

Written evidence submitted by the London Climate Change Partnership**Environmental Audit Committee Inquiry on Heat Resilience and Sustainable Cooling****1. About the LCCP**

- 1.1 The London Climate Change Partnership (LCCP) is an independent partnership comprising public, private and community sector organisations that play a role in preparing London for extreme weather and climate change today and in the future. We have worked to increase climate resilience within and between sectors in London since 2001. The Partnership facilitates collaboration on research, delivery programmes, awareness and knowledge transfer on climate adaptation and resilience across London.
- 1.2 Our members include but are not limited to those organisations with statutory or regulatory responsibility with respect to climate change adaptation and resilience including but not limited to the Greater London Authority, Environment Agency, Transport for London, the Port of London Authority and Thames Water.
- 1.3 This response is based on inputs from the members of the Partnership, but does not represent the views of any individual Partner.

2. Executive summary:

- 2.1 Heat and heatwaves are recognised as a risk for London, with impacts on health, productivity, transport infrastructure, and other sectors already being observed, and expected to intensify as the climate changes. As with other climate-related risks, overheating will disproportionately affect populations with particular social or physical vulnerabilities.
- 2.2 The Government's response to overheating risk has so far been inadequate. Despite the actions outlined in the Government's second National Adaptation Programme (NAP2; 2018-2023) the Climate Change Committee's Adaptation Committee found that the UK's exposure and vulnerability to heat stress was increasing. The Committee's latest progress report in March 2023 preceded the publication of the most recent third National Adaptation Programme (NAP3), it clearly indicated that NAP2 had not adequately prepared the UK for climate change and that impacts from extreme weather are already being experienced. This indicated the urgent need for NAP3 to "lead a long overdue shift in focus towards the delivery of effective adaptation". This shift is not in evidence from the NAP3, which, although more comprehensive in its inclusion of climate risks, still demonstrates an incoherence across policy areas, with no strategic adaptation plans developed, no core vision for what a well-adapted UK would look like and no indicators or performance standards to guide effective delivery.
- 2.3 On overheating risks, NAP3 does not provide adequate policies to respond to the clear and obvious and growing risks to health and productivity due to overheating. While more research is still needed on the circumstances of those who die due to overheating, there is already information about the higher risks experienced by those with underlying health conditions, such as respiratory illnesses. Although the Heatwave Plan for England has now been replaced by the Adverse Health and Weather Plan, the overall approach of the Government is to focus on preparing the health system for dealing with the consequences of overheating, and not enough attention is being paid to preventing overheating in buildings. There is a strong case

for developing a National Heat Risk Strategy with a focus on preventing overheating of buildings in order to avoid impacts of health and productivity as the climate changes.

- 2.4 In addition, NAP3 once again fails to recognise the higher risks to health and productivity in cities of climate change, and in particular the increased risks of overheating associated with the urban heat island effect, with cities characterised by higher density buildings, a proliferation of dark man-made surfaces and large populations leading to cities being on average around 5°C warmer than surrounding rural areas. In addition, higher amounts of air pollution in cities, particularly on hot windless days, compounds the risks posed by heat to vulnerable individuals with underlying health conditions, particularly respiratory illnesses.
- 2.5 There is a need for building regulations to protect people from overheating in existing as well as new buildings, by providing a standard definition and methodology for assessing the risk.
- 2.6 Government should also take steps to ensure the consideration of overheating in retrofit and refurbishment programmes, and to communicate clearly and consistently about the risks, particularly to vulnerable populations. In particular, the installation of better insulation and other energy efficiency measures to improve heat retention on cold days should also be accompanied by improvements to ventilation and other measures to assist cooling on warm days.
- 2.7 The Mayor of London is taking steps to address the issue of overheating and sustainable cooling solutions in London. The London Plan and London Environment Strategy set out policies and proposals for managing heat in new and existing buildings and retrofit; providing information on how Londoners can prepare for heatwaves, keeping public transport cool and providing more shaded areas across the city to provide respite. London is leading on many aspects but there are a number of barriers to achieving more including the sort of leadership and funding recently demonstrated by the Biden administration.
- 2.8 We also echo the recommendation by the Climate Change Committee in its recent report – Spatial Planning for Climate Resilience and Net Zero – that there is a need to revoke the 2015 ministerial statement and proposed amendment to the planning and energy act 2008 to restrict local planning authorities from setting higher energy and performance standards. These should be dropped and replaced by a statement confirming that planning authorities are able to set more ambitious standards.

Call for evidence questions

3. What evidence exists on the relationship between heat and human health (mortality and morbidity), and which communities are worst affected?
- 3.1 The UK Health Security Agency and Office for National Statistics provides an annual assessment of excess mortality post heat episodes such as the periods of heatwave conditions during summer 2022, which resulted in 2,985 excess deaths across 5 heat episodes. Data is also available by region including separate figures for London (387 deaths). Mortality data indicates that the most vulnerable individuals are people over the age of 65 – this age group, accounts for 95% of all deaths.

- 3.2 More understanding is required about the threat posed by periods of simultaneous high air pollution and high heat in urban areas.
- 3.3 The UK Health Security Agency and Office for National Statistics provides an annual assessment of excess mortality post heat episodes such as the 2022 heatwave – which resulted in 2,985 excess deaths across 5 heat episodes. Data is also available by region including separate figures for London (387 deaths). Whilst data for mortality is available there is little data available on the impact of heat on morbidity. Mortality data indicates that the most vulnerable communities are people over the age of 65, making up 95% of all deaths.

- 3.4 Despite the increase in excess all-cause mortality observed during periods of high temperatures, surveillance of other measures of healthcare use and demand (ambulance call outs, Emergency Department attendances) frequently do not mirror this increase ie a proportional increase in presentation to healthcare services is observed. This suggests that a majority of the individuals who die during a heat episode, do so without any further contact with healthcare services. This highlights the need for a prevention-focused approach, eg through reducing harmful exposures to high temperatures.

- 3.5 A recent study of [London's homeless population](#) found that people who were homeless were approximately 35% more likely to be admitted to hospital when daily temperatures were 26C compared with a minimum temperature of 6C. No significant increase in admissions was observed on days with cold temperatures, likely the result of individuals and organisations being better prepared for winter weather.

- 3.6 The EU-funded Heat-Shield project ¹investigated the thermal resilience of European workers in the context of global warming, identifying occupations with the highest risk of work-related heat stress, impacts on health and productivity along with recommendations for workers, managers, employers and policy-makers. The project included qualitative research involving frontline clinical staff in the West Midlands of England. The research reported that frontline clinical staff did not have sufficient guidance on preventive strategies to reduce injuries in industrial workers with non-communicable disease (NCDs). Trauma consultants also reported concerns about heat-related fatigue and discomfort during the warm months pre- and post-operatively for these patients.

4. How can sustainable cooling solutions and adaptation strategies be implemented in such a way as to minimise overheating, reduce energy consumption and prevent overloading of the electricity grid during peak demand?

- 4.1 Through the Mayor of London's London Plan and the [2022 Energy Assessment Guidance](#), development applicants must follow the cooling hierarchy outlined below.

¹ <https://cordis.europa.eu/article/id/442736-important-light-on-the-effects-of-heat-exposure-on-industrial-workers-productivity>

This prioritises passive solutions over active cooling. It clearly outlines a process of prioritisation that should be followed in order, placing the adoption of more sustainable approaches first and foremost:

1. Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure.
2. Minimise internal heat generation through energy efficient design.
3. Manage the heat within the building through exposed internal thermal mass and high ceilings.
4. Provide passive ventilation.
5. Provide mechanical ventilation (MVHR) - Mechanical ventilation can be used to make use of 'free cooling' where the outside air temperature is below that in the building during summer months. This will require a by-pass on the heat recovery system for summer mode operation.
6. Provide active cooling systems - The increased use of air conditioning systems is generally not supported, as these have significant energy requirements and, under conventional operation, expel hot air, thereby adding to the urban heat island effect. However, once passive measures have been prioritised if there is still a need for active systems, these should be designed in a very efficient way and should aim to reuse the waste heat they produce.

4.2 As part of the above cooling hierarchy, development applicants must Complete the Good Homes Alliance (GHA) Early Stage Overheating Risk Tool, as well as Undertake dynamic overheating modelling in line with the guidance and data sets in Chartered Institution of Building Services Engineers (CIBSE) Technical Memorandum (TM)59. Through this, applicants must demonstrate mitigation measures to reduce the risk of overheating during future modelled extreme weather years, achieved through use of the CIBSE Design Summer Year (DSY) 2 and DSY3 weather files.

4.3 It is worth noting that in practice, where cooling has been proposed, applicants make little effort to fully demonstrate that all other measures, such as external shading (other than from balconies), have been investigated.

4.4 If cooling is considered necessary to meet overheating criteria, but passive solutions are restricted due to noise, air quality or security, then mechanical systems that provide trim cooling to reduce the peak temperatures and use significantly less energy should be prioritised (for example MVHR with small cooling loop) rather than a full air conditioning system with set point of 21°C. In new build developments, currently there is not enough incentive to reduce cooling demand and most emphasis is on improving the system efficiency.

4.5 Applicants find it particularly challenging to meet the bedroom criteria on overheating assessments and this will only become more challenging as external temperatures increase (i.e. when CIBSE weather files are next updated).

5. What actions can be taken to protect those most vulnerable to the impacts of extreme heat?

5.1 Protecting the most vulnerable Londoners from the impacts of extreme heat requires good communication. The UKHSA's heat health alerts and new matrix approach provides an early warning system which appears to have operated smoothly this

summer, although it is not clear if it has resulted in a reduction in mortality and morbidity. The temperature thresholds that were employed with the heat-health alert system in previous years were set higher than the levels at which vulnerable individuals experience elevated risks from heat. Challenges still remain with improving individuals' understanding of their own vulnerability and with increasing awareness of the impacts of heat.

5.2 More information is needed about the relationship between the extent of overheating that occurs inside buildings and the outside temperature. Vulnerable individuals inside overheating buildings experience the highest levels of risk.

5.3 In London, the Cool Spaces network helps the public find places of refuge during spells of intense heat. However these places are not designed to be used by anyone with high levels of vulnerability who may require additional medical attention. Cooling centres were established in London during the 2022 heatwave to provide cool spaces for rough sleepers who are particularly vulnerable and exposed to extreme heat. This initiative was delivered by local authorities working in partnership with the Mayor of London.

5.4 In addition to rough sleepers there are other groups of individuals that are particularly at risk from extreme heat and indoor overheating because they are not always able to adapt quickly, may have pre-existing health conditions and may be living in or spending long periods in buildings that are not adapted for climate change. These include older people residing in Care Homes where we have seen evidence of excess summer deaths during heatwaves; and children in Schools/Early Years Settings.

5.5 A pilot programme across 5 care homes in London to audit for overheating risks was carried out in 2019. One key recommendation was to ensure that the risk of overheating due to climate change should be included in all care home inspections by the Care Quality Commission.

5.6 In addition, the Mayor of London has provided guidance for schools and early years settings to outline measures needed to better prepare for and adapt to the impacts of climate change including overheating.

6. To what extent do the Government's Climate Change Risk Assessment and National Adaptation Programme (as well as other related strategies such as the Net Zero Strategy and Heat and Buildings Strategy) identify and address the risks from extreme heat? (*Note: The third NAP, covering the five-year period from 2023-2028, is expected to be published in the summer of 2023*)

6.1 The Government's Third Climate Change Risk Assessment (CCRA3) sets out 61 UK-wide climate risks and opportunities and prioritises 8 of these risk areas for action. While the phrase extreme heat is not used explicitly, extreme heat directly impacts the majority of these key risk areas, including a specific priority on "risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings".

6.2 NAP3, however, does not respond to this risk adequately and more broadly lacks ambition and strategic focus, which will be detrimental to the UK's ability to adapt to

heat and other climate risks. There is no prioritisation of actions, and proposed actions are not proportionate in scale and urgency to the issues identified in the CCRA3. There is no apparent recognition of the risks of extreme heat in urban areas NAP3 makes no mention of urban cooling measures that will be supported by the Government. The urban heat island effect in cities means they can be 5-10 degrees warmer than rural areas, because of high levels of dark surfaces that absorb the Sun's energy, and high densities of buildings and populations.

6.3 Of particular concern in the NAP3 is that several sections that count as key actions are in fact research, scoping or evidence-gathering to better understand the impacts of climate change and efficacy of potential adaptation actions – work that has or should have already taken place. For example, some actions noted are: developing and consulting on a national transportation adaptation strategy; surveying business readiness for climate impacts; and “conduct[ing] targeted research through the NAP3 implementation period from 2023 to 2028 into which building types, tenures and groups are most at risk and likely to be impacted by overheating and air pollution”. There is little detail of any actions that would actually reduce the risk of overheating..

6.4 While the risks related to extreme heat were identified in CCRA3, NAP3 and related plans do not adequately address these While more research is still needed on the circumstances of those who die due to overheating, there is already information about the higher risks experienced by those with underlying health conditions, such as respiratory illnesses. Although the Heatwave Plan for England has now been replaced by the Adverse Health and Weather Plan, the overall approach of the Government is to focus on preparing the health system for dealing with the consequences of overheating, and not enough attention is being paid to preventing overheating in buildings. There is a strong case for developing a National Heat Risk Strategy with a focus on preventing overheating of buildings in order to avoid impacts of health and productivity as the climate changes.

7. Does the current planning framework do enough to encourage heat resilience measures such as cooling shelters, water bodies, green infrastructure and shading to be integrated into urban planning? Where such measures are incorporated, how accessible and successful are they?

7.1 No, the current National Planning Policy Framework (NPPF) does not provide enough encouragement to implement heat resilience measures. There is a very general mention of the risks associated with rising temperatures through climate change which provides a useful 'hook' for other plans, but the NPPF does not provide any further detail on this or how to address the risk of overheating.

7.2 In London, the Mayor is taking action despite the lack of government leadership. The London Plan 2021 sets out policies to minimise the risk of new developments overheating and also to reduce their impact on the urban heat island through a cooling hierarchy that prioritises design, orientation, shading, and ventilation over mechanical cooling. It also requires planning assessments that consider overheating as well as energy efficiency. Policy SI 4 in the London Plan states that developers should carry out overheating modelling of extreme weather scenarios as part of an energy strategy, which will provide the necessary detail for developments to be designed with the appropriate mitigation measures installed. This is an innovative approach to reducing the risk of new developments overheating and we welcome the wider adoption that has occurred through the Approved Part O of the building regulations, which came into effect in 2022. London is monitoring compliance with

these policies through the annual [Energy Monitoring Report](#). The Mayor's cooling hierarchy requires applicants to mitigate overheating risks using passive measures. External shading is strongly encouraged, as is solar control glazing, and these can significantly reduce solar heat gains while maintaining natural light. To demonstrate the mitigation of overheating risk, applicants are required to undertake a CIBSE Technical Memorandum TM59 compliant dynamic overheating assessment. Non-residential developments with natural ventilation must use TM52.

- 7.3 The 2018 [London Environment Strategy](#) sets out policies and proposals to tackle the risks from overheating in London. These include the development of a communications plan for severe heat events to keep Londoners safe, commissioning evidence to underpin local policy and interventions for the most vulnerable people, and working with Transport for London to minimise heat on underground and bus networks and on streets.
- 7.4 London's [risk register](#) identifies heatwaves as a risk to health and sets out the controls that are in place to manage the risk – including the Heatwave Plan for England (now replaced by the Adverse Weather and Health Plan), air quality forecasts, an annual Heat Health Watch, and plans by the London Resilience Partnership. These interventions need to protect the most vulnerable Londoners, and the London Climate Change Partnership has worked to promote approaches to assessing social vulnerability to flooding and heatwaves, such as [Climate Just](#), with London's resilience, health, and local authority partners.
- 7.5 The role of green infrastructure in providing cooling and shading is set out in Policy G5 of the London Plan, Objective 5.1 in the Green Infrastructure chapter of the London Environment Strategy, and Transport for London's Healthy Streets Approach. Policy G5 in the London Plan sets out the mandatory Urban Greening Factor which encourages more and better urban greening in new developments. Across London as a whole, there are now thought to be more than one million m² (100 hectares) of green roofs installed.²
- 7.6 There is limited evidence of the success of measures that are installed due to lack of monitoring data. Monitoring of the efficacy of planning policies, particularly in terms of what overheating mitigation measures are actually delivered/as built is limited.
- 7.7 Even the best policies are only as good as their implementation, which depends on the skills and capacity of developers, builders, planners, and designers to understand the potential risks over the lifetime of a building or development and propose robust solutions. It depends on the knowledge and preferences of clients and investors, who could demand heat-resilient homes and developments. It also depends on the ability to make the case to overcome viability assessments that often rule out adaptive features as too expensive. The London Climate Change Partnership supports capacity-building through knowledge exchange and commissioning of research to inform better decision-making. The partnership is coordinating a sector-based approach to encourage better understanding and action by sectors to address all the major risks from climate change.
- 7.8 Without better design and planning of buildings, occupants (or at least those who can afford it) will resort to air conditioning, which will exacerbate local outdoor temperatures, threaten energy security and emissions reduction targets, and widen inequalities. It is therefore urgent that government does more to promote capacity-building, for example, by working with professional bodies in the buildings sector

² London Environment Strategy 2018

(e.g., planning, construction, design) to improve their ability to address overheating through training, guidance, and advice. There is also a need for stronger and consistent messages from government about the risks from heat, particularly to vulnerable people.

7.9 Higher demand by households and businesses during periods of high temperatures can put pressure on supply. This may come in terms of short term spikes in demand which puts pressure on ageing or undercapacity water supply infrastructure, leading to bursts and outages, which in turn may restrict access to water when most needed. With climate change we expect longer periods of high temperatures and heatwaves. This may also impact on overall water resource reserves. Both these heat driven pressures need to be addressed to ensure future water infrastructure resilience

7.10 Urban greening is an important measure to help mitigate urban heat, it will only be effective if properly irrigated with sufficient water. These potential pressures on water supplies demonstrate the need to think about adaptive solutions in an integrated way. Species selection that can tolerate future climate conditions is also important

8. What can be done to protect the UK's existing public and private sector housing stock from the impacts of extreme heat while ensuring that homes are sufficiently warm in the winter months?

8.1 The installation of better insulation and other energy efficiency measures to improve heat retention on cold days should also be accompanied by improvements to ventilation and other measures to assist cooling on warm days. At present, government schemes to support energy efficiency measures do not encourage complementary measures to avoid overheating, even though it would be a more cost-effective than separate retrofits.

8.2 For New Developments - Indoor Overheating - planning applicants are expected to mitigate the overheating risk in the early stages of design. The Energy Assessment Guidance explains how to comply with measures to reduce internal overheating risk in line with the London Plan's cooling hierarchy.

8.3 New Developments - Reducing the Intensification of the Urban Heat Island (UHI) – London, like other urban cities, has an UHI which means that the urban temperatures are relatively higher compared to surrounding rural areas due to, for example, the urban surfaces and excess heat from transport, buildings etc. The London Plan places emphasises on new developments not intensifying the UHI effect. The mayor has also commissioned translational research into what can be done to reduce the impacts of the UHI.

8.4 New housing supply - the Affordable Homes Programme 2021-26 introduced six new sustainability requirements which set minimum standards for sustainability, including the management of heat risk. Mirroring the London Plan, the standards require overheating mitigation to be considered at the early stages of design development.

8.5 Roofs Designed to Cool – the Mayor of London commissioned Arup to undertake research and guidance into retrofit measures for existing homes and buildings in London which would help create cooler homes and buildings for summer using reflective materials as part of a retrofit approach (coating, tiles, photovoltaic panels). This approach could help protect existing public and private sector housing without impacting on warmth in winter months.

- 8.6 Approaches to cooling through passive measures will help vulnerable households during extreme heat events as there will be less reliance on mechanical and active measures such as air conditioning (and the associated costs with use).
- 8.7 Retrofit Accelerator – Homes - this programme provides London boroughs with the technical expertise they need to kick-start ‘whole-house’ retrofit projects including heat mitigation measures.
- 8.8 Local Energy Accelerator: this programme funds expertise to develop low-carbon, locally generated energy for buildings through mainly heating (and/or cooling) networks. Renewable energy from the ground, air or water is used to provide heating and/or cooling for buildings.
- 8.9 Innovation Partnership - connects housing providers and UK building firms through all stages of home retrofitting including heat mitigation measures.
- 8.10 Warmer Homes - the programme provides £25,000 to retrofit upgrades to homes. It supports 3,205 homes where energy efficiency measures are installed to keep a home warm and to ensure adequate ventilation is provided to help cool a home. This programme reduces post-retrofit overheating risk.

9. What role might reversible heat pumps (which can act as both heating and cooling systems) and other emerging technological solutions, such as the development of smart materials, play in meeting future cooling demands?

9.1 It is a serious oversight that the Government’s Boiler Upgrade Scheme appears to exclude heat pumps that are enabled to provide cooling as well as heating.

9.2 Current London policy supports a centralised energy system rather than individual systems. Some ambient loop systems have been allowed and as summers become progressively hotter we have also seen some reversible ASHP solutions proposed that provide both heating and cooling at the same time and can benefit from heat sharing. At the moment the challenge is to prevent them being used throughout the development to areas where it may not be required. The risk is that the systems could be used for comfort cooling and for more hours resulting in increased energy consumption.

9.3 Smart phase-changing materials with low embodied carbon to energy reduction balances could play a part in the future, but any new technologies will need to demonstrate a proven impact as well as being affordable and viable. As mentioned above, passive solutions are currently the most sustainable way to manage overheating, which is why they are prioritised through the cooling hierarchy in the London Plan

10. How can cleaner refrigerants with low or zero global warming potentials support the UK’s cooling needs while contributing to the national emission reduction targets?

10.1 These are important considerations but need to be thought about at the same time as considering how will older refrigerants can be safely and effectively replaced without them being discharged into the environment. Without this, replacement of refrigerants could have the unintended consequence of increasing emissions of greenhouse gases.

10.2 We understand that there will be some scenarios where cooling systems are required, such as industrial use and potentially residential scenarios in which there are air quality, noise and/or security constraints. Where this is the case, it is important that these systems use refrigerants with low global warming potentials (GWPs). The impact of refrigerants needs to be considered alongside any emission reduction target, for example, the Greater London Authority does this through the [Whole Lifecycle Carbon \(WLC\) policy](#): “The WLC assessment will require the applicant to report the refrigerant type, its global warming potential (GWP), initial quantity/charge, assumed annual leakage rate, maintenance regime and end-of-life recovery rate.”

10.3 At planning it can be too early in the design process to confirm GWP values, but applicants do outline it as a possible reduction. The impact of this policy is difficult to state for certain but it is likely that this reduction probably would not be proposed without WLC requirements.

10.4 The use of materials with lower GWPs will have implications as they can reduce the efficiency of the system, so any gains in GWP need to be balanced with savings in operational energy use. Also lower GWP materials can have safety implications.

11. Does the Government’s Future Homes Standard adequately consider overheating in homes? If not, what additional elements should it include?

Not answered

12. How effectively is the Government working across departments and with local authorities to ensure a coordinated approach is taken to heat resilience?

12.1 There is some evidence of government coordination across departments to address heat resilience, such as cross government working groups addressing overheating in a coordinated way, sharing good practice and opportunities for joint working. These include: The Cross Government Overheating Working Group organised by the Department for Health and Social Care..

12.2 However regional and local policy and planning authorities have filled a policy void at national level with examples including the lack of detailed guidance as part of the NPPF compared to a more comprehensive approach within the London Plan.

12.3 Government retrofit strategies and funding incentivise carbon and energy demand reduction at the expense of a holistic and integrated approach to mitigating existing climate risks such as overheating . Whilst insulation measures will inevitably lead to a reduction in energy demand, this must be accompanied by a focus on mitigating overheating risk through good natural ventilation.

12.4 It is a serious oversight that the Government's Boiler Upgrade Scheme appears to exclude heat pumps that are enabled to provide cooling as well as heating. This is another example of a lack of joined up thinking across government departments which is holding back more effective climate action. In this case the Department for Energy Security and Net Zero, which leads on climate change mitigation, appears to be ignoring the need for climate change adaptation, which is led by the Department for Environment, Food and Rural Affairs.

13. Does the UK need a dedicated Heat Resilience Strategy? What lessons can be learned from other nations when it comes to national strategies for heat resilience?

13.1 Most of the Government's approach to the risks of heat is focused on preparing the health system for dealing with the consequences of overheating, previously through the Heatwave Plan for England and now the Adverse Weather and Health Plan, and not enough attention is being paid to preventing overheating in buildings, which is often responsible for the adverse consequences for health and productivity. There is a strong case for developing a National Heat Resilience Strategy with a focus on preventing overheating of buildings in order to avoid impacts of health and productivity as the climate changes. This should engage all major national stakeholders, including the Department for Transport, and Department for Levelling Up, Housing and Communities, as well as the Department of Health and Social Care, as well as local stakeholders, including regional and local government.

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