

Briefing:

Climate adaptation in London: Proposed Review of London's preparedness for climate change

To: Chief of Staff;
From: Head of Climate Change & Climate Change Adaptation Manager
Cc: Deputy Mayor Environment & Energy; Assistant Director Environment and Energy; Deputy Mayor Fire & Resilience; Deputy Chief of Staff; Executive Director Good Growth; MPDU; MPDU; Senior Advisor to DM Environment & Energy

Date: **5 January 2023**

1. Overview of this briefing

This note follows another year of accelerated climate impacts on London in 2022. This paper recommends that the Mayor commissions an independent review to explore how London can be better adapted, exploring the actions needed at national, regional and local levels to ensure we can deliver the changes necessary to reduce the impacts on London's people, infrastructure and economy.

The briefing puts forward the proposed approach to setting up a climate change adaptation review, it sets out the key issues facing London and summarises measures that are already underway. The briefing sets out a series of questions for steer and has been developed in discussion with the Deputy Mayors for Environment and Energy, and Fire and Resilience. Attached are draft terms of reference (Annex 3) for the review, which sets out the proposed approach to managing the review.

The proposal has been developed in discussion with the MPDU and other relevant parts of the GLA group including London Resilience, Planning, Infrastructure and Housing.

We would be happy to set up a meeting to discuss this further and get your feedback on the proposal and next steps.

2. Scope of the Review and questions for steer

London is experiencing accelerated impacts from climate change. The city has recently been subject to a drought order, saw record high temperatures and related wildfires this summer, and has also seen more significant surface water flooding events. Given the known disruption, damage, and health impacts caused by recent extreme weather events, it is evident that London is not fully adapted to its current weather. Climate change will pose increasing challenges to our current ability to cope. We wish to examine the nature of this likely adaptation deficit and consider how London can be better adapted to the accelerating risks. We wish to look at how London can be better adapted to meet these accelerating risks. Climate risks affect every sector of society, and no single organisation can bear the full responsibility for adaptation. Therefore,

a review will need to draw out what is needed at different scales - national, regional, and local - to support London's adaptation to climate change.

A. Questions for Steer

Scope of adaptation and resilience – adaptation and longer-term climate resilience are in scope. For this purpose, we use the London Environment Strategy definitions:

- a. Adaptation is the process (or outcome of a process) that leads to a reduction in harm or risk of harm, or realisation of benefits associated with climate variability and climate change.
- b. Resilience is the ability of a system to recover from the effect of an extreme load that may have caused harm. Adaptation policies can lead to greater resilience to climate change.

The extent and pace of London's adaptation to climate change impacts is the primary focus, to gain a better understanding of London's preparedness and ability to withstand these impacts in a climate-changed future. Resilience in this context refers to preparedness for longer-term stresses rather than emergency management and response. We suggest current emergency response is largely out of scope, as emergency services are in the process of reviewing their own capabilities in light of their emergency response last summer with changes either underway or planned. However, there will be an element of crossover here; particularly where emergency response may need to adapt to growing climate risks.

Question: Is this scope correct?

Geographical boundaries – we propose this Review will cover Greater London as a geographical whole, with possible consideration of smaller areas within London if useful to highlight specific challenges or other relevant issues. Where national policy or programmes impact on London's ability to adapt, this should be considered.

London's resilience will also depend in part on the resilience of other places because of the movement of people, supplies, and finance through its borders. The Review might also include some assessment of geographical interdependencies.

Question: Is the geographical scope correct?

Methodology – We suggest that the Chair of the Review should define their approach within the objectives and scope defined by the GLA. This approach has been widely adopted in other public reviews and allows for the use of innovative approaches (see summary of other recent reviews in Annex 2). We propose the Chair will meet at an agreed interval with a Mayor's Office Review Panel (membership to be agreed) to ensure and monitor progress of the Review and provide advice.

Question: Are we happy to allow the Review Chair to define the methodology (in consultation with the Mayor)?

2. Staffing/resourcing – The review will require resource commitment. Meeting this externally (for example project management, drafting etc) will slow the process of kick-starting the review. Conversely, using GLA resource will impact on the capacity of the teams donating resource and may require significant workload reprioritisation. Resource requirements are set out in more detail in this note. We are currently assuming that 1.5 FTE resource will be needed to support the review.

B. Summary

Key climate risks to London

1. Both globally and locally we are seeing an acceleration of climate related events like heatwaves and flooding and increases in sea level rise. Recent data from the World Meteorological Organisation say Europe is the fastest warming region on earth, with temperatures increasing at twice the global average over the last 30 years. It is estimated that at least 15,000 people died in the 2022 summer heatwaves across Europe, including more than 3200 in the UK (WMO, 2022).
2. London itself has experienced significant weather events, most recently including surface water flooding, unprecedented high temperatures, drought, and wildfires during the past 18 months. Climate projections tell us that we can expect an acceleration of climate-related disruption and damage well into the late century.
3. In this context it is right to consider whether national, regional, and local policies, programmes, and plans are sufficient or effective to ensure London is as well adapted as possible for climate change. This paper sets out some options for establishing a Review that helps assess London's preparedness and ability to recover from climate change impacts.
4. A cursory review of the known climate risks for London shows that some are better managed than others. For example, there is a plan and a lead agency to manage tidal flood risk (TE2100), while a plan for surface water flood risk management is currently in the early stages of being developed, but there is no lead agency with "ownership" of either risk. For heat risk, as with those for flooding, ownership is extremely dispersed and there is no strategic plan to manage it. Where strategies and plans do exist, it is not entirely clear whether these are leading to sufficient or effective adaptation action. In some cases, activity is happening in the absence of a strategic plan, but again, there is little understanding of the extent of the problem (surface water, heat risk) nor the impact of these efforts. With few exceptions, London has not defined targets for adaptation, and so it is impossible to measure progress against a set goal.

This paper recommends a short, time-limited review, to determine London's capacity and action to adapt to climate change and provide recommendations for improvement.

This Review should be independently chaired, with support from a panel of stakeholders including the GLA. Budget for the project has been identified from the Good Growth Directorate. Project management and secretariat could be provided by the GLA though this would require workload prioritisation and potentially slowing other work areas. This will be picked up through the Business Planning process.

5. Key climate risks facing London are:

Coastal and Fluvial flooding: The Thames Barrier and associated flood gates, tidal walls and embankments provide London with high level protection from coastal flooding. 37,000 homes are at high or medium risk of tidal or fluvial flooding. The TE2100 currently keeps under review the need for a new Thames Barrier and timings for flood defence river wall raising. Latest assessments mean a decision (e.g. design,

funding, location, planning permission) on a new Barrier would be needed by 2045 in order to have it in place by 2070. The Mayor helped ensure land was protected for a new Barrier, supporting the EA's objection to proposals to develop on of the proposed sites in Essex. The Barrier has increasingly been used to manage upstream river flooding (west London) as well as coastal flooding. Prolonging the Barrier's operational life will mean focusing its use on its primary purpose (coastal flooding) and reducing its use as a river defence. This in turn mean that upstream river defences will need to be maintained and improved ahead before 2045 to ensure that the Barrier is still operational to 2070 for which a plan and funding for this will need confirming.

Flash Flooding: Heavier more frequent rain events, coupled with an ageing Victorian drainage system and increasing areas of impermeable surfaces in London makes the city vulnerable to sewer and surface water flooding. The Tideway Tunnel will help reduce spillages of sewage into the Thames, improving water quality but it will play a very limited role in managing surface water flooding. Modelling undertaken as part of the Thames Water Independent flooding review confirms the very limited role Tideway can play in managing surface water flooding (and it wasn't designed to do so – the driver for the tunnel was non-compliance with the EU Urban Wastewater Treatment Directive). Outer London's sewer and stormwater flooding networks are not connected to Tideway and overflows discharge into watercourses. 81,000 homes and businesses are at high risk to surface water flooding (a 1 in 30 year event) a further 191,000 homes and businesses are at medium risk (1 in 100 year flood event). In addition, cities are more vulnerable to flash flooding, to economic and service/infrastructure disruption with more impermeable areas and basement dwellings, flooding poses a growing risk to life for people inhabiting basement properties. We saw from the flooding in summer 2021 that basements were particularly vulnerable and experienced the most severe flooding. Had the same storm event happened at night with more people at home or asleep the consequences could have more serious still. Data on the number and location of basement properties at risk is currently not good enough.

Overheating and the urban heat island effect: London has experienced severe heatwaves this year and recorded its highest ever temperatures this summer. Such events are likely to become increasingly frequent. Average monthly temperature projections for London show a 5-6°C increase in summer and winter averages by 2050. Heatwaves disproportionately impact the at risk and vulnerable the most (elderly, young and those with health risks). Summer heatwaves in 2020 led to around 500 excess deaths in the population. The ONS have reported that the heatwave in 2022 led to an estimated 2,803 excess deaths across England in the most vulnerable age group (over 65s). Overheating also impacts infrastructure and services in the city (power sources overheat, water demand massively increases, rail-lines can buckle etc). Additionally, the urban heat Island effect means the centre of London can be 10°C warmer than rural areas, caused by high density of buildings, impermeable surfaces and waste heat generated by transport and buildings. Typically, the impact is greater at night as buildings and infrastructure surfaces release heat that they have store through the day.

Drought: London's growth has meant an increasing demand for water. London is within the driest part of the country and faces drought risk if reservoirs and aquifers are not refilled by regular rainfall. London recently experienced a level 2 drought (with some restrictions to domestic customers on water use), a severe (level 3) drought (where both domestic and business uses are both restricted) is estimated to have an economic impact of £330 million a day

This July was the driest on record. The Southeast experienced below average rainfall in 10 of the last 12 months to the end of August. The summer heatwaves meant that demand for water also reached record levels.

While the immediate risk has now subsided, a drier than average January and February means further restrictions next summer has not yet been ruled out.

London's ageing and leaky infrastructure network also adds to the challenge. The National Infrastructure Commission warns of continuing increasing demand and impact on the environment. The Commission estimates that England could face a shortage of between 600 and 800 million litres per day in a severe drought with a 0.5% probability and between 800 and 1,000 Ml/day in a more extreme drought with a 0.2% probability

C. Background - GLA led action on climate adaptation

6. While the Mayor has a legal duty to take account of climate change in undertaking his functions, he does not have the requisite powers or responsibility to directly deliver many of London's required adaptation solutions. Statutory powers for flooding are held by other organisations (flood risk management authorities e.g. EA, Lead Local Flood Authorities including TfL, boroughs, water and sewerage companies, and highways authorities). For heat risk there is no lead organisation, nor independent regulator, and water resources are managed by privatised water companies. London has four companies supplying water. Drainage and sewage is managed by Thames Water. A quick overview is set out in Annex 1.
7. The London Environment Strategy sets out a range of policies to help tackle these issues. This has been supported by Mayoral policies in his London Plan and his environmental programmes, however it is likely the scale of delivery in London falls short and the policy framework to support the transition to a better adapted city may not be sufficient. Reducing surface water flooding risk will require billions of pounds of investment for example.

D. What is the Mayor already doing?

8. Despite limited powers and a modest funding envelope a lot has been delivered by the Mayor in his first and second term to progress London's adaptation to a changing climate.
9. The Mayor has delivered climate resilience programmes through his green new deal funding; including but not limited to £24m for grant programmes for green space and climate resilience; a £1.8m climate resilient schools programme, training for hundreds of borough officers in sustainable drainage (SuDS) delivery and accompanying SuDS guidance documents, a cool spaces programme and care home audits to help manage heat risk. The Mayor has lobbied water companies for more investment, convened a roundtable on flash flooding resulting in lead authorities committing to new, non statutory pan London governance arrangements and commitment to deliver a London wide surface water flooding plan for the first time. The London Climate Change Partnership, convened and managed by the GLA, draws together climate change adaptation expertise and has focused on sharing knowledge around key areas of climate change adaptation. The Partnership has convened a number of sub-groups around issues such as transport. In response to this year's record breaking heatwave the GLA

are working with LCCP to convene heat risk experts across London to better understand what more can be done to manage the risk.

10. For a more detailed list of the Mayor's activities on heat see [link: \(The Mayor's Work on Managing Overheating and Cooling\)](#)
11. For a more detailed list of the Mayor's activities on water resources see the link ([Water Resources note](#))
12. For an overview of the work of the Surface Water Flooding Roundtable see the link ([Surface Water Flooding Report](#))
13. For an overview of LCCP work on adaptation planning see [Adaptation Pathways Starter Guide](#)
14. For an overview of LCCP work on heat, bringing multi sector partners together to identify needs, opportunities and priorities to mitigate heat risk see Heat Risk in London [sub group work](#). The LCCP helped London Councils develop and supports delivery of their climate adaptation focussed Resilient and Green programme, which can be found here: [Climate change | London Councils](#)
15. London's emergency response mechanisms are well established, but flood events in summer 2021 demonstrated a number of areas where response fell short. Last year's action on improving the emergency response to surface water flooding demonstrate their capacity to develop and implement new procedures to better manage risk. Existing structures are already in place to manage London's (and the GLA's) immediate response to weather related events through London Resilience. While we expect the long-term climate resilience of London is in scope, the Review should not focus on current emergency or incident response processes which are being reviewed by London Resilience Group and partners, however exploring what changes may be needed at the cultural or institutional scale to support better climate resilience should be within scope of the Review.

E. What more needs to be done:

16. In terms of ensuring longer term adaptation, more is needed for London to reach an acceptable level of climate resilience and the Review may wish to consider what an 'acceptable level of resilience' means for London. While not focussed specifically on London, the Climate Change Committee set out a series of adaptation risks that are not suitably managed. This is witnessed by the various extreme events of 2021 and 2022. Adaptation isn't yet embedded into all planning and investment decisions; neither within the GLA nor across London organisations and sectors. Existing buildings and infrastructure and public realm, require adapting to make them resilient to climate risks. Investment decisions do not routinely or systematically look at how adaptation can be built in.
17. Funding for adaptation is lacking; particularly for retrofit programmes, whether this be for the thousands of hectares of sustainable drainage and green infrastructure needed to reduce risk of flash flooding or for adaptation of existing buildings to withstand extreme and prolonged heat. The transport network will need to adapt to function more effectively during or recovering from extreme weather. It is essential we clarify understanding of who should bear the cost, the split between general taxation and

other funding streams. For example, some resilience measures, particularly in the utility/infrastructure sector will be fully/partially funded by customer bills agreed with regulators through the price review process.

18. Opportunities are being missed for delivering adaptation and mitigation together as part of retrofit programmes, as adaptation isn't routinely being considered in decisions and integration between programmes needs to improve. Overall costs are likely to be less in most cases where adaptation and mitigation action can be aligned.
19. Innovative approaches to funding may have merit in future, but there are no such mechanisms in place at present that offer a viable funding stream for adaptation. Green finance may offer a solution in future if models capturing financial value can be created. But current progress in this area focusses on mitigation and net zero, where there are clearer links to return on investment in some areas. Certainly, most investment in adaptation in London currently comes from various public funding sources.
20. The roles of national, regional, local government and individuals are not well defined in climate adaptation and responsibilities are shared across multiple organisations, which hampers integration. National adaptation planning would benefit from looking at the specific and enhanced risks that cities face.
21. Defra is the lead government department for adaptation but faces a huge challenge embedding adaptation action across government departments, let alone across local government and the wider public and private sectors.

F. Proposed Review: Assessing London's preparedness for Climate Change

22. Given the increasing frequency and scale of climate impacts being felt in London, it is necessary to assess London's preparedness, identify action underway, gaps in knowledge and delivery and test the suitability of governance structures to ensure London is well adapted. This could be taken forward by a formal independent review that is able to assess what is currently happening across London, giving high level and independent views on what governance, powers and programmes are needed. Undertaking the work through an independent commission will allow it to look impartially at what is currently in place and what is needed across different sectors and tiers of government. An independent voice will also add weight to any lobbying to government and help secure buy-in from others. This work would also be relevant to other city regions.

Scope

23. The Review will assess how we plan and make the city adapted and also how London responds. We will need to consider how the Review complements existing work underway, such as the surface water flooding work being taken forward by the GLA and other partners. It is recommended that the focus be on long-term adaptation and climate resilience but consider emergency or incident response in so far as including any changes needed as an adaptation measure to growing climate risk.

Principles for the Review

- It should be independently chaired
- It should be time limited, acting as quickly as possible and disbanded on completion. The Review should be completed within six to nine months from the point of the chair being appointed.

- The Review should consider representations from across sectors and communities in London including environment, transport, housing, health, business, insurance, local and regional government. This represents the key stakeholders and infrastructure that will be impacted and also organisations who have the capability to help London adapt.
- It should make recommendations to ensure London accelerates towards being better adapted to climate risk

24. The key aims of the Review should be to answer the following questions in terms of London's long-term climate risks.

25. For each key climate risk:

- Assess London's preparedness for each key climate risk
- Are there sufficient plans in place, can they be delivered and are they monitored? Are national, regional and local plans coordinated and aligned?
- Assess existing policies and programmes and whether they are sufficient to prepare London? In order to do this, we will need to take a view on an acceptable level of climate resilience recognising this may not be the perfect answer and will need further work to define beyond this Review
- Assess existing roles and responsibilities and whether they support delivery of an effective London-wide response to the risk
- Identify changes needed – if deemed necessary - at national, regional and local levels to ensure more effective adaptation delivery
- Identify legislative, governance, policy and programmes gaps that need to be addressed.
- Assess how integrated the approach is across all climate risks
- Identify opportunities to improve the consideration of climate change risks in GLA and GLA group decision making and programme delivery
- Consider how adaptation interventions might be funded

Broader considerations

- The Review should be solutions focussed
- Should not focus on reviewing or re-examining the climate risk, unless this specifically furthers our understanding of the solutions for London. We know what the risks are.
- The Chair will have some independence in how they wish to structure and run the Review, but the terms of reference must be agreed between the Chair, GLA Chief of Staff and the lead Deputy Mayor(s) - Environment & Energy (and DMs for housing, resilience, planning tba)
- The terms of reference set out examples of how the Review may operate, in terms of evidence gathering etc.

Chair

26. An independent chair:

- should be approached or recruited to review London's preparedness and we should consider equalities, diversity and inclusion in the appointment. Independence will be important to ensuring that recommendations for actions at the national, regional and local levels are properly considered. The chair will need experienced technical report writing resources likely to be at the level of an experienced academic or consultant or small panel of such.

27. Remuneration:

- we will consider remuneration for the Chair and any panel members, recognising the volume of work will likely require significant time and given the compressed duration of the Review, workload will be significant.

28. Secretariat and technical support:

- there are several options here (see Annex 2): either the GLA could support, or we procure consultant support, or secure pro-bono consultancy support. Both Bloomberg and ARUP have expressed an interest so far, more in terms of technical support and facilitation than secretariat function. On balance we feel the review should be resourced internally, and supported where possible with pro-bono support (for example as an advisory panel to the Chair). This will be important for ensuring there is a strong communication between the Mayor's office and the work of the review.

29. Chairs could include:

- []
- []
- []
- []
- []
- []
- []
- []

None of the potential candidates above have been approached and due diligence has not been carried out on any of the candidates suggested. We would also need to explore with the Governance team an appropriate process for appointing a Chair. We would need to work with GLA governance to identify a suitable approach. Due diligence will need to be carried out on potential candidates

Organisations supporting the Review

30. In running the Independent Review, the Chair will be free to shape their methodology (in consultation with Mayor's Office as per TOR) in assessing how prepared London is for different climate risks and setting out some clear solutions to address vulnerabilities and gaps in preparedness. While we do not propose a permanent commission, the Chair may wish to engage or employ the following organisations to provide, review, evidence, and expertise. They would need to represent a range of sectors (e.g. transport and infrastructure) and organisations (e.g. Environment Agency) relevant to London. They could include representation from (not exhaustive):

- UK Health Security Agency
- TfL
- Corporation of London/London Boroughs
- London Infrastructure Group reps (utilities cos)
- G15 Housing
- Association of British Insurers
- Chartered Institute of Building Engineers
- GLA Climate & Resilience teams

- Developers e.g. Land Sec; Grosvenor; Lendlease
- Forestry Commission
- Grantham Institute
- Climate Change Committee
- Met Office
- Environment Agency
- CBI/FSB
- Defra

GLA internal teams

- Environment & Energy
- Transport & Infrastructure
- Housing & Land
- Planning
- Resilience
- Health & Communities (for awareness)

Budget and Resources

31. The GLA can support the secretariat of the Review, this is estimated to require 1.5 FTE for the duration of the work. This would include one lead officer and be supplemented with other specialist officers across the climate change adaptation and resilience teams. This will require discussion on what measures are potentially delayed and stopped in the existing business plan.
32. In addition, consultancy/independent expert and technical support will be needed as defined by the Chair and agreed with the Mayor's Office in line with the terms of reference. Up to £80k has been earmarked to support the review from within existing budget allocations.
33. Senior Managers in the GLA teams named in paragraph 30 above, as well as the Senior Advisors for Environment and Energy, Planning, Fire and Resilience and Housing were consulted as part of preparing this paper.

[Annexes below]

Annex 1: Climate adaptation risks, Mayoral powers and key issues

	Who is legally responsible for a London wide strategy?	Responsibility for local delivery	Does the Mayor have a formal role (outside his general CC duty)	What is the Mayor currently doing?	Issues
Coastal & River Flooding	EA (catchment based for river)	Requires local authorities in the Thames Estuary region, the EA and businesses to work together.	No	London Plan policy; Advocacy via TE2100 stakeholder group	<p>Tidal and river flooding – relatively well managed in London. The Environment Agency are the lead authority. Public flood warning systems are in place and standards of protection from river and tidal defences are largely acceptable, although it will be important to monitor the degradation of protection levels with climate change. Funding for these flood schemes tends to be possible as benefit cost ratios for such schemes stack up. This is due to large numbers of properties protected by tidal and fluvial schemes.</p> <p>The Thames Estuary 2100 programme is undergoing a 10 year review, updated with new monitoring data to determine whether it remain fit for purpose. As the plan is ‘adaptive’ this is part of the plan process. While the Thames Barrier is effective until 2070 and a decision on a new Barrier is not needed until 2045, that does assume that existing flood defences are maintained and that the Thames Barrier is used primarily for coastal defence (it is regularly used to manage river flooding upstream of the Barrier – however in order to extend its life until a new Barrier is in place this activity will need to be reduced)</p> <p>The role of other authorities beyond the Environment Agency, in delivering the plan is someone what unclear. This is a potential risk to the plan achieving its objectives. There is some risk to delivery of what is needed ahead of the Barrier upgrade as it relies on multiple no statutory partners</p>
Surface Water Flooding	No-one at the London level. A voluntary approach is being developed. Thames Water produce a DWMP.	Flood Risk Management Authorities	No	Roundtable; SuDS pilot; SUDs projects through greening programmes; London Plan policy; Guidance; Influencing through consultation	<p>The smaller and more dispersed nature of surface water schemes means London is less well protected. Governance is less clear cut than for fluvial and tidal flooding and is split across the 33 boroughs in London. There is no strategic authority with an overview. The work of the Mayor’s roundtable, the transition group on surface water flooding to form a new strategic group and deliver a strategic plan for surface water flooding is addressing this need. The strategy and plan will include a funding strategy for how deliver the required measures across the city.</p> <p>Local Authority approaches and capacity differ widely; a London approach currently relies on ‘good-will’ across partners, with no statutory teeth to ensure delivery; the process to develop an agreed approach is slow with many motivated to protect existing arrangements. Government’s funding and approach focuses more on ‘rural flooding’ than urban flooding, meaning that smaller urban schemes are often not supported.</p> <p>TW drainage and wastewater management plan – estimates that 7000 hectares of sustainable drainage is needed by 2050 to manage London’s surface water risk. It is unclear how this will be funded and who will deliver it given the plan relies on using nature based solutions such as SuDS in the public realm.</p>
Heat and UHI	No legally responsible party	No clear owner	No	Cool spaces; Drinking fountains; Planning policy;	National policy does not enable effective responses at the city or regional level; overheating and designing for cooling are not well enough integrated into building regulations. Existing building stock requires extensive retrofit, no schemes exist to do this at scale. It is poorly integrated with national water and energy efficiency programmes.

	Who is legally responsible for a London wide strategy?	Responsibility for local delivery	Does the Mayor have a formal role (outside his general CC duty)	What is the Mayor currently doing?	Issues
				Guidance; Cooling centres and heat comms (during heatwave only), LCCP heat risk group	<p>There are outstanding areas where evidence to support interventions (or a strategic approach to managing heat) may be lacking. These include knowledge about:</p> <ul style="list-style-type: none"> • Limits of adaptation measures, e.g., in higher temperatures and heat thresholds • Costs of retrofit at scale • Which buildings and infrastructure are most at risk (combined identification of locations, exposure, vulnerabilities) • Full range of measures for specific sectors, e.g., transport
Water Resources & Drought	<p>Water companies responsible for Drought Action Plans (catchment based not GLA boundary based) in consultation with EA/Defra</p> <p>WRMP across water companies in the SE region; governed as part of the Ofwat price review (every 5 years)</p>	Water companies and the EA	No	Influencing through responding to consultations; lobbying water companies to invest in infrastructure; amplifying comms; using planning policies to reduce water demand in new properties.	<p>Limited levers to reduce water consumption in existing buildings. We need to understand how planning policy can be strengthened and a clear case be made to government for changes in building regs to ensure building are better adaptation to heat risk and make a greater contribution to water efficiency.</p> <p>Water resources management has complex governance arrangements. For domestic customers Privatised water companies are regulated by an environmental and economic regulator. For commercial customers there is a retail water market which includes an additional layer of water retailers between the wholesale water companies and the customer.</p> <p>Water resources are governed through the WRMP process. Every 5 years Ofwat determines the outcomes of the price review agreeing the amount that water companies can claim from customers through bills to manage supplies. This covers the costs of operations and investment in new resources, infrastructure and demand management measures.</p> <p>The Mayor has no formal role in the Ofwat process.</p>

Annex 2: Other Review approaches for reference and comparison

Review	Chair	Chair £ (Y/N)	Chair appointment process	Review duration	Output	Appointing Auth	Steering group, advisors, call for evidence	Review budget	Methodology, Approach etc
LFB Culture review 2022	Nazir Afzal OBE	Y	Open selection process – competitive field of candidates. Recruitment of chair and panel by search committee	Max 18month from Chair's appointment (Nov 21) Target of 12 months	Report (Authored by Chair) Not yet released (later this month – Nov)	Search Committee comprising: Deputy Mayor for Fire and Resilience, London Fire Commissioner, 1 other	Review panel members (Majority external to LFB) Community Panel Representative committee	£265,000	Potential to issue a call for evidence internal and public. Secretariat: by LFB.
Harris Review: Terrorism preparedness, 2016, 2022 (update)	Lord Toby Harris		Lord Harris commissioned by Mayor Sadiq Khan in informal process	12 months	Report by Chair and Harris Review Panel with 127 recommendations in 2016 and 294 new recommendations in 2022	Mayor of London	advisors and multiple roundtables business father and voluntary sectors		over 100 interviews with emergency services, transport sector, local and central government and city hall and a QC.
Kerslake review of affordable housing, Lambeth	Lord Kerslake	Y	Invitation	3 months (not reported yet) from apt	Report (in progress)	LB Lambeth	Panel of 3 experts Secondee from GLA to support plus Lambeth officers	c.£80,000 plus in kind GLA resource	Group meetings, sector roundtables, public and written submissions
Kerslake Review of GLA Group Housing Delivery 2022	Lord Kerslake	Y (stipend £ [REDACTED])	Review was a Mayoral manifesto commitment. Shortlist of Chair names approached, not an open recruitment	3 months from apt	Report with 15 Recommendations.	Mayor of London	Steering group, advisors Secretariat: 3 x H&L officers reporting directly to Lord Kerslake	£10k plus in kind GLA resource	As with Lambeth (above) GLA officers – research, drafting, project management support

Annex 3: Draft Terms of Reference

In the context of accelerating climate change impacts on London, the Mayor of London is commissioning a review to assess London's preparedness in adapting to the impacts of climate change. Background can be found in the following London Climate Change Adaptation Review paper (also attached). The London Climate Change Adaptation Review ('The Review') will be independent of the Mayor and the GLA Group.

The Review will assess the extent and pace of London's adaptation to climate change impacts to gain a better understanding of London's preparedness for and resilience to more frequent and extreme weather. The review will look across relevant sectors of London including housing, infrastructure, transport, health etc. The review will look at the role national, regional and local government can play to accelerate London's adaptation. The review will also consider the role and actions other London stakeholders should play including businesses, the third sector, finance and insurance, regulators and individuals.

It should also consider interdependencies between and within sectors with regard to impacts. The Review will not focus on identifying and setting out London's main climate risks in any detail as the risks are well understood. The Review is not intended to assess how London responds to weather related emergencies when they occur.

The Review will be led by an appointed Chair who will set out their preferred methodology for making this assessment. The methodology will be agreed with a small Mayor's Office Review Panel. The Membership of this Panel will be agreed before the Chair is appointed (likely to be Mayor's Chief of Staff and lead Deputy Mayors and advisors).

The Review should:

- Set out London's principal climate risk and the impacts
- Assess the London's overall preparedness to accelerating and future climate risk
- Identify where the most significant gaps are in adaptation and preparedness for more frequent and extreme weather and climate change
- Consider gaps in adaptation, be solutions focussed, aiming to set out a number of clear priority actions that can be taken to improve London's climate adaptation efforts
- Consider equality issues and the extent to which there may be unequal distribution of climate impacts, or capacity to respond/adapt (for example in less wealthy or socially deprived parts of the city)
- Outline and prioritise in the Review outputs, solutions where climate adaptation measures deliver wider benefits (co-benefits)
- The Review should consider representations from across sectors in London including environment, transport, housing, health, business, insurance, local and regional government. This represents the key stakeholders and infrastructure that will be impacted and also organisations who have the capability to help London adapt.
- make recommendations to ensure London accelerates towards being better adapted to climate risk considering but not limited to physical, policy, regulatory, governance measures and the role of communication and advocacy. The review should consider the actions that should be taken at all tiers of government (national, regional and local) and consider the actions for other relevant stakeholders, organisations and individuals.

- be time limited, acting as quickly as possible and disbanded on completion. The Review should be completed within six to nine months of the Chair's appointment.

Evidence gathering

While these terms of reference are not prescriptive the Chair and the Mayor's Office Review Panel should agree the methodology taken to undertake the review. Suggested approaches to gathering evidence include, but are not limited to

- Stakeholder mapping
- Public call for submissions
- Targeted stakeholder call for evidence
- Steering group(s) meetings
- Roundtable meeting(s)
- Interviews

Staffing/resource:

The GLA will support the review with the equivalent of 1.5 FTE to provide project management, policy and secretariat support.

In addition, the Chair should consider appointing a technical advisor or technical advisory panel external to the GLA to support in delivering the outputs. In addition, the Chair may wish to appoint a steering group to guide the Review.

Governance:

The Chair will meet at an agreed interval with a Mayor's Office Review Panel to ensure and monitor progress of the Review and provide advice. Any chair appointed steering group should be agreed with the Mayors Office Review Panel.

These terms of reference will remain in draft form until agreed between the Chair and the Mayor's Office Review Panel. The outputs will be reported to the Mayor.

Climate Change Adaptation Review- Mayor's Brief

Date: 4 April 2023

To: Sadiq Khan, Mayor of London; David Bellamy, Chief of Staff; Shirley Rodrigues, Deputy Mayor for Energy and Environment; Fiona Twycross, Deputy Mayor for Fire and Resilience

Cc: Richard Watts, Deputy Chief of Staff; Ali Picton, Mayoral Director for Operations

From: [], Head of Climate Change; [], Climate Change Adaptation Manager, [] & [], Climate Change

Re: **Climate Change Adaptation Review**

Overview

Following another year of accelerated climate impacts on London in 2022, this note recommends that you commission an independent review to explore how London can be better adapted to climate change impacts.

A review will explore the actions needed at national, regional and local levels to ensure we can reduce the climate impacts on people, infrastructure, environment and economy in London. The resulting output will not be a new strategy but will focus on actions (similar to the approach of the Skidmore 'Mission Zero' review). The Climate Change Committee's March 2023 report to the UK Government 'Progress in adapting to climate change' highlights how inadequate the current National Adaptation plan is and how underprepared for climate change impacts the UK is, including its cities and built environment¹. At the launch of the latest IPCC report² UN Secretary General Guterres highlighted the need to scale up finance and capacity for adaptation noting that 'adaptation and mitigation must be pursued with equal force and urgency'.

This briefing sets out the proposed approach to setting up a London review. The proposal has been developed in discussion with relevant parts of the GLA group including the Mayor's Policy Delivery Unit, London Resilience, Planning, Infrastructure and Housing Units, and with Shirley Rodrigues, Fiona Twycross and David Bellamy.

The review would be led by an independent chair supported by pro bono consultancy. It is proposed the review runs until December 2023. [REDACTED]

¹ <https://www.theccc.org.uk/publication/progress-in-adapting-to-climate-change-2023-report-to-parliament/>

² <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

The review would be supported internally by the Climate Change Adaptation and Resilience teams at City Hall. A small budget is allocated in 2023-24 to support the work.

Decision Required

- Approval is sought to conduct a review into London's preparedness for climate change.
- To agree to appoint an independent chair via a written correspondence from the Mayor. This will be necessary to ensure the review can be delivered in 2023.
- To approve the prioritisation of [REDACTED]. Your approval will allow us to make a formal approach.

Background

While the GLA has a legal duty to take account of climate change in undertaking its functions, it does not have the requisite powers to directly deliver many of London's required climate adaptation solutions. The UK's Climate Change Committee set out a series of adaptation risks that are not suitably managed and has criticised the lack of national leadership or programme of investment required to meet the UK's adaptation needs³. Many of these identified risks are applicable to London.

The need for a London Climate Change Adaptation Review

The Climate Change team, working closely with the Resilience team has identified a time limited, independent review as a necessary next step to advance London's adaptation to increasing climate change impacts.

This review will act as a 'stocktake' of London's current adaptation actions, evaluate these actions and make a clear set of recommendations to guide London's preparation for climate hazards and will identify main areas of concern and actions needed to rectify them. Its findings will focus decision makers across London and nationally on the need to prepare for climate hazards and to ensure policies and budgets integrate climate considerations.

The GLA has been delivering a range of measures, these include the Mayor's green new deal funding which has invested £24m for grant programmes for green space and climate resilience. A further £1.8m climate resilient schools programme is supporting the most climate vulnerable schools, we have trained hundreds of borough officers in sustainable drainage (SuDS) delivery and published accompanying sector specific sustainable urban drainage solutions guidance. The cool spaces programme helps identify indoor and outdoor spaces, where Londoners can find some respite in hotter weather and we have undertaken care home audits to help manage heat risk. The London Plan requires new strategic development to manage water more effectively on-site and make consumption more efficient. You have also successfully lobbied Thames Water for more investment to improve leakages and convened a roundtable on flash flooding

³ <https://www.theccc.org.uk/2023/02/01/a-lack-of-leadership-is-preventing-essential-investment-to-prepare-the-uk-for-climate-change/>

which is resulting in local authorities committing to a first ever London wide surface water flooding plan.

- This review is needed now because despite these actions and achievements, the pace and severity of impacts is accelerating at an unprecedented rate. Heatwave and flooding events have exposed gaps in our ability to prepare and be sufficiently coordinated. In addition, since 2016 we've seen far less progress globally on mitigation than any of us would have expected.
- The review should consider representations from across sectors and communities in London including environment, transport, housing, health, business, insurance, local and regional government.
- It will focus on long-term adaptation and climate resilience. It will consider emergency response in so far as that sector needs to adapt to growing climate risk.
- It will consider the unequal distribution of climate impacts and capacity to respond/adapt.
- It will make recommendations to ensure London accelerates towards being better adapted to climate risk.
- The recommendations should be focussed on London broadly and not solely the GLA.
- The review will not define climate resilience, nor will it set adaptation targets or standards for London although this is likely to be a recommendation for future work.
- The review will not investigate the climate risks facing London as these are already well understood.
- The review should be completed within six months from the appointment of the chair.

Governance

The proposed review will comprise an independent chair, supported by a secretariat, to be provided by pro bono consultants. An Expert Advisory Panel will provide advice to the review and a GLA team will be set up to interface with the review.

Chair

To ensure integrity, the chair will be independent. The Greater London Authority will set out the guiding principles and scope of the review, to ensure key objectives are met. The chair will help to shape these, within the parameters set by the GLA (or Mayor).

Several high-profile candidates have been identified to lead the review, bringing together expertise in the climate adaptation and environment fields. [REDACTED]

- [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]



Secretariat

The chair will be supported by a secretariat comprising pro bono support from three to four consultancies (including Bloomberg Associates). Alongside the chair they will develop the approach for evidence gathering, support evidence gathering sessions, analyse evidence and draft the report.

Expert Advisory Panel

The GLA will identify a diverse and representative Expert Panel of between six and eight members. Their role will be to ensure that the review takes account of wider climate change adaptation expertise and input.

GLA project Management Group

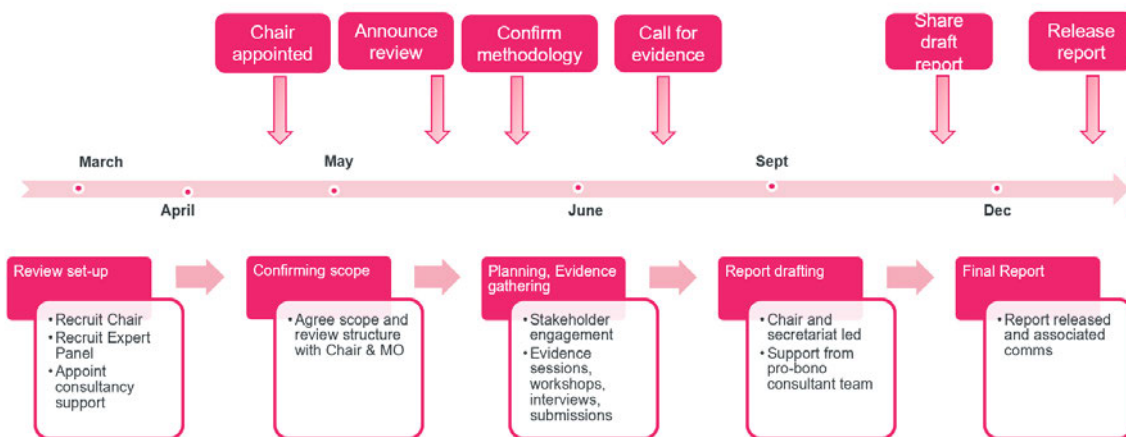
GLA officials are developing an approach to the review, that enables it to deliver in a similar timeframe to Chris Skidmore's 'Mission Zero: Independent Review of Net Zero'. A project group comprising officials from the climate change adaptation and resilience teams and procured external short-term support will drive forward the review.

Interaction with the Mayor's Office

We intend to use the CIB Resilience committee, chaired by the Chief of Staff, as the vehicle to provide regular updates on the review. The Deputy Mayor Environment & Energy would be invited to join for these items. Additionally, the chair will meet with the Chief of Staff, and Deputy Mayors for Environment & Energy and Fire & Resilience at agreed milestones through the review.

Timeline

An indicative timeline is set out below. The chair will discuss and agree the approach and timeline with the Chief of Staff and Deputy Mayors.



Proposed key dates:

17 May 2023: Announcement of the Climate Change Adaptation Review for London and chair.

The Environment Agency will launch the **Thames Estuary 2100 Ten Year Review on 17 May**. This is the EA’s adaptive plan to managing the risk of tidal flooding in London and the Thames Estuary. This will be the first full update of the Plan since publication in 2012 and is a critical adaptation action for London. The EA have approached the GLA to ask you to speak at the launch. Launching this plan alongside the Adaptation Review and announcing the chair appointment would highlight a milestone on climate adaptation action for London.

December 2023 - review completion and publication of recommendations

If the chair is appointed and review announced in May, the review could conclude by December, allowing some buffer between finalisation and the pre-election period for the Mayoral elections starting in March 2024. The review would provide an important evidence base and list of recommendations for an updated London Plan and London Environment Strategy following the 2024 election.

Annex 1

Further Background

At the end of March the Climate Change Committee (CCC) published its latest statutory assessment of the state of adaptation in the UK. It found, consistent with previous assessments, that there has been a “striking lack of preparation from Government” across policy, planning, and implementation of adaptation. Two previous National Adaptation Programmes represented a “lost decade” in preparing for the known risks, while continuing inaction threatens the delivery of Government’s key objectives including Net Zero.

A lack of leadership and resourcing from Government presents challenges to cities facing unprecedented impacts from heat, rainfall, drought, and wildfires. Funding is limited by poor investment and inappropriate funding models. Local and regional authorities are not adequately resourced and lack capacity to prioritise adaptation. Powers and regulations are lacking and responsibility for a nation-wide problem with very local impacts and solutions is unclear.

Despite the challenges, London has set out policy and programmes to address adaptation through various Mayoral strategies, including the London Environment Strategy, the London Plan, and the Mayor’s Transport Strategy. Mayoral funding programmes like the Green New Deal have invested millions of pounds into projects that can deliver climate resilience. Following the July 2021 floods the Mayor convened key partners to embark on London’s first surface water flood risk management strategy. And London’s emergency services have learned important lessons from recent flooding and heatwave events and embedded these into their ongoing practice.

There is more that needs to be done. zero carbon and energy efficiency projects often create opportunities to embed adaptation through retrofit, but these opportunities are missed because policy and funding mechanisms do not support an integrated approach to climate action. Buildings and public realm will need upgrading, including thousands of hectares of greening, to make them resilient to flooding and heat. Our transport network, water, energy, ICT, and other infrastructure will need investment to ensure that assets and services are able to cope.

New funding models may need to be established to deliver the significant investment required to adapt London for its changing climate. Public, corporate, and even household spending will need to be aligned to improving climate resilience. Currently no mechanisms exist that offer a viable funding stream for adaptation; green finance currently focuses on achieving carbon reduction and net zero, with adaptation struggling to demonstrate return on investment. Certainly, most investment in adaptation in London currently comes from various public funding sources.

Defra is the lead government department for adaptation. It faces a huge challenge embedding adaptation action across government departments, let alone across local government and the wider public and private sectors. Its third National Adaptation Programme is to be published this summer, and early engagement suggests that it will not provide the ambition or strategic coherence needed to set the UK on a firm path toward climate resilience. In the absence of this leadership, London will continue to set its course and use its adaptation review to ensure that its resources are best aligned to deliver a climate-ready London for Londoners.