ice
Institution of Civil Engineers

London

INFRASTRUCTURE FOR LONDON 2021

Foreword

London's electorate returned Mayor Sadiq Khan for a second term on 6 May, and his administration can expect continued support from ICE London for its Good Growth ambitions, including initiatives such as the Mayor's Infrastructure Advisory Panel and Supporting Diversity programme.

This is also a time to reflect and refocus, as we face a different future from that expected eighteen months ago, and this Report on London's Infrastructure sets out a series of recommendations for London's future and for action by the Mayor.

Infrastructure remains fundamental to the way we live our lives: from the buildings we use for living, work or leisure; the water and energy which make those spaces liveable; the roads, paths and rails we use to move around; and making sure that projects are delivered in a cost effective, timely and environmentally responsible way. Layered on to these existing challenges is the debate around Covid 19 recovery, including consideration of how far those infrastructure needs have changed – especially how we work and move around – as well as the longer-term threat of climate change and how we all respond to that challenge.

Climate change continues to move up the Agenda, and we need to focus on how to reduce carbon emissions, as well as how to adapt London and its infrastructure to the consequences of the 'locked in' emissions which have already taken place. It is essential to ensure that our transport, energy, telecommunications and water systems can continue to function effectively despite the increased risks of flooding, fires, strong winds, and high temperatures. Resilience will be a key feature of our systems and skills-set.

My thanks to everyone who contributed to this Report which draws on a wide range of expertise, including report author Victor Anderson, the ICE London Committee and contributors to five policy workshops in March 2021. It also draws on previous work by ICE London's expert panels, ICE London policy papers such as Engineering Cleaner Air (2017) and ICE's annual State of the Nation reports, to which ICE London contributes.

This Report includes ten clear priority recommendations. As civil engineers, we are concerned with both the big picture and the practical details, and we look forward to working with the Mayor, London Assembly Members, and all of London's policy makers, to ensure the continued sustained success of our great world city.

Steve Lee CEng FICE
Chair, ICE London

10 Recommendations for the Mayor

ICE London's recommendations provide a set of achievable goals for the incoming Mayor of London and Assembly Members, which could dramatically change the way infrastructure is provided.

1 Developments should go ahead in Opportunity Areas identified in the 2021 London Plan, in cases where it gives particularly high figures in terms of projected new homes and jobs.

2 Dealing with gaps in full-fibre and 5G communications infrastructure should be an immediate priority.

3 London should move ahead with measures for shifting the allocation of street space from cars to pedestrians, cyclists and public transport modes, encourage freight from road to rail, and make more use of waterways for transport.

4 There are many small infrastructure schemes which would usefully and very cost-effectively contribute to quality of life in London, for example by improving active travel provision, the condition of roads, or facilities in parks.

5 Infrastructure – including roads, railways, water supply, and waste facilities – must be designed, adapted, and maintained, to make it able to withstand increases in temperature, flooding, winds and fires resulting from climate change.

6 Building design in London should urgently be updated to take into account the risk of future flooding caused by severe climate change. There should be a presumption against hard surfaces, where grass and other soft surfaces are practical.

7 London needs to get its infrastructure ready for electric vehicles. This means far more street charging points, increasing the capacity of some electricity sub-stations, and an expansion of local renewable energy generation.

8 Major new building and transport infrastructure developments must all be subject to rigorous greenhouse gas assessments and decarbonisation plans.

9 There should be a lump sum funding allocation from the Exchequer for London, as well as the use of the Community Infrastructure Levy to raise revenue from unearned financial gains from major infrastructure development.

10 There should be a boost to construction industry skills training through expanding further education colleges and adult education, making full use of the Apprenticeship Levy.

Time to change course

London's future looks a lot different today from the outlook when work began on the latest London Plan. The Plan, the Mayor's official strategy for London's development, has since February 2017 been through a long process of research, drafting, scrutiny, consultation, and examination by planning inspectors.

London faces a new reality. The Covid-19 pandemic has brought about a set of major changes. Some will be reversed as soon as restrictions are fully lifted, but others are likely to survive for some time to come and will be reshaping cities around the world.

During 2020, most Londoners' lives became much more local. Green spaces people can walk to from home became much more strongly valued. Flats with no room for an office at home have, for many people, come to feel too small. Many low-paid jobs seen as 'unskilled', in social care and delivery services for example, have turned out to be part of the essential bedrock of our lives. Responses to the virus have made it seem obvious that we also need to be preparing for other major risks, such as climate change.

It is time to look again at the trajectory London has been on in recent decades. This has been set out in all three London Plans.[1] In its essentials the approach has been very simple and has remained the same: build the transport infrastructure and the housing will follow. London can then be regenerated station by station, node by node. We can see this in practice all around us in the stations and new flats at Paddington, King's Cross, Vauxhall-Battersea, Stratford and Elephant & Castle. We can also see the plans to take it further with the extension of the Bakerloo line, Crossrail 2 to regenerate London's north-east, and perhaps less plausibly, the Croydon Tramlink giving a boost to Sutton.

To a very large extent, this strategy has proved successful. London's transport system has improved, and many thousands of people have been housed in new flats. There is still some important scope for this trajectory to be continued further, but the scope is getting less and less, for a number of important reasons.

- Many areas of London's old dockland, industrial, and railway land have already been put to new uses.
- Green spaces are now more highly valued than ever. There are very few places where existing communities are lobbying for additional building: all but community assets such as a GP surgery, school, or library, takes place in the face of local opposition. Overriding that has a cost in terms of democracy.
- Working from home during the pandemic has shown that, thanks to broadband, it has become a practical way of organising work for a significant segment of London's workforce. At least in the short term this is reducing the need for commuting and the demand for commuter transport infrastructure and central office space, and increasing the need for local hubs, shared workspaces, and cafes. This shift, if it continues, will not only reduce central London's traffic congestion but also its unhealthy concentration of air pollutants.[2]
- There is an increasing danger of an even greater skew in London's population profile than already exists. People on low incomes are being squeezed out, often to places such as Dartford and Gravesend outside Greater London, even though in many cases the people who are moving out have been doing work essential to London's functioning, as has become very evident during the pandemic (such as work in health, social care, retailing and delivery). Meanwhile many better-off young families wanting space for children and office-at-home are moving out of London flats and into houses in, for example, Birmingham and Bristol.[3]
- There is some evidence that London's population as a whole is now beginning to fall, potentially reversing the long-run trend that all three London Plans have been based on.[4]
- The Government's 'levelling up' agenda, which involves a commitment to expenditure on transport infrastructure outside London, needs to better articulated, and we need to

1 For a good example of this trajectory at its most explicit, see July 2017 Arup Report for the GLA: 'London's Strategic Infrastructure Requirements'. **https://www.london.gov.uk/sites/default/files/london_strategic_infrastructure_requirements_2017_1.pdf**
However more recently a report principally by Arup authors for London First, published in January 2021, took a very different view. 'Transport in London: new solutions for a changing city'. **https://www.londonfirst.co.uk/sites/default/files/documents/2021-01/TransportInLondon.pdf**

2 Changes of this sort across many parts of the world have led to the concept of the '15 Minute City'. See for example 'Introducing the 15-Minute City Project' **https://www.15minutecity.com/blog/hello**
'Designing the 15 Minute City' (Arup 2020) **https://www.arup.com/perspectives/designing-the-fifteen-minute-neighbourhood**

3 See for example discussion on Mumsnet: **https://www.mumsnet.com/Talk/property/2117575-Thinking-the-unthinkable-moving-out-of-London**
London Assembly Housing Committee survey August 2020: **https://www.london.gov.uk/press-releases/assembly/escaping-the-city-post-covid**

4 PWC: 'UK and Global Economic Outlook' (Jan 2021). **https://www.pwc.co.uk/press-room/press-releases/2021-uk-and-global-economic-outlook.html**
See also: **https://www.irishtimes.com/news/world/uk/covid-19-london-s-population-fell-by-700-000-amid-exodus-of-foreign-born-residents-from-uk-1.4458762**
https://www.onlondon.co.uk/is-londons-population-really-likely-to-fall-this-year/

ensure that 'levelling up' does not mean levelling down London.[5]

The least convincing way of managing this problem is to 'square the circle' by setting official housing targets which are repeatedly missed, as they have been for decades, and are therefore unreliable as a basis for planning. The latest London Plan has a target of 52,000 new homes per year for the next 10 years, whilst the Government's proposed formula implied an annual figure of 93,000. In practice, the average figure per year from 2017-2019 was less than 37,000.[6]

Against this background, there are however still many things that can usefully be done about London's infrastructure –

- The climate change adaptation and resilience challenge is enormous and will create a huge need for the skills of civil engineers, architects, builders and infrastructure professionals. This will be discussed in the next section.
- There are major exceptions to the overall picture we have presented so far. Most of the places where new building remains practicable are in those Opportunity Areas already identified in the London Plan where it gives particularly high figures in terms of projected new homes and jobs such as the old Park Royal industrial estate.[7] These developments should go ahead. (**Recommendation 1**)
- Dealing with gaps in full-fibre and 5G communications infrastructure should be an immediate priority. (**Recommendation 2)**
- It will be important to press ahead with measures for shifting the allocation of road space from cars to pedestrians and cyclists (whilst improving safety), shifting freight from road to rail (with a new rail freight terminal in south London), and a shift in passenger transport from cars to rail and buses, as well as making more use of waterways for transport. (**Recommendation 3**)
- We are concerned in the Institution of Civil Engineers with infrastructure in its widest sense, not only major programmes like Crossrail or the maintenance of London's rails, roads and bridges. There are many small schemes which would usefully and very cost-effectively contribute to quality of life in London, for example by improving active travel (cycling and walking) provision, the condition of roads, or facilities in parks. (**Recommendation 4**)

We also support the expansion of Heathrow Airport, but believe that this should be carried out with the greatest possible attention being given to minimising its environmental impacts.

5 London First 'Central Government's role in helping London drive recovery' argues that promoting the capital's recovery alongside that of other cities and regions could generate a fiscal surplus to support government investment in vulnerable communities. **https://www.londonfirst.co.uk/sites/default/files/documents/2021-05/CentralGovtsRoleInLdnRecovery.pdf**

6 Letter from Robert Jenrick to Sadiq Khan responding to the Draft London Plan, 13.3.20. **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/924466/Letter_to_the_Mayor_of_London.pdf** Lichfields 'Planning Matters' blog 7.8.20. **https://lichfields.uk/blog/2020/august/7/london-and-the-new-standard-method-england-s-hotbed-of-need/**

7 'The London Plan 2021' pages 36 & 37. See also page 28 map for the links with transport. **https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf**

PLANNING CASE STUDY:

Meridian Water, Enfield Council

Meridian Water is located in the south east of the London Borough of Enfield, benefiting from its proximity to the River Lee, Lee Valley Park, the A406 and a train line into central London.

The ambition for the project is to create an exemplary new piece of the city that delivers 10,000 new homes, 6,000 jobs and new schools, health facilities, parks and local amenities over a 25-year period.

Enfield Council itself has assumed the role of master developer to de-risk the project, a pioneering approach for a local authority that sees the council lead responsibility for setting strategies, working up the masterplan and selecting development partners to bring forward phases incrementally. On parts of the site that are not due to be developed for a number of years, the council has provided space for small businesses, music and cultural venues.

The new Meridian Water train station opened in June 2019, part of Enfield Council's aim to strategically frontload the infrastructure in order to unlock further development. The station will eventually serve an estimated 4 million passengers a year.

Image credit: Simon Turner on behalf of Waltham Forest Council

ACTIVE TRAVEL CASE STUDY:

Enjoy Waltham Forest

The Enjoy Waltham Forest programme invested £27million of Mini-Holland funding from TfL to improve infrastructure and encourage a modal shift from private car to walking and cycling. All schemes within the programme have transformed the local area with lower traffic levels which have been designed and implemented to TfL's Healthy Streets design standard. New public spaces, street art and pocket parks in areas formally used by traffic, including a new village square, has already been used for community events, prior to the Covid-19 pandemic.

Where appropriate, trees rating highly on the Urban Tree Air Quality scale were planted in these spaces to improve local air quality. To support the modal shift, the borough provided cycle training free of charge for anyone who works, lives or studies in Waltham Forest, enabling residents to utilise the new infrastructure and the full benefits of the scheme.

The urgent adaptation agenda

Pandemics regularly feature on official government lists of risks, and on the risk reports from the World Economic Forum, a key input to their annual meetings in Davos.[8] Yet there has very often been a failure to make an effective chain from identifying a risk to putting in place the measures necessary to deal with it. Many reasons have been put forward for this, including a chronic overemphasis in most decision-making on short-term considerations at the cost of the long-term, and an unsurprising reluctance to put resources into possibilities that may well never happen.[9]

The Covid-19 pandemic has led to some rethinking, with a widespread desire to work from home, spend more time in local green spaces, and have reliable high-speed broadband. There is, however, always the danger of 'fighting the last war' and not thinking about other major risks. Facing us all there is a greater risk than even another pandemic: the risk of severe climate change. It is greater both because it is certain to occur as there is now no longer any way it can be prevented (although it can be moderated) and it will continue to have an impact for far longer.

Climate change is already officially an emergency. A motion stating this was agreed by the House of Commons in May 2019. 308 UK local authorities, and the London Assembly, have also declared a climate emergency, as have 13,000 scientists and respected publications such as 'Scientific American'.[10]

Climate change has a whole set of serious consequences, including species extinctions, fires, temperatures too high to live and work in, ice cap and permafrost melt, the spread of diseases, harmful algae blooms, subsidence, local and seasonal water scarcity, more destructive (though not more numerous) hurricanes and typhoons, and increased risk of flooding. All his has been explained in numerous scientific reports.[11]

OECD (Organisation for Economic Co-operation & Development) has reported that their "modelling of the potential impacts of a major flood in Paris found that 30% to 55% of the direct flood damages would be suffered by the infrastructure sector, while 35% to 85% of business losses were caused by disruption to the transportation and electricity supply and not by the flood itself."[12]

A UK Government risk assessment report in 2017 concluded that: "Increased frequency of flooding from all sources is the most significant climate change risk to UK infrastructure, including energy, transport, water, waste and digital communications ... Projected changes in temperature and rainfall will place additional pressures on infrastructure, in particular the rail, road, water and energy sectors.

High temperatures create a risk of buckling on the rail network, cause electricity cables to sag, and road tarmac to soften and rut. Components such as signalling equipment can overheat and fail. Changes in rainfall, coupled with population growth, are projected to lead to supply/demand deficits in water resource zones across England and in some other parts of the UK by the 2050s, with widespread deficits projected by the 2080s. … Approximately 8% of the UK's transport and road network is at medium to high risk of landslide disruption.

While future projections remain uncertain, increases in maximum wind speeds experienced during storms would have significant implications for overhead power lines, data network cabling and the rail network, as well as for offshore

8 UK 'National Risk Register 2020': **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952959/6.6920_CO_CCS_s_National_Risk_Register_2020_11-1-21-FINAL.pdf**
World Economic Forum: 'The Global Risks Report 2021' **http://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf**
London has its own official risk register – **https://www.london.gov.uk/sites/default/files/london_risk_register_v9.pdf**

9 See Samuel Hilton & Caroline Baylon: 'Risk Management in the UK' (The Centre for the Study of Existential Risk 2020). **https://01883769-75b2-47bc-819a-ec021b2d38d0.filesusr.com/ugd/06aa4b_7dedd03fcd274f949af5aebc29300322.pdf**

10 List of local authorities declaring: **https://www.climateemergency.uk/blog/list-of-councils/**
London Assembly declaration (December 2018): **https://www.london.gov.uk/press-releases/assembly/call-on-mayor-to-declare-climate-emergency**
Scientific American statement: **https://www.scientificamerican.com/article/we-are-living-in-a-climate-emergency-and-were-going-to-say-so/**

11 See for example IPCC: 'Climate Change 2014: Impacts, Adaptation and Vulnerability: Summary for Policymakers'
https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgII_spm_en.pdf
IPCC: 'Global Warming of 1.5o C' (2018) Chapter 3: 'Impacts of 1.5°C of Global Warming on Natural and Human Systems'
https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Chapter3_Low_Res.pdf
A report specifically about climate impacts in London was commissioned by London Assembly Member Caroline Russell: 'Climate Change Risks for London' – Jones Climate Sustainability Consulting (April 2019).
https://www.london.gov.uk/sites/default/files/climate_change_risks_for_london_-_a_review_of_evidence_under_1.5degc_and_different_warming_scenarios.pdf
See also 'London Regional Flood Risk Appraisal' (GLA 2018). **https://www.london.gov.uk/sites/default/files/regional_flood_risk_appraisal_sept_2018.pdf**
'Flood Risks in London: Summary of Findings' – London Assembly Environment Committee (2014).
https://www.london.gov.uk/about-us/londonassembly/meetings/documents/s36267/Appendix%201%20-%20Flood%20risk%20slide%20pack.pdf

12 'Climate-resilient Infrastructure' (OECD 2018). Page 2. **https://www.oecd.org/environment/cc/policy-perspectives-climate-resilient-infrastructure.pdf**
https://www.oecd-ilibrary.org/governance/seine-basin-ile-de-france-2014-resilience-to-major-floods_9789264208728-en

infrastructure."[13] Climate change therefore presents a whole series of risks to infrastructure.

There is therefore also another major consequence climate change will eventually, and should immediately, have: the systematic redesign of cities, buildings and infrastructure. A high priority should be given to protecting infrastructure from flooding and temperature increase. Civil Engineering is one of the professions with a key role to play in this transformation.

In different parts of the world, there are already elements of such a transformation in place. An important task now in London is to take these examples, see what is relevant here, and put together an integrated plan for London's climate risks, adaptation, and resilience. By "adaptation" we mean making the changes required by projections of future climatic conditions; by "resilience" we mean the capacity to respond to whatever happens, including less predictable eventualities and emergencies.

Hammersmith Bridge is an example of an asset being left with sub-optimal maintenance over a long period of time, and we are now in a situation of debating who is paying for the significant repairs. There must be a proactive maintenance regime on existing and new assets, with clear funding responsibilities.

Here are some specific examples of what is being done –

- Detailed planning is taking place for possible future flooding events on the Thames Estuary, including measures to protect the underground system and investigating options for a new Thames Barrier.[14]
- Extreme heat can cause railway tracks to buckle. Japanese Railways has raised the standard for estimated maximum performance temperature of its railways from 60°C to 65°C to guide future investments. JR has also developed maintenance vehicles that detect potential joint openings.[15] Climate change is predicted to result in increased numbers of railway buckling incidents in the UK, with consequent delays and disruption to services.[16]
- Leeds has embarked on a large-scale scheme to protect the city from flooding, aiming to protect 3,000 homes and 500 businesses.[17]
- The GLA published a report setting out how people running schools can think systematically about planning for climate adaptation.[18]
- In Paris, the Resilience Plan includes a section on school playgrounds. "Paris schoolyards … are covered with impermeable asphalt and closed to the general public even outside school hours… In the medium- to long-term, a cooling programme for all schools will be implemented. It will aim to gradually replace asphalt walkways with trees and vegetation (lawns, orchards, vegetable gardens), and / or test new materials (stabilised materials, recycled wood, kinetic tiles, evapotranspiration and permeable coating, etc.) and new methods to cool schoolyards and / or dormitories (district energy, earth tubes, solar absorption cooling, etc.)."[19]

We propose:

Infrastructure – including roads, railways, water supply, and waste facilities – should be designed or adapted, and maintained, so it can withstand increases in temperature, flooding, winds and fires. (**Recommendation 5**)

Building design in London, and especially the part of it in the Thames flood plain, needs urgently to be updated to take into account the risk of future flooding caused by severe climate change. There should be a presumption in the planning system, and in the decisions of home-owners, school managers, and others, for the use of SUDS (sustainable urban drainage systems), instead of hard surfaces where grass and other soft surfaces are practical. (**Recommendation 6**)

There is also a need to plant trees and re-wild the land at the outer reaches of large river catchments such as the Thames. Trees should also be extensively planted in the flood plains of brooks and rivers to slow down the run-off.

13 'UK Climate Change Risk Assessment 2017: Evidence Report'. Chapter 4 page 4. **https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Chapter-4-Infrastructure.pdf**
See also Scott Thacker et al.: 'Geographic Hotspots of Critical National Infrastructure', in 'Risk Analysis' December 2017. **https://onlinelibrary.wiley.com/doi/full/10.1111/risa.12840**

14 Environment Agency: 'TE2100 Plan' (2012). **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/322061/LIT7540_43858f.pdf**

15 'Climate-resilient Infrastructure' (OECD 2018) page 13.

16 K. Dobney et al.: 'Quantifying the effects of high summer temperatures due to climate change on buckling and rail related delays in south-east United Kingdom', in 'Meteorological Applications' 16 (Royal Meteorological Society 2009).

17 https://www.leedsclimate.org.uk/leeds-flood-alleviation-enters-next-phase **https://www.arup.com/projects/leeds-flood-alleviation-scheme**

18 'How London Schools and Early Years Settings can Adapt to Climate Change' (GLA 2020). **https://www.london.gov.uk/sites/default/files/gla_schools_adaptation_guidance_14-10-20_issue.pdf**

19 Mairie de Paris: 'Paris Resilience Strategy' (2018). **https://resilientcitiesnetwork.org/downloadable_resources/Network/Paris-Resilience-Strategy-English.pdf**

Image credit: Project Centre Limited

SUSTAINABLE DRAINAGE CASE STUDY:

London Strategic SuDS Pilot Study Project

Jointly funded by Thames Regional Flood and Coastal Committee & Thames Water, the London Strategic SuDS (sustainable drainage systems) Pilot Study was created to implement and evaluate the benefits of small retrofit SuDS interventions in London. Up to £1.5m of funding was available across six pilot boroughs: Camden, Southwark, Westminster, Enfield, Hillingdon and Kingston.

Hydraulic modelling across several catchments has helped identify opportunities for SuDS delivery as well as providing evidence of the aggregated flood risk, socio-economic and natural capital benefits and then attributed values back to the individual interventions, to unlock flood risk funding for their delivery. Importantly it has demonstrated that over 60% of the flood risk benefits can be derived via the delivery of 5% of the opportunities if locations are optimised.

In the raingardens installed as part of the Eastcote Town Centre Improvements, the SuDS scheme increased its capacity to withstand 30mm of rain to reduce the flood risk to residential and commercial properties and improved local amenity. The scheme won the ICE London People's Choice award 2020, voted for by the public.

Other schemes delivered included a linear cascading raingarden along Camley Street, Camden and a whole series of raingardens in Haselbury, Enfield. Completed schemes were carried out in collaboration with other works such as highway safety improvement works or cycle infrastructure schemes. The SuDS opportunities from the modelling have subsequently been uploaded onto the GLA's Infrastructure Mapping Application for London and has helped identify potential collaboration between SuDS delivery and future utility works. A project is now underway between Cadent and the London Borough of Enfield which will see raingardens installed as part of road surfacing reinstatement works, reducing costs and importantly disruption for the local community. These opportunities demonstrate the significant potential for integrated working on projects that tackle a wide range of urban issues: flooding, traffic, regeneration, heat, air quality, etc.

It's an emergency

A recent report from the United National Environment Programme examined progress made since the Paris Agreement in 2015, reached under the auspices of the UN Climate Treaty (UNFCCC). The report found that "Government pledges under the Paris Agreement, known as Nationally Determined Contributions (NDCs), are still woefully inadequate. Predicted emissions in 2030 leave the world on the path to a 3.2°C increase this century, even if all unconditional NDCs are fully implemented."[20] To achieve the Paris Agreement target of limiting the rise in global average temperature to 1.5 degrees would require at least a five-fold increase in government pledges (together with their implementation). Even to keep to 2 degrees would require a tripling.

That analysis was carried out shortly before President Biden took office and announced his new measures, with some positive responses from other leaders, and so the situation now is looking slightly more hopeful, although overall still alarming.

The GLA should play its full part in responding to this emergency. There are, however, three reasons why this will be difficult –

- The powers of the GLA are limited. Funds available for economic development and job creation are relatively small.
- Market prices influence all consumers but do not adequately represent the enormous burdens which greenhouse gas emissions are placing on members of future generations. This problem is reflected in government cost-benefit analysis through its use of discount rates which make costs and benefits a generation or more hence count for very little in decision-making taking place in the here and now.
- There is currently an urgent need for a joined-up government-led plan to limit UK greenhouse gas emissions, which would provide a framework for action by the GLA to fit into.[21]

Despite these constraints there are still significant ways to move forward with the decarbonisation agenda in London. Some are already GLA policy, and the issue here is therefore with delivery, finance, and the availability of skilled labour. Other developments are taking place in parallel with the GLA's ambitions. Initiatives we particularly wish to see highlighted by the Mayor are –

- **London needs to get its infrastructure ready for electric vehicles.** This means far more street charging points, increasing the capacity of some electricity sub-stations, and an expansion of local renewable energy generation, especially from solar energy. The outcome will be not only less carbon emissions but also improved air quality.[22] (**Recommendation 7**)
- **Major new building and transport infrastructure developments must all be subject to rigorous greenhouse gas assessments and decarbonisation plans.** These should apply not only to the construction and working of the developments themselves, but also to their likely knock-on consequences. There should be an attempt to minimise: the "urban heat island" effect of new developments[23]; the quantity of unrecycled demolition and construction waste[24]; and the blocking of wildlife corridors.[25] (**Recommendation 8**)

20 UNEP: 'Emissions Gap Report 2020' (December 2020)

21 For ICE views on national UK strategy, see the ICE 'State of the Nation 2020' report: **https://www.ice.org.uk/getattachment/news-and-insight/policy/son-2020-Infrastructure-and-2050-net-zero-target/State-of-the-Nation-2020-Infrastructure-and-the-net-zero-target.pdf.aspx#_ga=2.47036839.1298164972.1618233572-111297131.1616009148**

22 On the air quality implications, see ICE London: 'Engineering Cleaner Air' (2017). **https://www.ice.org.uk/getattachment/about-ice/near-you/uk/london/publications/engineering-cleaner-air/ice_3563_engineering_cleaner_air_report.pdf.aspx** Pages 35-39.

23 See Julie Futcher: 'Shadowlands', in 'CIBSE Journal' July 2014. **http://portfolio.cpl.co.uk/CIBSE/201407/modelling-tall-buildings/**

24 See European Environment Agency: 'Construction and Demolition Waste: challenges and opportunities in a circular economy' (2020). **https://www.eea.europa.eu/publications/construction-and-demolition-waste-challenges**

25 See Wild West End website. **http://www.wildwestend.london/stories-feed/londons-green-corridors-set-to-expand**

Making it happen

Many projects are genuinely of national significance, such as Crossrail 1 and 2, but very often the financial dependence of London government on central government prevents the Mayor and Assembly from moving ahead with the priorities of the people of London.

The Mayor and Transport for London would be in a much stronger position to respond to London's needs if further power were to be devolved to the Greater London regional level. For this to happen in practice, the degree of financial dependence of London government on central government would have to be greatly reduced.

One way in which this could be achieved, recommended by the Mayor's advisory London Finance Commission (in 2007), is through earmarking some of the revenue from particular taxes as GLA revenue. For example, they recommended full devolution of council tax, business rates and stamp duty.[26] The Mayor (in the 2021 London Plan) wants to claim Vehicle Excise Duty.[27]

This type of arrangement, however, makes London subject to the fluctuations of the market in ways which are irrelevant to any sensible consideration of how finance ought to be allocated. The pandemic has drastically affected high street VAT receipts and tube fare revenue, and any system where the funding of an organisation such as the GLA depended on either would now be in severe difficulties, as is happening with the losses affecting Transport for London. An additional problem is that where earmarking involves the revenue from a tax being shared out, it creates the unnecessary administrative burden of separating out London's share from other shares, particularly if this arrangement were to be repeated for other local authorities.

A better scheme would be for the GLA to have a lump sum allocation from the UK Exchequer, in the same sort of way as the devolved bodies in Scotland, Wales and Northern Ireland do, which then the GLA would decide how to spend across the range of its responsibilities, instead of the present system involving many separate earmarked grants. A lump sum finance system for London should be the beginning of a general new needs-based financial settlement for the future of local government across England, devolving more spending decisions to local level. Reform of local government finance is the key to reducing England's overcentralisation of power, which even London suffers from.

More joint working between the GLA and the leaders of the South-East's county and unitary councils would improve planning at the overall regional level, Greater London together with the wider South-East. This would reduce the justification for central government involvement.

Although infrastructure is often very expensive, it adds substantial financial value to many different assets, including housing, shops, and land. Businesses and owner-occupiers find themselves with windfall gains won at the public's expense through government funding financed by taxpayers. A levy on unearned increases in wealth achieved in this way could usefully and fairly help to fund infrastructure. A full-scale national policy of Land Value Taxation is very ambitious (and would have to be accompanied by very strict planning controls to maintain green space and areas for social housing), but a levy on specific infrastructure developments, through the use of the Community Infrastructure Levy, would be far easier to implement.

Policy implementation for infrastructure depends not only on funding and the power to allocate it, but also on the availability of skills. Currently there is a skills crisis in the construction sector, partly because not enough young people are coming into it to replace those who will soon be retiring, and partly because of Brexit discouraging some workers from eastern Europe from staying in London.[28] Efforts should continue to work with employers and professional institutions within the built environment sector to make roles and careers welcome to everyone in the community, irrespective of background. There is an urgent need to address the skills shortage, as part of a general revival of further education colleges and adult education.

The GLA and TfL themselves also need to be making use of the apprenticeship levy money they are entitled to, as well as promoting and encouraging the taking up of apprenticeships.

We propose:

- A lump sum funding allocation for London to replace separate earmarked grants, as well as the use of the Community Infrastructure Levy to raise revenue from a share of unearned financial gains from major infrastructure development. (**Recommendation 9**)
- A boost to construction industry skills training through expanding further education colleges and adult education, and making full use of the apprenticeship levy. (**Recommendation 10**)

26 London Finance Commission: 'Devolution: A Capital Idea' (2007). **https://www.london.gov.uk/sites/default/files/devolution_-_a_capital_idea_lfc_2017.pdf**

27 'The London Plan 2021' para 11.1.33. **https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf**

28 Oscar Watkins & Dean Hochlaf: 'Skills for a Green Recovery' (Institute of Public Policy Research 2021). **https://www.ippr.org/research/publications/skills-for-a-green-recovery**

SKILLS CASE STUDY:

Boosting industry skills with the Kickstart scheme and apprenticeships

Launched September 2020, the kickstart scheme is aimed to provide 16 to 24-year-olds on universal credit the opportunity for employment. In partnership with the Prince's Trust, 70 placements will be provided by Balfour Beatty. These will last six-months with the view of transferring the kickstart participants to their Apprenticeship Scheme. This is being delivered as part of The Prince's Trust Coalition for the Built Environment scheme, which aims to bridge the skills gap present within the industry.

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ICE London is responsible for education, knowledge and public voice activities with more than 10,000 ICE Members living or working in London.

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