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Dear Mayor Khan,

ICE London's Response to a City for All Londoners

The Institution of Civil Engineers (ICE) London region welcomes the publication of A City for all Londoners, your statement of ambition as the Capital's new Mayor.


As an international membership organisation that promotes and advances civil engineering around the world, we offer our expertise to you and the Greater London Authority as you begin the process of revising the London Plan and your seven statutory Mayoral strategies.

London is a vibrant, global city, but one that faces a number of challenges over the coming years. As you are aware, a rising population and more extreme weather from climate change are putting great pressure on our natural resources.

How we manage the finite land and water we have, produce enough clean and cheap energy, manage the housing, transport and waste requirements of all Londoners and minimise our effect on the environment will define the Capital's success far into the future.

Our 9,000 members in London, who cover a range of sectors such as transport, waste, water and energy, are ready to assist you and the GLA in finding solutions to these challenges. In this response, we provide our initial thoughts on your plans. We look forward to working with you over the coming years as you develop your strategies further.

Yours sincerely,



Suzanne Moroney
ICE London Director

Response to A City for all Londoners

Institution of Civil Engineers London

December 2016

Executive Summary

Section	Comments
1. Accommodating Growth	ICE London supports the concepts of 'Good Growth' & 'Healthy Streets', but infrastructure investment must be at the heart of these proposals. The Mayor should seek to get the maximum benefit from planned transport projects whilst considering how we can use our current assets better. Water security must be considered as a constraint on growth.
2. Housing	ICE London supports the drive for genuinely affordable housing. The use of underutilised TfL land is welcomed. The Mayor must also ensure TfL is able to use this land to generate funding to maintain its assets and to invest in new transport upgrades.
3. Economy	ICE London supports the proposals to increase the uptake of STEM. We support new technologies like smart cities and driverless cars.
4. Environment, Transport and Public Space	ICE London supports the shift to a circular economy, but this must be embedded throughout all Mayoral policies. We support the proposals on air quality and to make London a zero carbon city by 2050 and will work with the Mayor to achieve these two targets. Flooding is not covered enough in the document, particularly surface water flooding which could benefit from the increased roll out of sustainable drainage. Waste harmonisation should also be encouraged by the Mayor.
5. A City for All Londoners	ICE London supports embedding fairness and equality into all policies for London and will strive to make the civil engineering and built environment sector more diverse and reflective of society.

Our Previous Recommendations

ICE London's 2016 Infrastructure for London Manifesto provides a number of recommendations for the coming four years of the Mayor's term. We were delighted to see a number of these recommendations are reflected in A City for All Londoners, including the need to focus transport investment, to develop housing, improving energy efficiency and generation, boosting skills in STEM and reviewing road user charges.¹

In the Manifesto, we also recommended a commitment from the Mayor's Office to the London Infrastructure Plan (LIP) 2050². We are delighted to be a part of the Strategic Infrastructure Investment Programme (SIIP) and hope that this will build on the work of the LIP2050 to prioritise the most crucial infrastructure projects for the Capital.

ICE London also called for the Mayor to support the Government's final decision on the 2015 Airports Commission Report. Now that the Government's decision has been made, we call on City Hall to accept the decision and to help in finding an integrated approach to expansion that enables balanced economic growth, thriving communities and health and wellbeing, whilst taking account of air quality and noise issues. This decision reaffirms that the UK is open for international business and serious about retaining London's status as a global city.

¹ [Infrastructure for London Manifesto, ICE London, February 2016](#)

² [London Infrastructure Plan 2050, GLA, July 2014](#)

We support the Mayor's call for further powers from central Government. In our State of the Nation Report: Devolution³, we highlight that devolution can be harnessed to provide a strategic approach to infrastructure investment. We were pleased to see powers over adult education and funding for housing were provided in the Autumn Statement⁴ and would support the devolution of suburban rail services to the Mayor.

Consultation Response

Part 1: Accommodating Growth

On transport infrastructure, ICE London agrees that significant increases in capacity are required and is delighted to see Crossrail 2 and East London river crossings are high priorities for the Mayor. Crossrail 2 will have a transformational effect on London – and if planned properly and integrated with London's overall infrastructure needs – could provide a number of secondary benefits. For example, designing in energy cooling from the ground around the tunnels to either help cool the tunnels themselves or supply heating and cooling to local building networks around shafts and stations. This was considered too late for implementation on Crossrail, but has been proven to be effective in other European countries. To fund Crossrail 2, we believe there are lessons that can be learnt from the Northern Line Extension and similar schemes which show there are opportunities to take advantage of local uplifts in land values. ICE London would like to see mechanisms put in place to allow the capture of increased property and land values, for example through the opportunity and compulsory purchase of land parcels along key new transport routes and through additional property taxes in areas that have seen significant increases in property values due to transport investment.⁵

Whilst new capacity in certain pinch points or to encourage modal shift is necessary, new infrastructure is not always the best solution. Much more focus needs to be on more effective use of what is already available on London's transport network, such as encouraging users to travel off-peak or at times of low demand. A smarter approach to the assets TfL currently have and the implementation of new technologies could see considerable improvements in capacity without large scale infrastructure investments.

Generally, the Mayor's Transport Strategy (MTS) should not be developed in isolation. Instead, a 'whole systems approach' must be taken, where the MTS is fully integrated with the Mayor's Environment Strategy, taking account of energy, water and waste demands.⁶ For example, a shift to electric vehicles may add demand on energy distribution networks beyond their capacity to deliver. Similarly, emerging technologies like micro hydrogen generation using overnight off peak electricity would increase the potential to make hydrogen vehicles a viable transport alternative as well as a source of potential energy. The Mayor has a key role in ensuring these silos between the energy, transport, waste and water sectors are more joined up.

ICE London supports the concept of 'Good Growth', ensuring that growth does not mean unaffordable homes or strains on local infrastructure or services. Good Growth requires a strategic approach to infrastructure and development that considers the effects of increased population on all aspects of our core systems. This means large developers considering energy supply, drainage and potential flooding, waste services and

³ [State of the Nation: Devolution, ICE, June 2016](#)

⁴ [Autumn Statement, HM Treasury, November 2016](#)

⁵ [Response to the National Infrastructure Commission, ICE London, January 2016](#)

⁶ [State of the Nation: Devolution, ICE, June 2016](#)

transport much earlier in the planning process to ensure that new housing is not of poor quality or is not resilient.

We look forward to hearing in detail the proposals for London's cultural infrastructure plan, using cultural requirements to inform the spatial and planning strategies. We would highlight that London's infrastructure is in many ways intrinsically linked to its heritage and culture and would call on City Hall to support initiatives that celebrate our historic buildings, transport and sewerage systems and to see investments in new infrastructure as contributions to the city's cultural fabric. By doing so, we can also inspire the next generation to take up subjects in STEM, helping to develop a new generation of pioneering engineers and innovators.

ICE London supports the Mayor's commitment on 'shifting lorry consolidation centres closer to the River Thames or the rail network and encouraging more business deliveries by bike'.⁷ TfL could play a more strategic leadership role in managing freight consolidation in London, providing support to developers looking to use consolidation services and investing in centres for areas where there is an undersupply of consolidation. This would have a number of benefits for London, including improvements to air quality, congestion and noise pollution.

We support the concept of creating 'Healthy Streets' and believe that modal shift to active travel can help significantly ease the strain on London's transport network. Pedestrianisation must be implemented in relation to London's overall transport system to ensure that it does not lead to congestion on surrounding roads. ICE London also supports the roll out of cycling infrastructure such as the cycle superhighways. However, consideration must also be taken to the cycle hire bicycle stock. In Copenhagen, bicycles have been upgraded to include onboard navigation, electrical assistance and a smart phone booking systems. These improvements are vital for encouraging more of the public to take up cycling.⁸

One constraint on London's continued successful growth is water security, an issue that is not identified in A City for All Londoners. The issue of water supply is becoming increasingly pressing with demand for water projected to exceed supply by 10 per cent in 2025 and by 21 per cent in 2040.⁹ Currently, there are three options for new sources of water supply: a supported raw water bulk transfer from the River Severn, an upper Thames reservoir at Abingdon or a wastewater reuse at either Deephams or Beckton Sewage Treatment Works. ICE London believes that a new strategic water resource will be necessary over the coming century if climate change and population growth predictions are correct.¹⁰

Increasing supply, however, must also be coupled with demand management measures, such as the introduction of smart water meters and encouraging the public to use less water. The Mayor could ensure that new developments commit to the Government's now expired Code for Sustainable Homes Standard which could reduce per capita water consumption from the average of 150 litres per day to 80 litres per day.¹¹

Although not directly under the Mayor's remit, this issue would benefit from a strategic leadership approach and the bringing together of Thames Water, OfWat, local authorities in the South East of England and central

⁷ [A City for All Londoners, GLA, October 2016](#)

⁸ [Hiring an electric 'smart' bike in Copenhagen, BBC News, 15 July 2014](#)

⁹ [London Infrastructure Plan 2050, GLA, July 2014](#)

¹⁰ [Developing a New Water Resource in the South East England Region, Discussion Paper, ICE London, January 2016](#)

¹¹ [Code for Sustainable Homes Standards, DCLG February 2008](#)

Government. We believe the Mayor is in the best position to provide this role. We offer the expertise of our ICE London and South East England Water Panel in helping to find the best solutions to these issues.

Stronger links to the South East of England is mentioned within A City for All Londoners and ICE London supports this, particularly as a way of enabling confidence for infrastructure investment. There are a number of proposed schemes in the wider South East which will benefit London, such as Crossrail 2 and the Lower Thames Crossing which require co-operation between decision makers across the region.¹²

Part 2: Housing

ICE London supports the Mayor's aim to make 50% of all new homes built in the Capital affordable. Intensifying housing development on the 75 batches of TfL land would assist in meeting this considerable challenge, but must be managed in a way that allows TfL to see returns on its investments. With the £700 million reduction from TfL's Government grant and the continuing need to upgrade and maintain its assets, TfL must have the funding to meet London's transport requirements.

ICE London agrees that brownfield sites should be used to boost housing stock, but care must be taken when re-assigning industrial land for housing. All potential future uses should be considered so that wider emerging requirements are not overlooked. For example, to cater for increased resident numbers, there is a likely need for waste transfer stations to be set up. These would need to be set up and operated on a commercial shared basis.

The anticipated need for 44,000 additional homes per year provides an opportunity to insist that London has higher energy performance standards than are applicable elsewhere in the UK. The current national building codes will not achieve the desired 'zero carbon' homes, so additional criteria need to be set.

Part 3: Economy

We were pleased to see the devolution of adult education to the Mayor in the Autumn Statement and are delighted that STEM education plays a significant role in A City for All Londoners. With a current construction workforce of 108,800, London is projected to require 15,700 extra skilled workers by 2020.¹³ Inspiring children to take up STEM subjects is therefore a high priority for local authorities, the Mayor and Government.

ICE London is also pleased to see several references to the use of smart technologies that can make our infrastructure more resilient and boost capacity without requiring the construction of new assets. Throughout 2017, ICE London will be examining what smart city thinking can bring to London, bringing together a variety of experts and engineers. We would be keen to share our thinking with you and the GLA to ensure London is able to benefit from these emerging technologies.¹⁴

Driverless cars are also mentioned, a new technology that will not only revolutionise the way Londoners travel, but also how we use our streets and roads. The benefits of autonomous vehicles (AVs) include a reduction in street clutter, such as signage, drainage benefits from the re-greening of front drives and a reduced need for significant transport infrastructure projects. As set out in WSP | Parson Brinckerhoff's

¹² ICE South East England's response to the consultation on the Lower Thames Crossing can be read [here](#).

¹³ [National Infrastructure Plan for Skills, September 2015](#)

¹⁴ ICE London's Knowledge Programme: Making London Smarter will run from July to December 2017

White Paper, 'of the estimated 8,000 hectares of central London land occupied by parked cars today, it is reasonable to assume that 50-70% – potentially more than 5,000 hectares – could be released once AVs are commonly in use.'¹⁵ Connected vehicle technology (CVs) also provide opportunities to monitor the transport system in real time, allowing for TfL and other organisations to better maintain their assets and manage traffic flows.

The Mayor's support for the trials and research into these technologies will therefore be very welcome, but the Mayor must also provide leadership in determining how AVs & CVs are integrated into London's transport system, particularly during the roll out period where driverless vehicles will be on the road next to driver-controlled ones. Ownership models, such as whether London moves towards more shared ownership of AVs, will also be an important component of future transport strategies.

The Mayor is right to list digital as a key utility and we look forward to the appointment of a Chief Digital Officer to promote this sector. ICE will be publishing its State of the Nation: Digital Report in spring 2017, which will assist in highlighting potential opportunities from digital for the built environment in London.

Part 4: Environment, Transport and Public Space

ICE London is pleased to see the Mayor commit to a 'circular economy' approach to environmental policies. Developing a circular economy will help make London a more prosperous as well as sustainable city, removing our reliance on virgin materials. In the construction sector, there have been a number of exemplary schemes including how spoil can be used to create new habitats for wildlife, such as the Wallasea Island Wild Coast Project in conjunction with Crossrail.¹⁶ It is now important that smaller construction companies and projects embed circular economy thinking in the same way many larger schemes have. This may require re-examining the regulations for waste facilities, so that smaller developments can get licences more easily to prepare their waste for reuse.

It is also important that circular economy thinking is developed throughout the entire London Plan and strategies. A shift to reducing, reusing and recycling materials will not be led by one single policy initiative, but instead many small changes that help lower the total waste produced by the Capital. Ensuring the GLA and its agencies, such as TfL, are taking a more circular economic model will show how other organisations should act. For example, London should move to a water management system that captures surface water in sustainable drainage systems, where it can be stored, treated and re-used in non-potable distribution systems at times of high demand. New developments should consider sustainable drainage first, before being allowed to automatically connect to the sewage network.

The harmonisation of waste management services should also be part of the Mayor's environmental strategy. The varying methods for waste collection across the boroughs can easily dissuade residents from recycling, particularly when the population is as transient as London's. Although contracts in place with the waste authorities and collectors means total harmonisation may be difficult in the short term, small steps should be taken now, led by LWARB, so that London can move towards a more uniform model of waste collection and disposal.

¹⁵ [Making Better Places: Autonomous Vehicles and Future Opportunities, WSP | Parsons Brinckerhoff, 2016](#)

¹⁶ More information on the Wallasea Island Wild Coast Project can be found [here](#).

On air quality, ICE London is pleased to see that the Mayor is already taking a series of measures to tackle air quality in London. We have shared with the Mayor our thoughts on pedestrianisation and consolidation and will continue to inform his activities through our Air Quality Taskforce¹⁷.

ICE London also backs the Mayor's ambitious target to make London a zero carbon city by 2050 and looks forward to help develop a detailed roadmap of how this goal will be achieved. This will require a shift to renewable energy, but also dealing with carbon from heating.

We welcome the creation of the Energy for Londoners agency that focuses on generating energy savings, promoting local generation and the roll out of smart meters. We encourage the Mayor to take lessons from the RE:FIT and RE:NEW schemes and to examine emerging technologies and methods like hydrogen and integrated energy planning.¹⁸ The Mayor must also take account of London's unique environment that makes local generation harder (for example, lack of available space for solar PV or wind turbines). This means the Mayor must use his influence to ensure cleaner energy is generated outside London and transported in using effective and available 'energy vectors'.

The issue of flooding is not mentioned frequently within A City for All Londoners and we hope that it remains a high priority for the Mayor. In his Manifesto, the Mayor set out the need to start planning for an additional barrier for the Thames.¹⁹ Whilst a new barrier will be necessary at some point – and we welcome the early planning of it – barriers will only protect London from fluvial flooding and tidal surges, not the other forms of flooding that threaten the city, such as those caused by surface water run-off and sewerage overflows. The Mayor must call for action on these flood risks too which have been exacerbated by the paving over of permeable surfaces. Ensuring that all new developments meet stricter criteria for sustainable drainage would be a welcome start in tackling surface water flood risk.

To protect against surface water flooding, the Mayor must work with Thames Water, the Environment Agency and the London boroughs to implement sustainable drainage in the most at risk areas. Following recommendations from the Green Infrastructure Taskforce, the GLA developed a Sustainable Drainage Action Plan in February 2016, which ICE London welcomed. It is important that this Plan is now implemented and monitored to see if it can achieve the target of a 1% reduction in surface water flows in the sewer network each year for 25 years, resulting in a 25% reduction in flows by 2040.²⁰ This Plan must also be used to maintain any new sustainable drainage schemes, so that they do not fall into disrepair or disuse.

To manage the issue of fluvial and tidal surges, the Mayor should continue to support the Thames Estuary Asset Management 2100 Programme which manages flooding from the River Thames over the century to 2100. The Plan was recently reviewed after 5 years of implementation and found that many of the original forecasts were on trend.²¹ It is important to note that this Programme covers over 3,500 different assets, including not just the Thames Barrier but flood walls across the tidal River Thames.²² All these assets will need

¹⁷ [ICE London Air Quality Taskforce](#)

¹⁸ Further information on these technologies and methods can be found [here](#).

¹⁹ [A Mayor for All Londoners, Sadiq Khan, 2016](#)

²⁰ [London Sustainable Drainage Action Plan, GLA, October 2015](#)

²¹ [TE2100 Five Year Review Non-Technical Summary, Environment Agency, July 2016](#)

²² [CH2M HILL named as delivery partner for Thames Estuary Asset Management 2100 flood defence programme, CH2M, November 2014](#)

continual maintenance and upgrades if we want to protect the 1.25 million residents living in the flood risk area.²³

Part 5: A City for All Londoners

ICE London supports embedding fairness and equality into all policies for London. The roll out of step-free access improvements on the transport network is vital to ensuring all Londoners can access the city in the same way. The Equality Act 2010 ensures that all should have the same access to public realm and ICE will continue to strive to protect this through all engineering solutions.

On behalf of the civil engineering industry, we are also working to ensure our workforce is reflective of the society it serves and that we have the skills necessary to meet the infrastructure challenges ahead. Infrastructure providers like Tideway Ltd are already leading the way by committing to have gender parity by the time the Tunnel is completed and in launching 'Back to Work' schemes for those who wish to re-join the profession.²⁴ We hope to use the Mayor's newly devolved powers over adult education as well as the London Curriculum to help create a new generation of diverse civil engineers.

Acknowledgements

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- ICE London Energy Expert Network Members
- ICE London and South East England Circular Economy Panel
- ICE London and South East England Water Panel

Members of these groups can be found [here](#). The views of this document are provided in a personal capacity by members of the ICE and are not the views of their companies or organisations.

²³ Ibid

²⁴ [Thames Tideway project to target gender equality, New Civil Engineer, June 2014](#)