first loss position to help support returns for private investors.

446 See technical Annex, 'Annex B: Funding and financing assessment' a long list of models assessed. Buller et al. (2017): Shade Sails and Passive Recreation in Public Parks of Melbourne and Denver: A Randomized Intervention

Green Infrastructure

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
GLA/London Borough revenue funding and borrowing	Well established/easy to implement	Low resource mobilisation potential
Central government grants	Existing schemes available	Only relevant in some contexts/highly competitive -> limits resource mobilisation potential
TfL Local Implementation Funding	Well established/easy to implement	Only relevant in some contexts
Philanthropic, charitable and community funding	Can target most vulnerable locations/people	Limited resource mobilisation potential
Section 106 Agreement/Social Value Investment	Well established/easy to implement	Unlikely to support scaling Only relevant in areas of developer interest
Business Improvement Districts	Established model Voting implies high acceptability where implemented	Commercial interests may not align to areas of greatest need
Corporate sponsorship	No fiscal impact	Commercial interests may not align to areas of greatest need Possible concerns over 'privatisation' of green space
Environmental credits	Growing market interest, reduces fiscal impact	Possible trade off in green infrastructure design Blended finance support likely needed to attract private investment
Water company balance sheets	Well established Low-risk funding model	Only relevant in some contexts
Further options available in the longer term		
Overnight visitor levy	Reflects visitor benefits from green infrastructure, likely high acceptability	Not yet definitely available, competing demands for funding
Outcome bonds	Allows public sector to share in green infrastructure delivery risk with private investors	High transaction costs to develop model Not tested with investors in London context
Blended finance endowment funds	Explicit support for maintenance	Unclear whether investor interest will allow sufficient scale

Figure 20: Summary assessment of funding and financing models for green infrastructure.

Enabling conditions to scale finance

Despite the wide range of funding and financing models available, several enabling conditions are needed to support delivery:

- **Developing clear, prioritised and investable project pipelines.** Existing plans and spatial evidence, including the LGIF, would help provide a clear understanding of where investment is most needed, the benefits provi.e. and who benefits. This would help identify which sites are best suited to public, private or philanthropic funding; and inform site-specific assessments of the benefits of green infrastructure. This can help build stronger investment cases for funders and finance providers.
- **Sufficient delivery capacity and supply chains.** Scaling investment will require building the skills, capacity, and supply chains to design, deliver, and maintain green infrastructure interventions that provide cooling, shading, flood resilience, biodiversity, and wider public realm benefits.
- **Better understanding of long-term and maintenance needs and costs.** Many boroughs lack comprehensive information on future maintenance requirements and may require support to generate accurate assessments of their green infrastructure maintenance needs to support asset management, inform funding requirements and identify suitable maintenance funding models.

Future opportunities to be explored in London

1. **Developing a prioritised green infrastructure investment pipeline at a London-wide level.** Public authorities could work together to identify priority projects based on need, drawing on existing plans and evidence such as the LGIF, Local Nature Recovery Strategy and other local plans and strategies. This can help distinguish between locations that are more or less suitable for different funding models.
2. **Commissioning site-specific benefit and funding assessments for priority projects.** These could quantify cooling, health, amenity, flood reduction, biodiversity, carbon, and tourism benefits, to support the investment case and identify which beneficiaries could reasonably contribute to funding or maintenance.
3. **Assessing maintenance funding needs.** Boroughs could be supported to develop a clearer picture of public green infrastructure maintenance needs to support asset management, inform funding requirements, and identify suitable maintenance funding models
4. **Testing investor appetite for innovative models.** There's an opportunity for the GLA and other public authorities to act as a convenor to engage potential investors, including London CIV, London borough pension funds, and others, to better understand the appetite for outcome bonds and a blended finance endowment fund. This could be used to test the scale of investment that could be mobilised, the return and risk profile investors would require, and the types of green infrastructure projects or maintenance needs that could credibly generate investable revenue streams.

Deep dive 4: Install outdoor shading structures to reduce temperatures and decrease sun exposure – for example, shade canopies, shade sails and pergolas.

The investment case for London

There is a limited quantitative evidence base of BCRs for engineered shading structures, particularly in the UK context. However, evidence from Australia and the United States suggests that passive recreation areas in parks with shade sails had almost four times higher odds of being used than unshaded areas,[447] while retail evidence suggests that longer dwell times can increase spending. This points to a potential role for shading in supporting town centres, high streets, and public spaces. However, more work is needed to understand whether higher footfall is additional, rather than displaced from non-shaded areas to shaded areas.

Shading structures also deliver wider public benefits. They can reduce heat stress, sunburn and skin cancer risk; support outdoor worker productivity; strengthen community use of public space; and possibly reduce solar gain in nearby buildings.

Careful siting and design will be needed to avoid unintended impacts, including any reduction in air movement that could affect local air quality or thermal comfort.

Key barriers for funding and financing

Stakeholders reported several challenges in funding and financing shading structures:

- The relative unfamiliarity of shading structures in London and elsewhere in the UK may make public bodies, businesses and communities less confident about where they are appropriate; how they should be designed; and what benefits they can deliver.
- The need to maintain free public access limits some revenue-generating models, especially given the ongoing maintenance needs of most structures.
- Planning, highway and streetscape constraints complicates delivery, adding cost, complexity and delay.

Potential funding and finance models

Engineered shading structures offer more scope for private sector involvement than many other measures. **Sponsorship, BID funding, Section 106 agreements, and social value commitments** all represent potentially attractive models, particularly in high-footfall locations or where developer interest is concentrated. An **advertising-based** model could also be explored. Under this approach, either public or private finance would be used to construct the shading structures, with the asset owner generating income by selling advertising rights on or around the shading assets. This could provide a relatively flexible and diversified source of revenue, as income would not depend on securing a single sponsor or long-term commercial partner. This model is already used successfully in London for bus shelters; and may have potential in other locations where footfall is sufficient to attract advertising revenue.

447 Buller et al. (2017): Shade Sails and Passive Recreation in Public Parks of Melbourne and Denver: A Randomized Intervention Randomized Intervention

However, as with green infrastructure, further work is needed to understand the extent to which commercially attractive locations overlap with the places where shading is most needed. This links to a risk that exclusive reliance on sponsorship, advertising or developer-led models could concentrate investment in high-footfall and more prosperous areas, rather than in locations where heat risk and vulnerability are greatest.

For this reason, some **local government funding** will likely still be needed. This could be supported by potential sources like **borough CIL receipts** and **overnight visitor levy revenues**. Stakeholders also highlighted Mayoral CIL receipts as a potential source. However, this is currently committed to funding the Crossrail scheme until 2041; and any expansion would require public consultation, stakeholder support, and government approval. For both borough and Mayoral CIL, development viability concerns may also limit the scale of revenue that could realistically be raised. The overnight visitor levy could be attractive because visitors benefit directly from measures such as shade structures; but it would require new legislative powers and would likely face competing demands on any revenue raised.

Charitable, philanthropic and community funding could also play a complementary role, particularly in areas of high need. However, these sources are unlikely to be sufficient to meet city-wide needs on their own.

One further option, which has not been explored in detail, is **solar-integrated shading**. This could allow some of the costs of installation and maintenance to be recovered through electricity generation or sales. Further work would be needed to assess whether the additional engineering, construction and maintenance costs would be outweighed by the revenues generated.

Figure 21 sets out some of the key advantages and disadvantages of the some of the most attractive funding and financing models for shading, alongside the key benefits and beneficiaries.[448]

Credit: Dan Lynn on Unsplash

448 See technical Annex, 'Annex B: Funding and financing assessment' a long list of models assessed.

Shading Structures

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
Advertising	Flexible Diversified revenue source	Commercial interest may not reflect where needs are greatest Long-term uncertainty over revenue
Sponsorship	Potential for significant revenue from one commercial partner	Commercial interest may not reflect where needs are greatest Concentration risk from reliance on one sponsor
Business Improvement Districts	Established model Voting implies high acceptability where implemented	Commercial interests may not align to areas of greatest need
Section 106 Agreement/Social Value Investment	Well established/easy to implement	Unlikely to support scaling Only relevant in areas of developer interest
GLA/London Borough revenue funding and borrowing	Well established/easy to implement	Low resource mobilisation potential
Philanthropic, charity and community funding	Can target most vulnerable locations/people	Limited resource mobilisation potential
Further options available in the longer term		
Overnight visitor levy	Reflects visitor benefits from shading Likely high acceptability	Competing demands for funding
Solar-integrated shading	Potential to make structures commercially viable	More work needed to understand if revenues can cover costs

Figure 21: Summary assessment of funding and financing models for shading.

Enabling conditions to scale finance

The success of any funding or finance model will depend on several enabling conditions being in place:

- **Stronger evidence on benefits and commercial impact.** Scaling engineered shading structures will require better London-specific evidence on their health, cooling and thermal-comfort benefits, alongside their potential to support footfall, dwell time and wider use of public spaces.

- **Clearer planning and delivery requirements.** Given the relative novelty of engineered shading in London, clearer understanding of planning requirements, maintenance responsibilities and delivery constraints will be needed to support wider rollout.

Future opportunities to be explored in London

1. **Identify and prioritise pilot locations for shading structures.** This should focus on high heat-risk locations where shading could support public health, outdoor workers, high streets, visitor comfort, or public transport use.
2. **Take forward a small number of high-profile pilots with structured evaluation.** Pilots should collect evidence on cost, use, footfall, dwell time, user experience, maintenance needs etc.
3. **Explore planning and commercial routes for repeatable deployment.** The GLA and boroughs could consider how London Plan Guidance, local public realm guidance, or Local Development Orders will or could influence roll-out.
4. **Investigate the potential for solar-integrated shading**. This could assess where solar-integrated structures might be technically feasible, how much electricity they could generate, whether revenues could offset installation or maintenance costs, and whether they could support nearby public assets such as lighting, charging points, or community facilities.

Deep dive 5: Maintaining, raising awareness of and, where possible, expanding public drinking-water points and public toilets.

The investment case

The London Assembly has highlighted the importance of public toilets to make London accessible, inclusive, and welcoming.[449] Rising temperatures strengthen the case to also expand public drinking points. Better provision improves welfare; and supports older[450] and disabled Londoners to travel more safely. It also helps high streets and visitor destinations be more attractive, while reducing street cleaning costs and plastic waste. Despite growing qualitative evidence on the importance of these measures, further work is needed to estimate BCRs, likely returns on investment, and the distribution of benefits across different groups and organisations.

Credit: GLA

449 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

450 Age UK London (2022): Public toilets in London: the views of older Londoners

Key barriers for funding and financing

Stakeholders identified several barriers to funding and financing public toilets and drinking water points:

- Maintaining free access is important – but cleaning, maintenance, and security costs can be significant, making it difficult to develop sustainable financial models for expanding provision.
- Because boroughs do not have a statutory duty to provide public toilets, provision can be deprioritised when budgets are under pressure.
- Benefits are spread across users, retailers, visitors, transport operators, and the public sector, making it difficult to identify who could pay or how costs might be recovered.

Potential funding and finance models

Local government funding is likely to play a central role, given the limited scope for direct revenue generation and the importance of free access. This also reflects that local taxpayers will be among the key beneficiaries of improved facilities. **Community toilet schemes** could provide a relatively low-cost way to extend provision by making existing facilities in some private and public buildings available to the public – although they are unlikely to remove the need for dedicated public facilities in high-need locations.

Additional local government revenue sources could include a share in proceeds from a **future overnight visitor levy**, given that visitors benefit directly from toilets and drinking water in high-footfall areas.

A more fundamental option, previously identified by the London Assembly, would be to place a statutory duty on local authorities to provide facilities, accompanied by **ringfenced central government funding**.[451]

Private sector models could play a complementary role through **advertising, sponsorship** and **BID funding**, operating in similar ways to those described for the deep dives above. A further option, which London has already pioneered, would be to seek further **partnership with water companies**, particularly for drinking fountains. In the short run, any water-company engagement is likely to be driven by corporate social responsibility and/or public value considerations, rather than direct revenue generation.

However, these models are likely to be most viable in commercially attractive locations; and are unlikely to meet city-wide need on their own. As a longer-term option, the provision of public drinking fountains could be made an **explicit licence responsibility** for regulated water utilities, with costs recovered from water bill payers. However, this would require significant engagement with the water sector regulator and a clear case that such expenditure is in (all) customers' interests.

Figure 22 summarises some of the key advantages and disadvantages of the high potential funding and finance models, as well as the key benefits and beneficiaries that this action will support.[452]

451 London Assembly Health Committee (2021): The Toilet Paper: The London Assembly Health Committee's three principles for improving public toilet provision in London

452 See technical Annex, 'Annex B: Funding and financing assessment' for a long list of models assessed.

Drinking Water Fountains & Public Toilet provision

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
GLA/London Borough revenue funding and borrowing	Well established/easy to implement Reflects that many beneficiaries will be local	Low resource mobilisation potential
Central government grants	High public support More progressive than local government funding	Fiscal impact may limit acceptability (in central government)
Advertising	Flexible Diversified revenue source	Commercial interest may not reflect where needs are greatest Long-term uncertainty over revenue
Sponsorship	Potential for significant revenue from one commercial partner	Commercial interest may not reflect where needs are greatest Concentration risk from reliance on one sponsor
Business Improvement Districts	Established model Voting implies high acceptability where implemented	Commercial interests may not align to areas of greatest need
Water company partnerships (CSR)	Model already demonstrated in London	Commercial interest may be limited
Further options available in the longer term		
Overnight visitor levy	Reflects visitor benefits from toilet provision Likely high acceptability	Not yet definitely available, competing demands for funding
Water company license obligation	Well established Low-risk funding model	Requires extensive engagement to take forward

Figure 22: Summary assessment of funding and financing models for public drinking-water points and toilets.

Enabling conditions to scale finance

Key conditions are needed to help improve the enabling environment for this action:

- **Clearer statutory responsibilities** may open up new funding options and create a more stable basis for long-term provision, cleaning and maintenance.

- **A prioritised cross-city pipeline of sites** would help identify where need is greatest, what type of provision is most appropriate, and which funding model is most viable in each location. It would also help distinguish between sites that could attract advertising, sponsorship, or partnership funding, and those where public funding will remain essential.

Future opportunities to be explored in London

1. **Developing a cross-London priority map for toilets and water fountains.** This would help identify where provision is most needed based on heat risk, footfall, transport use, older and disabled people's needs, tourism, rough sleeping, homelessness, and existing gaps in provision. A clearer pipeline would help make the case for targeted public funding and identify where other funding sources might contribute.
2. **Strengthening the evidence base on health, accessibility, and economic benefits.** Further work could quantify how improved provision affects dehydration risk, hospital admissions, journey-making, high street activity, street cleaning costs, and plastic waste. This would strengthen the investment case and help identify which funding routes are best aligned with the benefits delivered.

Deep dive 6: Enhancing community cool spaces, and linking them with community-led initiatives, to increase awareness of heat health risk; and engaging communities to prepare and respond to heat.

Given the level of investment likely to be requi.e. this analysis focuses on the expansion and enhancement of London's network of cool spaces. The evidence for costs, benefits and effectiveness remains limited. As a result, the findings in this section draw on a combination of available literature and stakeholder engagement; and should be treated as indicative.

The investment case for London

There is currently an evidence gap about the costs and benefits of cool spaces in London, and this requires further piloting to gather evidence on effectiveness before large-scale investment proceeds. Recent nationwide modelling found that extending the use of pre-existing public cool spaces and buildings to help keep people cool can cost-effectively reduce excess heat-related mortality, with a BCR of 1.7:1 by the 2050s. However, real-world evaluations of impact are thin, with mixed evidence. While some studies suggest that cool hubs can improve welfare, and may reduce heat-related mortality, others suggest benefits may be temporary where people return to hot homes or other high-risk environments.[453]

453 Dearman et al. (2025): Public health effectiveness of cooling centres during periods of adverse hot weather: a systematic literature review

The case for investing in cool spaces can be strengthened by recognising the wider range of benefits they can deliver when embedded within community resilience efforts. Rather than acting solely as places of temporary refuge, cool spaces can be integrated with trusted local networks to provide heat-health information; identify vulnerable residents; and deliver targeted support to vulnerable individuals, such as distributing home-cooling aids.

This could extend benefits beyond the time people spend in the space itself, supporting wider health, social and community resilience outcomes.

The main beneficiaries are expected to be heat-vulnerable users – particularly low-income tenants in poorly adapted social housing or private rented flats prone to severe indoor overheating, older adults, as well as those experiencing homelessness, outdoor workers, and people without access to safe, cool indoor environments. As well as the comfort benefits, users could also benefit from increased productivity if these spaces are used for work, a benefit shared with their employers. Wider benefits could include reduced pressure on health services, lower emergency-response costs for boroughs, and opportunities for public engagement.

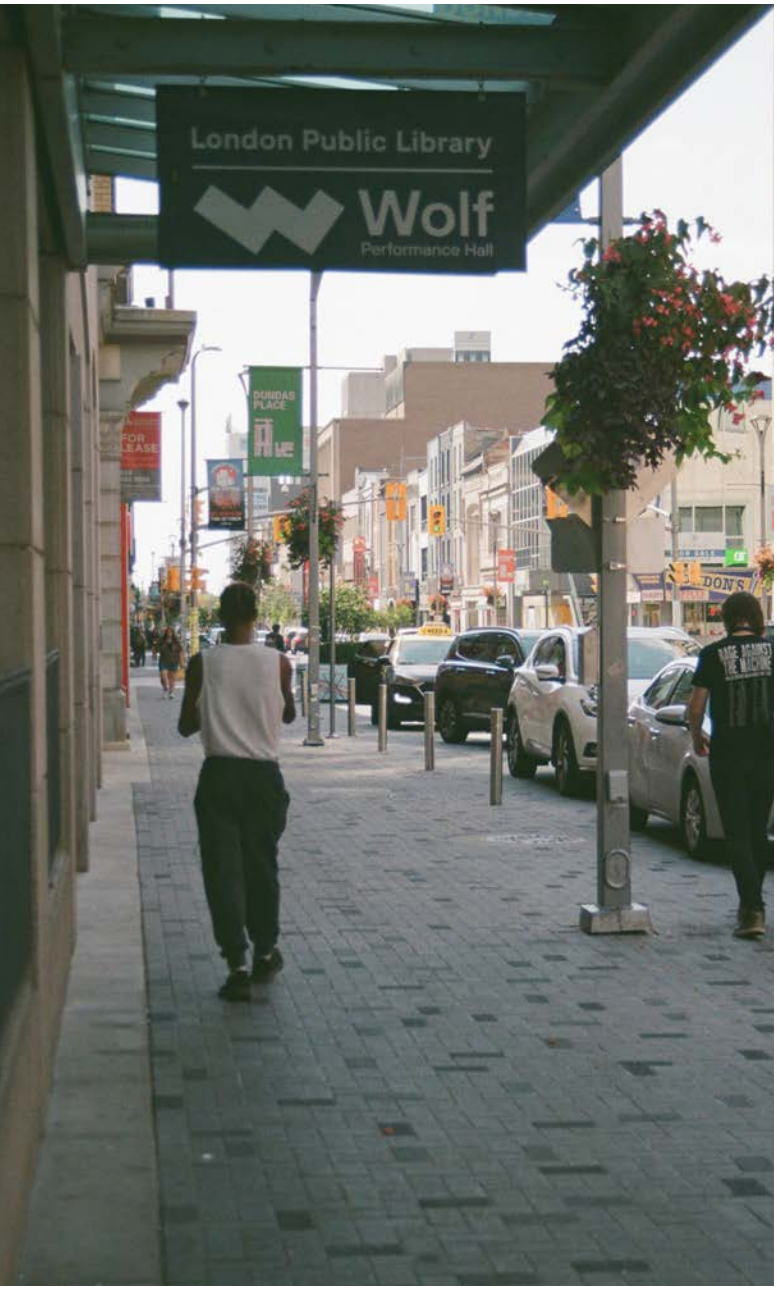
Key barriers for funding and financing

Stakeholders reported several barriers to funding and financing cool spaces:

- More data is needed on users, outcomes, costs and effectiveness to strengthen the case for future funding.
- There is no clear revenue model for cool spaces, which limits options for private investment to scale delivery. As cool spaces need to remain free to meet their social purpose, this limits opportunities for private investment cost recovery.
- Providers need to manage operational risks, including staffing, safe conditions and whether travel to cool hubs during heatwaves is appropriate.

Potential funding and finance models

Given the largely public and social benefits delivered by cool spaces, **public funding is likely to remain the primary funding source**, although complementary funding and financing models could help expand provision and reach. Some cool spaces are already being provided through existing free-to-access buildings, including libraries, community buildings, faith buildings, leisure centres, and voluntary sector networks. The next phase of delivery could expand this approach. Further **local public funding** could widen participation, potentially through a reverse auction in which providers bid for the support needed to make suitable cool space available during periods of extreme heat.



Credit: Kelvin Taylor on Unsplash

There may also be an opportunity for **London boroughs and the health system to pool resources to fund cool spaces**, particularly where these interventions can reduce heat-related health impacts and pressure on services. A co-commissioning model could be explored where boroughs and health partners jointly fund cool space-centred community interventions, based on the public health and service benefits they deliver.

Sponsorship and advertising may be viable in some locations, particularly where there is high footfall or a clear community profile. However, this runs the risk of funding flows to spaces located in areas of greatest commercial value, rather than greatest need. Private **utility-supported resilience hubs**, ultimately funded by a combination of utility customers and shareholders, may also have potential. For example, PG&E's Resilience Hubs Grant programme in California has supported community organisations to develop local resilience hubs, including spaces and resources that help communities respond to heat waves.[454] However, the need for ongoing investment to maintain cool spaces each year may limit the viability of private or philanthropic funding, as these funders' priorities shift.

Figure 23 summarises the key advantages and disadvantages related to the high potential funding and financing models for this action, as well as the main benefits and beneficiaries.[455]

454 PG&E (n.d.): Resilience Hubs Grant program

455 See technical Annex, 'Annex B: Funding and financing assessment' a long list of models assessed

Cool Spaces

Key Benefits

Key Beneficiaries

Models	Key advantages	Key disadvantages
Near-term high potential funding and financing models		
Local government revenue funding and borrowing	Well established/easy to implement Reflects that many beneficiaries will be local	Concerns around fiscal impact on local authorities
Philanthropic, charity and community funding	Can target most vulnerable locations/people	Low resource mobilisation potential
Central government grants	High public support More progressive than local government funding	Limited fiscal space poses a barrier
Further options available in the longer term		
Sponsorship	Potential for significant revenue from one commercial partner	Commercial interest may not reflect where needs are greatest Concentration risk from reliance on one sponsor leads to long-term uncertainty over revenue
Advertising	Flexible Diversified revenue source	Commercial interest may not reflect where needs are greatest Long-term uncertainty over revenue
Utility companies	Likely high public acceptability Established international model shows how it could work	Appetite of utilities unclear

Figure 23: Summary assessment of funding and financing models for cool spaces.

Enabling conditions to scale finance

The key enabler for the expansion of cool spaces is a stronger and more consistent evidence base:

- **Structured monitoring of effectiveness, costs and users.** A more consistent approach to data collection and evaluation would help compare different cool space models, understand who uses them, and identify where they are most effective.

- **Better evidence on potential health outcomes and avoided costs.** More evidence is needed on whether cool spaces reduce heat-related health impacts, emergency call volumes, hospital admissions or pressure on public services. Lambeth's partnership with King's College London to evaluate the Cooling Fiveways initiative in north Brixton is a useful example.[456] This analyses how cool space-centred interventions in north Brixton affect emergency call volumes. If evaluations show avoided costs for local authorities and the health system, this could strengthen the investment case and support future co-funding arrangements between boroughs, health partners and other public bodies.

Future opportunities to be explored in London

- **The next phase of cool space provision could be used as a structured pilot to build the case for future funding or scale-up.** There is an opportunity for regional and local authorities to agree a common monitoring framework covering users, costs, health and wellbeing outcomes, operational challenges, staffing requirements, and avoided public service pressures. This framework can then be applied to assess performance of a selection of cool hubs across the city.

Summary and cross-cutting next steps

Table B below shows the key benefits, who benefits, value for money, and high potential funding and financing models for each of the deep dives. It reinforces that many heat adaptation measures likely deliver strong economic value, with benefits exceeding costs.

The table also highlights that many funding and financing models are relevant across multiple deep dives. Public funding will remain important across all six areas, particularly where benefits are mainly public, such as improved health, reduced service pressure and greater equity. Local government funding and borrowing may also play a role where fiscal space allows, while central government funding will be important where benefits accrue nationally through reduced pressure on health services or wider productivity gains.

Private funding and financing models also have relevance across several deep dives. BID funding, Section 106 agreements, sponsorship and advertising could all help support green infrastructure, shading structures, public toilets and drinking fountains, and potentially some forms of cool space provision.

These overlaps point to several cross-cutting steps that could support delivery across the portfolio. These are steps that can both directly facilitate financial flows, alongside wider enabling reforms that make investment easier to justify, structure and deliver.

456 Lambeth Climate Partnership (2026): Cooling Fiveways: Heat Risk Research Project

- **Building the evidence base to strengthen the investment case.** Public authorities, lenders, insurers and academic institutions can help strengthen the evidence base on the costs and benefits of heat adaptation. This should include both general and site-specific analysis, with a focus on who benefits, where financial savings or revenues may arise, and who could reasonably contribute to delivery costs. A clearer distinction is needed between **wider economic benefits**, such as improved health, productivity and avoided disruption, and **financial benefits**, such as reduced operating costs, lower energy bills, avoided repairs or higher rental income. Better evidence on **cashable financial benefits** could help show where heat adaptation projects might generate enough savings, income or reduced risk to justify borrowing or attract private finance.
- **Developing prioritised, costed investment pipelines for place-based heat adaptation measures.** These pipelines would support stronger business cases by clarifying what is needed; where investment should be targeted; likely costs and benefits; and which delivery routes are most appropriate. They would also help identify where private, philanthropic or partnership models may be viable, and where public funding will remain essential.
- **Embed cooling measures into existing programmes.** Building on the Warmer Homes Plan's recognition of the importance of cooling in home retrofit, there are opportunities to better integrate heat adaptation with net-zero policy and funding mechanisms where possible, including energy-efficiency retrofit and low-carbon heating programmes, so buildings are warmer in winters and safer in summers.
- **Explore existing and new funding routes.** There is an opportunity for public authorities to engage potential private, public and third-sector partners, including BIDs, sponsors, advertisers, developers, utilities and philanthropic funders, to test which funding and finance models may be viable. This would help identify which types of adaptation assets are most attractive to different funders and investors, what evidence they need to support investment, and where public funding will remain essential to protect equity and ensure provision in areas of greatest need.

Credit: Min Felix Xu on Unsplash

Table 02: Summary of funding and financing analysis for deep-dives.

Deep dive	Indicative BCR	Outcome	Key benefits	Who benefits	High potential funding and financing model options
Housing retrofits	1.2-1.8:1 depending on the type of building and retrofit measures –possibly higher	Cooler homes	Fewer deaths; better health, comfort and sleep; improved productivity; less disruption to education; lower energy costs in some cases	Residents; homeowners; health and care services; emergency services; employers and HM Treasury (through productivity gains)	• Private market (including green mortgages) • Central government grants • Social housing provider borrowing • Blended finance retrofit one stop shop
Care home retrofits	0.17-11.2:1 depending on the type of building and retrofit measures	Cooler vulnerable settings	Fewer deaths; better health, comfort and sleep; less disruption to care; lower energy costs in some cases	Residents; health and care services; boroughs; staff and service users; emergency services	• Existing care home funding model • Better Care Fund • Public-private partnerships • Blended finance retrofit one stop shop • Cooling and heating as a service
Green infrastructure	5.6-27:1	More shade and cooling from trees and parks	Lower temperatures; improved health and wellbeing; recreation; biodiversity; water management; and commercial activity	Residents; visitors; landowners; developers; boroughs; businesses	• GLA/borough revenue funding and borrowing • Central government grants • TfL Local Implementation Funding • Philanthropic/ charitable funding • S106/social value investment • BIDs • Sponsorship • Sale of environmental credits • Water company balance sheets • Overnight visitor levy* • Outcome bonds* • Blended finance endowment fund*
Shading structures	Not well evidenced but expected to be above 1	More shade and cooling from structures	Lower temperatures; improved health and wellbeing; increased commercial activity	Residents; visitors; landowners; developers; boroughs; businesses	• Advertising & sponsorship • BIDs • S106/social value investment • GLA/borough revenue funding & borrowing • Philanthropic/ charitable funding • Overnight visitor levy* • Solar integrated shading*

Deep dive	Indicative BCR	Outcome	Key benefits	Who benefits	High potential funding and financing model options
Public toilets and water fountains	Not well evidenced but expected to be above 1	More toilets and improved hydration	Safer and inclusive public spaces; better health; increased productivity and commercial activity	Residents; older people; outdoor workers; businesses; visitors; boroughs	• GLA/borough revenue funding and borrowing • Central government grants • Advertising and sponsorship • BIDs • Water company partnerships (CSR) • Overnight visitor levy* • Water company licence obligation*
Cool spaces	1:7:1 in one study, but more evidence is needed	Better access to cool spaces	Improved health outcomes, reduced pressure on emergency and care services	Londoners; emergency services; boroughs; taxpayers	• GLA/borough revenue funding and borrowing • Philanthropic/ charitable funding • Research councils • Central government grants • Advertising & sponsorship* • Utility companies*

* These funding and financing models are only expected to be feasible in the medium term. Significant work is required to assess detailed feasibility and create the enabling environment.

13

Conclusion

CONCLUSION

London must adapt to the impacts associated with high temperatures, as the economic damages from heat risk in London are already in the billions. This shows that London is particularly exposed to heat risk, due to the UHI effect, high population density, ageing population, and many other factors.

This plan has outlined 37 priority areas of focus across six sectors to reduce heat risk in London, and enhance the city's resilience for the future climate. Action will need to be delivered in partnership with many organisations; and the public must be mobilised to play their part in keeping heat-safe and supporting adaptation.

Implementation of the plan will begin by establishing the governance arrangements to facilitate partnership working, and by collating data to establish an accurate baseline for monitoring of heat risks and adaptation progress.

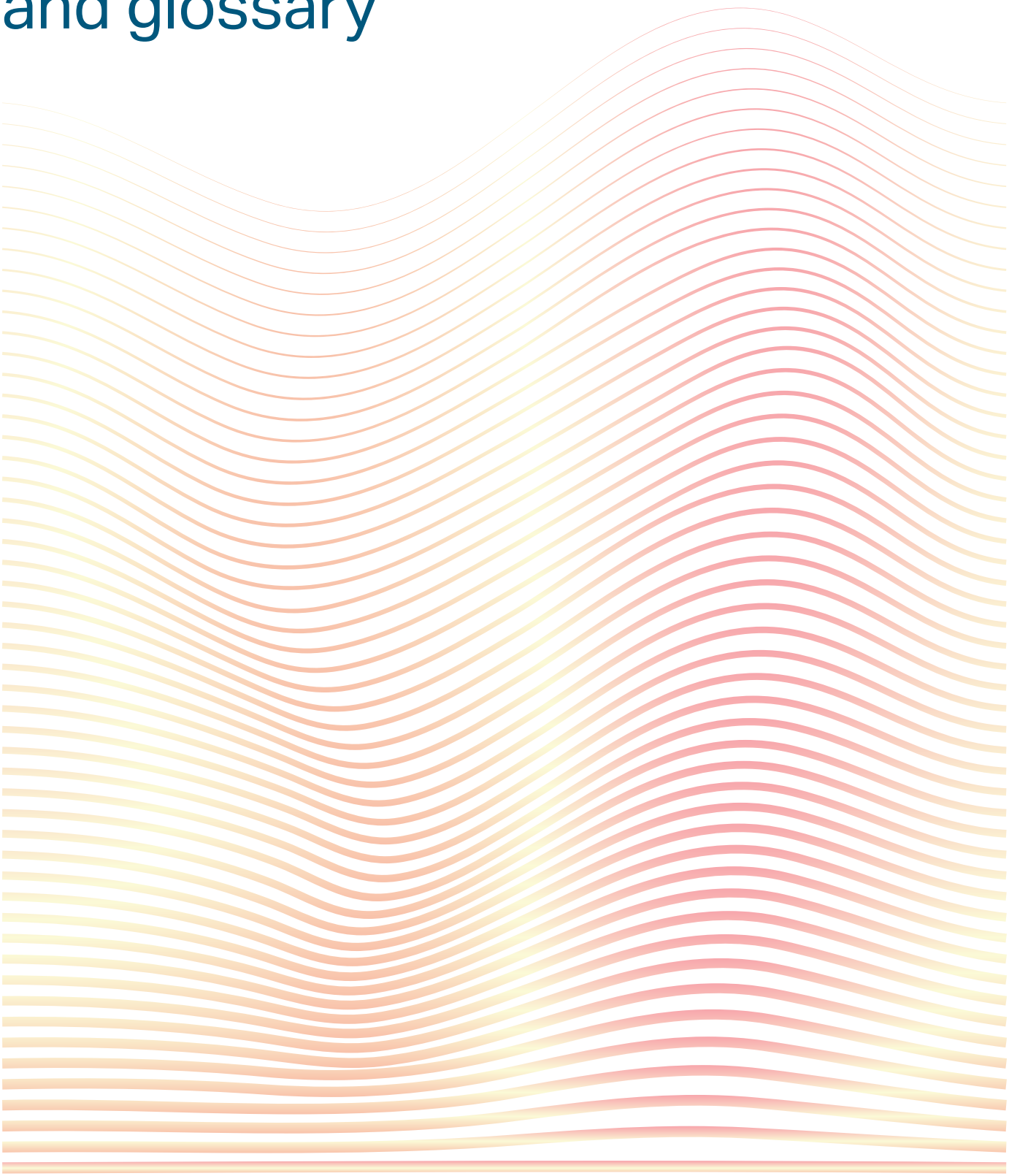
Development of this technical report has identified several data gaps relating to the effectiveness, costs and benefits of some adaptation actions, and so further work will be needed across partners to fill these gaps.

Significant investment is required to enable progress on heat risk adaptation. The funding and financing chapter outlines the next steps that will be taken to explore avenues to address the investment gap. Delaying investment will increase the extent of spending needed in the future, miss opportunities to create wider benefits, and in the short term, leave the city without the protection it already needs.

While it is not possible to eliminate heat risk altogether, collective responsibility and action can better prepare London to manage, respond and adapt. Leadership across boroughs, organisations and community groups is required to galvanise action and ensure London becomes a more liveable, prosperous, inclusive and equitable city.

14

Acronyms and glossary



ACRONYMS

Abbreviation	Definition
BCR	Benefit-cost ratio
BID	Business Improvement District
CCC	Climate Change Committee
CIBSE	Chartered Institution of Building Services Engineers
CIL	Community Infrastructure Levy
CRL	Cooling Roadmap for London
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DfE	Department for Education
DFG	Disabled Facilities Grant
DHSC	Department of Health and Social Care
EPRR	Emergency preparedness, resilience and response
EqIA	Equalities Impact Assessment
FOI	Freedom of Information
GLA	Greater London Authority
ICB	Integrated Care Board
LAEP	Local Area Energy Plan
LCRR	London Climate Resilience Review
LFB	London Fire Brigade
LGIF	London Green Infrastructure Framework
LRCG	London Resilience Communications Group

Abbreviation	Definition
MHCLG	Ministry of Housing, Communities and Local Government
NHS	National Health Service
NPPF	National Planning Policy Framework
NWF	National Wealth Fund
PAS	Publicly Available Specification
P2R	Pathways2Resilience
SMEs	Small and Medium-sized Enterprises
SuDS	Sustainable drainage systems
TfL	Transport for London
UHI	Urban heat island
UKHSA	UK Health Security Agency
VCFS	Voluntary, community and faith sector

GLOSSARY

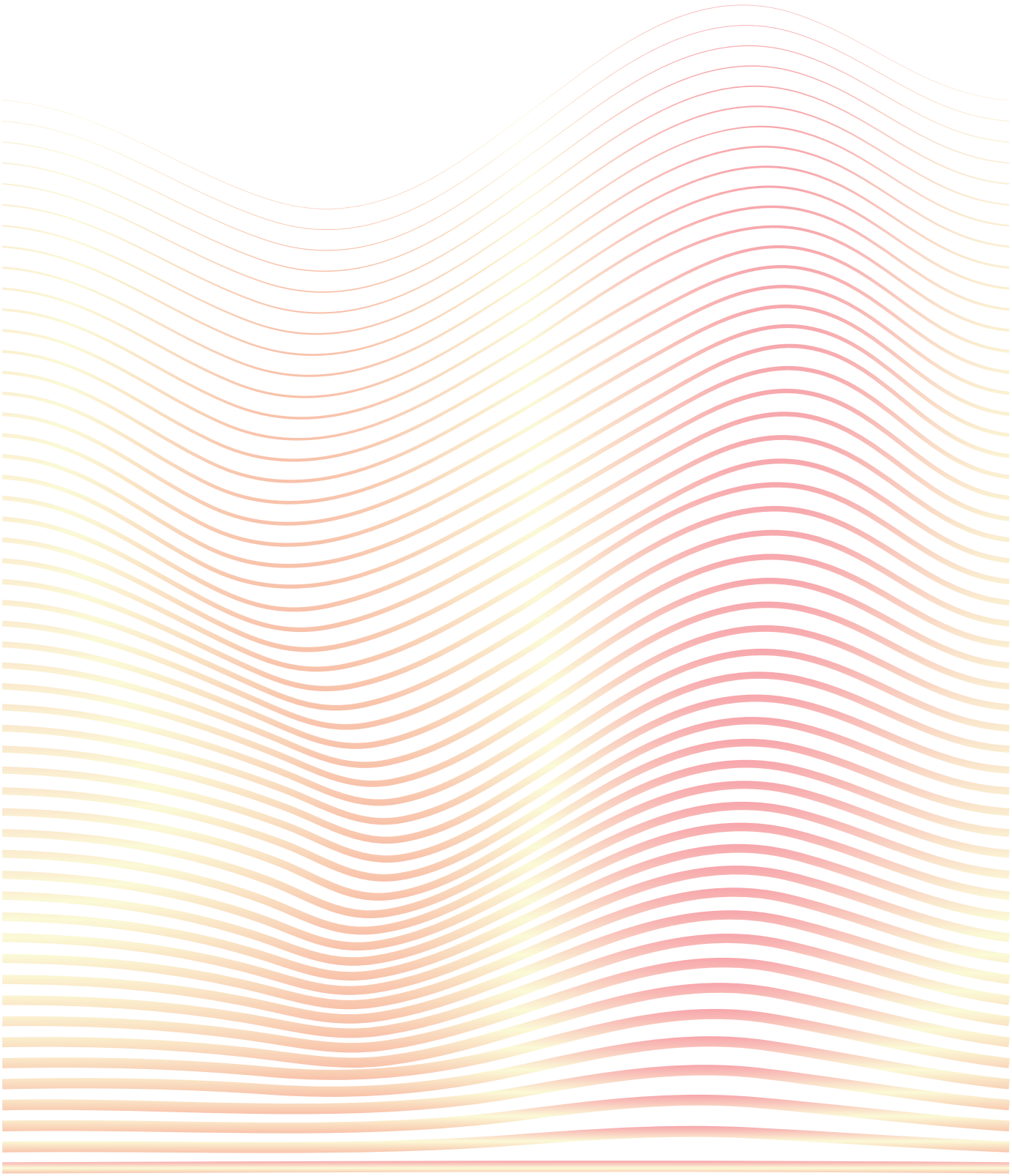
Term	Definition
Active cooling	Cooling provided through mechanical systems such as air conditioning, fans, or heat pumps.
Adaptation (climate change)	The process of adjusting systems, infrastructure and behaviours to reduce harm from current or expected climate change impacts.
Adaptation pathway	A decision-making approach that allows decision-makers to take actions under uncertainty; and identify what actions can be taken now and in the future.
Adaptive capacity	The ability of people, organisations or systems to prepare for, respond to, and recover from the impacts of climate change.
Benefit-cost ratio (BCR)	A measure used to compare the benefits of an intervention with its costs. A BCR above 1 indicates that the estimated benefits exceed the estimated costs.
Blended finance	A financing approach that combines public and private finance. Public finance is typically used to reduce risks or improve returns for private investors and/or to enhance affordability
Blue infrastructure/ blue spaces	Water-based features such as rivers, lakes, canals and fountains that help cool urban areas and support resilience.
Built environment	The human-made surroundings where people live, work and interact, including homes, buildings and public spaces.
Business Improvement District	A defined area in which local businesses, through a vote, agree to pay an additional levy to fund improvements, services or activities that benefit the area.
Climate resilience	The ability of systems, people and places to prepare for, withstand and recover from climate impacts such as heatwaves.
Cooling/heating as a service	A model in which a third-party provider delivers cooling or heating outcomes, rather than the building owner directly purchasing and managing the equipment. The provider may finance, install, operate and maintain the system, with customers paying over time based on use, availability or performance.
Cool spaces/ cool hubs	Buildings or locations that provide relief from high temperatures, typically offering shade, seating and access to water.
Decarbonisation	The process of reducing carbon emissions, particularly from energy use in buildings, transport and infrastructure.
Endowment fund	A fund in which capital is set aside and invested to generate income over time. The income can then be used to support ongoing activities while preserving some or all of the original capital.

Term	Definition
Equity (climate)	A principle recognising that climate risks and impacts are unevenly distributed; and that action should prioritise those most at risk.
Finance	Capital provided upfront to pay for an investment, usually with an expectation that it will be repaid over time. Finance helps bridge the gap between when costs are incurred and when funding becomes available.
Funding	The revenue or resources used to pay for an intervention over time. This can include paying for upfront costs directly, covering ongoing operating and maintenance costs, and repaying any finance that has been raised to deliver the intervention.
Green infrastructure	Natural features such as parks, trees and green roofs that provide cooling and wider environmental benefits.
Heat exposure	The extent to which people, buildings or infrastructure experience, or are exposed to, high temperatures.
Heat-health impacts	Health effects caused or worsened by high temperatures, including heat exhaustion, heatstroke, and increased mortality.
Heat island effect (urban heat island)	The phenomenon where urban areas experience higher temperatures than surrounding rural areas due to buildings, materials, and human activity.
Heat risk	The likelihood and severity of negative impacts from high temperatures, based on exposure, vulnerability, and adaptive capacity.
Heatwave (Met Office definition)	A period of at least three consecutive days during which daily maximum temperatures meet or exceed a location specific threshold; in London, this threshold is 28°C.
Outcome bond	A bond structure in which investor returns are linked, at least in part, to the achievement of defined outcomes or revenues generated by those outcomes. In the context of green infrastructure, returns may be linked to environmental credits or other measurable benefits.
Overheating	Indoor temperatures that exceed safe or comfortable levels, affecting health, wellbeing and productivity.
Passive cooling	Cooling achieved through design and natural processes, such as shading and ventilation, without mechanical systems.
Public private partnership	A contractual arrangement between a public body and a private sector organisation to deliver infrastructure or services. The private partner may finance, build, operate or maintain the asset, with payments made over time by the public sector, users, or a combination of both.
Resilience	The ability of systems or communities to withstand, adapt to, and recover from shocks and stresses.
Section 106 agreement	A legal agreement between a local planning authority and a developer, used to make a development acceptable in planning terms.
Social value contribution	A contribution made by an organisation to deliver wider social, economic or environmental benefits alongside its core contract or investment.

Term	Definition
Social vulnerability	The extent to which individuals or communities are more at risk from climate impacts due to factors such as age, health, or income.
Supply chain resilience	The ability of supply chains to continue functioning during disruptions such as extreme heat.
Urban greening	The introduction or enhancement of vegetation in urban areas to provide cooling and environmental benefits.
Vulnerability (climate)	The degree to which a system or population is susceptible to harm from climate impacts.
Whole-systems approach	An approach that considers the interconnections between sectors, systems, and stakeholders when addressing complex challenges such as heat risk.

15

Acknowledgements



The Heat Ready London Technical Report has been developed by the GLA with support from London Councils.

This project has received funding from the European Union's Horizon Europe research and innovation programme Pathways2Resilience under grant agreement No 101093942. The European Commission is not responsible for any use that may be made of the information it contains.

Development of the report was led by AtkinsRéalis and Pengwern Associates.

The GLA's City Intelligence Unit, Shade the UK and the University of Liverpool undertook analysis and public engagement to inform development of the plan. Many other organisations undertook analysis and engagement to inform development of the plan. These have been referenced throughout.

Many stakeholders across London contributed to workshops, meetings, and roundtables to support development of the plan. Additionally, Londoners provided inputs through surveys and public engagement.

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