This year’s Mayoral and Assembly Elections find London at a crossroads. A growing population, climate change and limited space mean that London will face some crucial decisions over the next four years, which will determine the shape and success of the city far into the future.

By the time the next Mayor and Assembly Members finish their terms in 2020, London will have changed significantly. The city will be home to 9 million residents, produce 7.8 million tonnes of waste\(^1\) and need 133 million litres of water a day.\(^2\)

With the city in desperate need of housing, new investment in infrastructure is required to ensure developers can build the homes required. Better transport connections and resource security are essential in unlocking new areas of the city for residential use.

We must also make sure the city is resilient to the growing threat of climate change which can cause both floods and droughts, and threaten the very functioning of the city.

This document, the Manifesto for London’s Infrastructure, sets out a number of recommendations to ensure we are able to deal with these and other challenges.

As the voice of infrastructure, the Institution of Civil Engineers (ICE) London has and continues to work with London’s Government to inform the decision making process on infrastructure issues. ICE London provides expert advice on the planning, delivery and construction of energy, water, transport and waste systems, harnessing the knowledge of our 9,000+ members who live within the city.

In this Manifesto, we set out ten clear and accessible recommendations for London’s Government. Tailored specifically for the Mayor and the London Assembly, these recommendations are not an exhaustive list of demands, but a roadmap for the Mayor and Assembly Members to ensure that London remains a world-leading city.

We look forward to working with the Mayor, London Assembly and all of London’s policy makers to ensure our vision of a successful, modern and sustainable city is achieved.

Roland Grzybek  
ICE London Chair
ICE London’s recommendations provide specific, achievable goals for the incoming Mayor of London and Assembly Members, which could dramatically change the way infrastructure is provided.

STRATEGY

Recommendation 1: Commit to the London Infrastructure Plan 2050 and set out a clear prioritisation strategy within 6 months of entering City Hall.

The Goal: To provide clear long-term direction on the future of infrastructure delivery in London.


The Goal: To end the delay in expanding airport capacity in the South East, ensuring business confidence.

Recommendation 3: Create a Regional Forum for authorities from London and the South East to discuss key infrastructure issues.

The Goal: To build a consensus on infrastructure decisions.

RESILIENCE

Recommendation 4: Develop a “London Resilience Plan 2050” mapping out how the capital will adapt to long term climate changes and environmental disasters.

The Goal: To ensure London continues to grow and adapt, no matter what pressures or shocks the city experiences.

Recommendation 5: Improve energy efficiency and increase local energy generation.

The Goal: To secure affordable, low carbon energy.

DELCIVERY

Recommendation 8: Focus Transport for London’s investment to unlock areas for housing, jobs and investment in the Capital.

The Goal: To address the housing shortage by opening up areas to investment through transport infrastructure.

Recommendation 9: Harness different funding and finance methods to pay for London’s infrastructure.

The Goal: To provide long term funding and finance arrangements so that London can deliver the infrastructure it requires.

Recommendation 10: Review Road User Charges with the revenue generated directed to infrastructure improvements.

The Goal: To reduce traffic on London’s roads and reinvest funding back into environmentally friendly infrastructure.

SKILLS


The Goal: To inspire children across the Capital to continue studying and to take up careers in STEM subjects.

Recommendation 7: Launch a skills campaign to increase the number of qualified civil engineers in London.

The Goal: To provide a wide and varied pool of talent in order to close the growing skills gap and deliver London’s pipeline of infrastructure projects.
The London Infrastructure Delivery Board (LIDB) was established to bring forward the initiatives set out in the LIP 2050 and to develop a programme plan to examine the timings and phasing of the various proposed schemes.

To ensure that these improvements are achieved, the next Mayor must commit to proactively delivering, and as necessary, updating the LIP 2050. ICE London calls on the incoming Mayor to set out their key priorities for London’s infrastructure in collaboration with the LIDB as well as external partners in the public and private sector.

“The 2050 London Infrastructure Plan is the first of its kind for the capital and a good example of forward planning by the Greater London Authority. Now the Plan has been consulted on and published, it requires the continued backing of the Mayor to ensure that the schemes listed are built and that the homes, transport and utility systems are in place for London’s growing population.”

Lawrie Quinn,
Vice Chair, ICE London
LIP 2050\textsuperscript{3} sets out:
£1.3 trillion infrastructure investment programme that will be required by London

including
£800 billion for housing
£973 billion for transport.

£223 billion for energy
£82 billion for water
£40 billion for waste management.

The document includes plans for 1.5 million new homes, a new ‘strategic’ water resource, 40 waste management facilities and a new sustainable urban drainage network amongst many other projects.

\textsuperscript{3} The cost of London’s long term infrastructure, by Arup, 29 July 2014
Airport Capacity

In July 2015, following three years of analysis and consultation, the Airports Commission recommended Heathrow Airport’s North West option on the basis that, combined with a significant package of measures to address its environmental and community impacts, it presents the strongest case and offers the greatest strategic and economic benefits.

It also set out the possible scenario that a second additional runway may be needed by 2050.

Increasing airport capacity will enable London and other cities in the UK to continue to compete on a global scale. Should a decision be delayed further the costs, according to the Commission, would amount to £30-45 billion to the economy over a sixty year time period. Business, tourism and trade will be constrained by a lack of capacity, limiting the UK’s ability to engage with growing economies, such as Brazil, China and India.

ICE London believes that the Government needs to act swiftly and boldly to implement the Airport Commission recommendation and expand airport capacity in the South East. The Mayor of London should campaign for the Government to end the ongoing indecision and, once a final decision is made, the Mayor and the London Assembly should accept the result and work to ensure the city is ready for new expansion.

The Mayor and Assembly should also consider how London can be prepared to deliver further capacity in the future by working with airports in London and the South East to ensure they have the right facilities and connections.

Without increases in capacity, the total cost of travel across the UK could rise by £3-4 billion by 2050.

(Airport Commission Final Report)

Each average flight to a high-growth economy, such as China, Indonesia, Brazil, Mexico and Russia, boosts trade by as much as £175,000.

(CBI)

The aviation sector contributes over £52 billion annually to the UK economy.

(Let Britain Fly)
London and the South East

The London and South East Region is the biggest economic centre in the UK. Altogether, the region generates £203 billion Gross Value Added (GVA) and contributed £80 billion across ten years in tax receipts to the Government and has the highest employment rate in the UK at 76.6%.

To remain competitive and continue to attract investment into the region and the wider UK, both London and the South East Region require high levels of infrastructure investment. In most situations, infrastructure issues such as the need for housing stock, water and energy resources and transport connectivity overlap both the Capital and the bordering South East. Decisions made by policy makers in the capital and in the areas surrounding it can often have significant implications on each other.

Infrastructure issues do not conform to political boundaries or municipal districts and it is therefore essential that politicians seek to work with each other across local authorities and regional assemblies.

ICE London is pleased that open constructive dialogue is taking place between London and the wider South East. To build consensus on infrastructure decisions, a representative body must be set up. It must be independently organised, be committed to by all local authorities and be accountable to the communities of all regions involved. The body must have clear terms of reference, covering core areas where it can add value to the decision making process, such as infrastructure and planning. It must also involve a wide range of stakeholders, not only local and regional authorities, but also Local Enterprise Partnerships and representatives from National Government.

ICE London believes a forum would therefore be the best organisational structure, led by a Steering Group of senior members of the London and South East authorities. The Forum must be clear in working in the interest of both regions and should take steps to ensure that all parts of the South East and London are considered and represented.

ICE London welcomes the creation of the National Infrastructure Commission and is pleased to see it has London’s transport system with its remit. By speaking with one voice, London and the South East’s concerns will be better heard by the Commission.

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6 Airport Commission Interim Report, S-CGE analysis July 2015
5 Office for National Statistics, Region and Country Profiles, July 2013
6 South East England Councils Manifesto, September 2014
7 Office for National Statistics, Regional Labour Markets, January 2015
8 At the Wider South East Summit in City Hall on 19th March 2015, representatives from London, the South East and the East of England met to discuss how issues of planning, infrastructure, education and housing could be dealt with on a wider regional basis. The Summit provided the basis for a framework for London to work with its neighbours in the South and East.
9 Regional and local economic growth statistics, House of Commons Library, 11 December 2015
Resilience

• Recommendation 4: Develop a “London Resilience Plan 2050” mapping out how the capital will adapt to long term climate change and environmental disasters.

• Recommendation 5: Improve energy efficiency and increase local energy generation.

London Resilience Plan

Modern cities are under significant pressure to adapt to altering weather conditions. Flooding and droughts can place heavy burdens on infrastructure and can threaten the very functioning of a city’s core systems.

London’s infrastructure must be prepared. Residents must be able to have access to electricity, water, waste facilities and food, as primary considerations of safety, and be able to travel and connect to other residents within and outside of the capital.

To deal with immediate threats, the London Resilience Partnership was set up to hold responsibility for the capital’s emergency plans and protocols. Made up of over 170 organisations, such as the transport companies, businesses, utility companies and central government, the Partnership has set out a number of Emergency Plans for instant shocks that could affect London.10

These plans need to be assessed in the future planning of London’s infrastructure and resilience and must be brought into the heart of planning policy. ICE London calls on the Mayor to produce a London Resilience Plan 2050 (LRP 2050).

The LRP 2050 would sit alongside the LIP 2050, and assess the resilience of the contents of the LIP 2050 and London’s existing infrastructure.

It would set out the Mayor’s policies on a number of key areas:

- Determining how London’s infrastructure would function if the city experienced extreme temperatures
- Whether Londoners would have access to clean water in a prolonged drought
- How the Thames Estuary 2100, which assesses flood risk, can be integrated into wider GLA policy.

Using research and findings set out in the LIP 2050, the Plan would analyse the potential risks and costs of flooding, droughts and heatwaves and set out what investment would be required to avoid a system failure up to 2050.

The Plan would bring together the work of the Resilience Partnership to assess the interlinking nature of infrastructure, such as what transport options would need to be available in the case of an electricity blackout. Where improvements need to be made, the Plan will set out the estimated costs of doing so.

10 London Resilience Partnership Strategy, June 2013

A Resilient Water Supply

How resilient is London? In terms of water supply, the South East England Region is classed as “seriously water stressed”. In an extreme situations a level 3 Drought Order (requiring a temporary use ban) would cost London £4.3m -9.5m per day.11

Thames Water are considering three options for a new source of water supply:

A supported Raw Water Bulk Transfer. Either a pipeline or canal transfer route through the River Severn to “top up” London’s water supply when necessary. The option has local community backing but may lead to water quality and ecology issues due to the mixing of River Severn water with the River Thames.

An Upper Thames Reservoir at Abingdon. The proposed Abingdon reservoir could provide the largest amount of water supply out of the three options making it the most resilient. The lead time means that this option will not be in place before early 2030s, requiring another option in the medium term.

Wastewater Reuse at either Deephams or Beckton Sewage Treatment Works. This would recycle wastewater from sewage using technology like reverse osmosis or a membrane bio-adapter. It would cost less to build but the public do not fully accept using wastewater and the process is energy and carbon intensive.

The incoming Mayor of London must support the process of finding the best option for a new water resource and work with the national government to ensure it is delivered. Initial analysis shows that an Abingdon Reservoir would ensure a long term water supply for London and the South East region which will be required if population increases and climate change continue to reduce supply.

Energy and electricity generation

London, as with the rest of the United Kingdom, is facing a growing energy crisis as demand threatens to outstrip supply.

Tightening capacity margins may soon begin to threaten London’s security. Greater variations in weather and population growth could exacerbate the problem, even with reductions in energy usage per person.

For the incoming Mayor, it is crucial that energy policy is effective and bold. The Mayor needs to ensure that London’s energy consumption per person and per business is reduced; that there is a sustainable supply of local electricity production; and that carbon emissions are minimised. The incoming Mayor should improve security of supply by encouraging small-scale electricity generation both at the domestic and commercial level and through embedded generation on the distribution network.

Priorities for London’s Energy Sector

• Measurements: Energy targets are crucial if London Assembly members and external organisations are to judge the effectiveness of the Mayor’s policies. However, targets must be achievable and there should be regular scrutiny of the progress the Mayor is making to reach those targets.

• Smart technology: The uptake of smart technology will be essential if London is to become more energy efficient. The Mayor must encourage suppliers and providers to continue offering smart technology to their customers and to invest in innovative methods of controlling energy usage.

• Local energy production: Boris Johnson set the target of supplying 25% of London’s heat and power from local sources by 2025.12 There has been good progress in developing heat networks across London, but further work is needed to develop technical standards and regulatory structures to ensure the market for heat networks develops on a larger scale.

• Solar energy: Due to London’s transient population, uptake of solar photovoltaic (PV) has been significantly lower than the UK average. According to a recent London Assembly report, if London had installed the UK average level of solar PV between 2010 and 2014, the capital’s CO2 emissions would have been 100,000 tonnes lower.13

13 Bring me sunshine, London Assembly Environment Committee Report, 23 October 2015.
Inspiring School Children

STEM subjects open doors to a range of varied and exciting careers, but students are often unaware of the potential benefits of studying these subjects. The situation is particularly worrying for female students, with 43% of girls said they were put off by STEM careers because they didn’t know enough about the careers available.\(^{14}\)

The London Curriculum was set up by Mayor Boris Johnson to cover Key Stage 3 (for children between 11 and 14).\(^{15}\) ICE London believes the London Curriculum needs to be extended to encourage more children to take up STEM subjects at GCSE, both by broadening the units available and by engaging children at a younger age. The Curriculum should also be extended to pupils in Key Stage 2, between the ages of seven and eleven, in order to ensure that children are inspired earlier to think about civil engineering as a future profession.

- Recommendation 6: Expand STEM in the London Curriculum and the London Schools Excellence Fund in order to lower the growing skills gap.
- Recommendation 7: Launch a skills campaign to increase the number of qualified civil engineers in London.

In 2011, men were awarded 85% of engineering and technology degrees and 82% of computer science degrees.\(^{16}\)\(^{(HESA)}\)

In the decade to 2025, engineering companies will need 1.82 million people a year with engineering skills.\(^{17}\)\(^{(EngineeringUK)}\)

London has 14% of the country’s population, but just 7.5% of its apprenticeships.\(^{(Greater London Authority)}\)
The London Schools Excellence Fund must similarly be awarded to projects that show a clear link to improve the uptake of STEM subjects and which demonstrate a clear path to science and engineering based careers. The Fund has been very beneficial to London’s schools, but ICE London calls on the Mayor to ensure funding goes to projects that promote diversity, particularly in STEM.

Closing the Skills Gap

A growing skills gap means London may find it difficult in the future to find qualified civil engineers able to build the infrastructure required for the future. With a current construction workforce of 108,800, London is projected to require 15,700 extra skilled workers by 2020. In order to deliver the infrastructure the city requires, London needs a mixture of skills and expertise. For the next Mayor of London, developing a pool of talent will be essential.

ICE London calls on the next Mayor to launch a skills campaign to get new entrants into the construction industry. The campaign should provide a holistic approach to nurturing talent, by engaging with schools and companies to bridge the link between education and career routes. Acting as a catalyst to drive young people into apprenticeships or higher education, the educational campaign will ensure that pupils across the city are aware of the various options open to them and understand what civil engineering involves, by using the wide number of examples of infrastructure projects on London’s doorstep.

In 2014, 40,050 apprenticeships were started in London, but only 20,760 were completed. In comparison, the South East Region (excluding London) saw 48,960 started and 34,770 completed. (London Data Store)

14 Girls’ Attitudes Survey, Girl Guides, 2011
15 The aim of the Curriculum is to boost standards in key subjects in schools, such as English, Music, History and STEM, by using London as a source of inspiration. The Curriculum has two STEM units: “Bridging the River” and “The Force of the River” which look at design, technology and physics in relation to the River Thames
16 The Fund, which provides £24 million for school projects, has awarded funding to over 100 schools
17 National Infrastructure Plan for Skills, September 2015
Transport for London has a large role to play in assisting the Mayor with London’s housing strategy, for example Crossrail is predicted to unlock the potential for up to 200,000 new homes to be built in London and the wider South East.\textsuperscript{18}

Although the organisation receives 42\% of its income from fares, business rate retention and grants make up nearly a third of TfL’s budget.\textsuperscript{19} Whilst TfL has made a welcome step-change in the management of its property assets, it is nevertheless crucial that the incoming Mayor ensures that capital projects to unlock growth are given priority. This is particularly important due to the Comprehensive Spending Review announcement that TfL’s revenue grant is being phased out by 2018/19, a reduction of £2.8billion that could affect London’s ability to maintain and upgrade its transport infrastructure.\textsuperscript{20} TfL’s Investment programme would be put under further strain should rail fares be frozen.

Improvements to current Underground and Overground lines are also important in increasing capacity on the network and allowing for areas in London to become denser. ICE London was pleased to see the Mayor’s Cycle Superhighway scheme introduced and will continue to support better cycle paths into the city centre.

**Transport Priorities to Unlock Housing Growth\textsuperscript{21}**

**Old Oak Common and Park Royal:** The Opportunity Area will become a major transport node with High Speed Two, Crossrail, Great Western Mainline, Underground and Overground connections. The scheme will provide around 25,500 new homes and 65,000 jobs.

**Upper Lee Valley:** Crossrail 2 and the extension of Gospel Oak to Barking Line will generate 20,000 homes and 15,000 jobs.

**Vauxhall Nine Elms:** The extension of the Northern Line from Kennington to Battersea will provide 15 minute journeys into central London by 2020. The Opportunity Area in Vauxhall will enable around 20,000 new homes and between 25,000 new jobs.

**Royal Docks and Beckton Riverside:** River Crossings like the Silvertown Tunnel and new rail infrastructure like Crossrail will generate 15,000 new homes and 40,000 jobs.

**Croydon:** The extension of the Bakerloo line would help deliver 7,500 new jobs and 7,300 new homes.

\textsuperscript{18} Powering Productivity and Jobs Presentation, Transport for London, July 2015
\textsuperscript{19} Ibid
\textsuperscript{20} London Assembly Transport Committee, December 2015
\textsuperscript{21} Opportunity London, GLA, November 2015
Crossrail 2 must be a priority and ICE London is pleased to seeing a growing consensus from local, regional and national government on the need for the scheme. Many of the benefits of Crossrail 1 have already been seen in terms of delivering housing and ICE London believes that similar gains will be accrued from the second rail link.

Similarly, river crossings to the East of London are needed to alleviate congestion on the Blackwall Tunnel. The Silvertown Tunnel and river crossings at Gallion’s Reach and Belvedere must be considered if the incoming Mayor is going to deliver housing in the nearby Opportunity Areas.

Previously, schemes like the Thames Gateway Crossing did not proceed from the planning stage due to local issues with air pollution, traffic and overcrowding. It is therefore necessary for the incoming Mayor to clearly outline the benefits of new river crossings to local residents whilst also working to mitigate any negative effects like pollution or increased congestion.

“Transport plays a key role in unlocking housing potential and is the key to connecting new homes to businesses, amenities and entertainment. Firm plans for better connectivity are a key factor in making sites more attractive to private finance, so can help to trigger high value regeneration and growth. That’s why investment in transport is directly linked to ending London’s housing shortage.”

Rachel Skinner,
Chair, ICE London Transport Expert Panel

Crossrail 2 will:

- **Promote 200,000 new homes for construction**
- **Support 60,000 jobs across the UK**
- **Provide new capacity for 270,000 people travelling into London at peak times.**

Crossrail 2: www.crossrail2.co.uk
Alternative Sources of Investment

The estimated capital cost associated with London’s infrastructure requirements stands at an estimated £1.3 trillion over the next 35 years, a huge sum by any standards. In addition London needs to pay for the on-going maintenance costs associated with these investments.

With such sums of money being required, the Mayor and infrastructure providers will have to start thinking innovatively about how infrastructure is delivered as well as funded and financed. The first task taken on by a new Mayor needs to be a prioritisation of the contents of the London Infrastructure Plan 2050, based on which programmes of work maximise the economic, regeneration and social benefits per pound spent. This will enable the new Mayor to establish a programme of work to 2050 and re-estimate the total cost.

This is tax payers’ and service users’ money being spent, so the GLA need to draw on all resources available to make sure it is being spent wisely. ICE London recommends that the Mayor challenges infrastructure providers, innovators and academics to come together to reduce the total cost of London’s infrastructure by at least 20% through the use of emerging technologies like BIM.

Even with significant cost reductions, the total bill facing London will be beyond that which can be funded from Government. ICE London supports calls for fiscal devolution to enable the city greater control and accountability over its spending. Fiscal devolution is unlikely to make a significant difference to the amount of money available to fund infrastructure, rather that more informed and timely decisions can be made.

A new approach is needed, whereby more localised public funding is enabled and greater private investment attracted to London’s infrastructure. At present it is not clear where would-be investors might go to invest in, for example, a key development site. A single point of contact that had oversight of London’s infrastructure would address this barrier to entry. ICE London believes this single entity should have a package of funding and financing options it can use for different infrastructure projects, such as an Infrastructure Trust, like the Chicago model.

Case study

Chicago Infrastructure Trust: Innovative Methods to Finance Infrastructure

In April 2012, Chicago set up an Infrastructure Trust with the aim of helping “the people, of the City of Chicago, the City government and its sister agencies in providing alternative financing and project delivery options for transformative infrastructure projects”. A Board was set up to oversee the Trust bringing together businesses, trade unions and city councilmen.

The Trust has funded an energy retrofit programme for 60 public buildings, costing $12 million and recently negotiated a $32 million 4G upgrade of the Chicago transit system. It has also been suggested that the Trust could fund a high speed rail link to O’Hare Airport.

The Trust does not work as a Private Finance Initiative (PFI). Instead, the Mayor releases bonds for the private sector to invest in, whilst ownership and management of the infrastructure remains with the public sector.

In London, an Infrastructure Trust could be set up in the same way as the London Enterprise Panel, under sections 30 and 34 of the Greater London Authority Act 1999.

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22 The cost of London’s long term infrastructure, July 2015
23 How it works, chicagoinfrastructure.org
24 ShapeChicago.org
Transport investment in particular can have a significant impact on property prices. The increase this brings in stamp duty and business rates revenue should be available to London, which the city can then borrow against to fund transport projects.

This requires devolution of property taxes. ICE London would like to see this taken further and mechanisms put in place to allow the capture of increased property and land values, for example through higher property taxes like stamp duty in areas that have seen significant increases in property values due to transport investment.

Further considerations for a devolution package could involve control of vehicle taxes being given to the GLA to be spent on road maintenance and better connectivity.

Review of Road User Charges

The principle of user pays is adopted to a greater or lesser extent across most infrastructure types, for example through utility bills and public transport fares.

With road maintenance estimated to cost around £9 billion to 2050, and air pollution an issue, the time has come to adopt a user pays approach on roads. User chargers are a necessary means of allowing a payback income stream for infrastructure investments, such as road charging, fuel taxes or parking levies. Often, these measures reduce carbon dioxide production and are beneficial for the environment.

ICE London agrees that new infrastructure should require user charges that can bring a return on investment. Various proposed river crossings in the East, such as the Silvertown Tunnel as well as current crossings like the Blackwall Tunnel, will require user charges to reduce traffic flows and provide funding.

However, ICE London believes a complete review of road user charges is required in London – particularly in relation to the Congestion Charge. The Congestion Charge is essential in order to manage vehicle use in a growing city and with congestion on London’s roads set to rise by 60% in 2031, the next Mayor must consider whether the charge is best targeting areas of high traffic and poor air quality.

TfL is acting to reduce traffic flows in central London with rail improvements to the outer areas, but has done little to plan for rising suburban congestion, particularly in areas designated for large scale housing redevelopment. ICE London therefore believes that new areas of high predicted growth should be highlighted, outside of central London, for possible future implementation of a charging system.

Areas including planned transport nodes, airports, large retail or office developments and major highways such as the North and South Circulars must be considered for new charging zones or tolling areas. TfL must consider how future growth will affect traffic conditions in such areas, and identify where a charge would have a particular local environmental and traffic benefit. By doing so, new road user charges can be best utilised for both demand management and revenue generation. New technologies and potential for behaviour change should also be examined when implementing new charging systems.

With new road user charges, London would experience improvements in air quality, reductions in carbon dioxide, nitrogen oxides and particle matter into the air. Air pollution has serious health implications with the Government estimating that 440,439 Londoners were exposed to unlawful Nitrogen Oxide levels in 2011.
Acknowledgements

Attendees of the ICE London Policy Workshop in association with Turner and Townsend held in September 2015.

Members of the ICE London Regional Committee.

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About ICE London

The Institution of Civil Engineers (ICE) is one of the pre-eminent engineering institutions in the world. Established as a learned society in 1818, it has over 85,000 members and provides a voice for civil engineering, continuing professional development and promoting best practice throughout the industry.

In London, ICE supports and represents over 9,000 members living and working in the capital to actively promote civil engineering with industry, schools, universities, local government and the media. Further details from www.ice.org.uk/london

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