

LONDON'S LARGE SCALE TRANSPORT INFRASTRUCTURE REQUIREMENTS

**GLA / TfL Submission to National Infrastructure
Commission**

January 2016

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1. What are the major economic and social challenges facing London and its commuter hinterland over the next two to three decades?

1. Since the advent of the modern Mayoralty in 2000, London has benefitted from its ability to undertake integrated strategic planning. There is a suite of statutory and non statutory documents that draw on a common evidence base developed and tested by the GLA and its functional bodies (including TfL):
 - The London Plan¹ and Mayor's Transport Strategy (MTS)² in particular set out a clear strategic policy framework for planning London's growth over the next 20 years.
 - In 2014, the Mayor also published a London Infrastructure Plan for 2050 that looked beyond this horizon.³ This reflects some of the emerging challenges that have become clearer since the publication of the MTS in 2010, including stronger population and employment growth than previously anticipated and the scale of London's housing supply shortage, which were described in the Crossrail 2 Strategic Outline Business Case (SOBC). These are expected to be addressed in an updated MTS following the 2016 Mayoral election, in the context of the new Mayor's overall priorities.

Summary of key challenges

There will continue to be a critical national role for London in driving sustainable economic growth

2. The UK will be competing in an ever more globalised world in which large cities will play an increasingly important role as the economic dynamos⁴. London is at the heart of a network of world cities that have led this process and the UK benefits greatly from hosting one of these global centres. An important economic challenge facing London over the next few decades is to maintain and extend this role.
3. London hosts a major cluster of globally competitive sectors in and around its centre which benefit from large economies of agglomeration⁵ and this represents a source of UK comparative advantage in the world economy. The relationship between employment density and productivity in the 100 largest employment centres is illustrated in Figure 1. The evidence for economic mass and productivity effects is set out in the DfT's Transport Investment and Economic Performance report⁶.
4. Ready access to a very large population catchment as illustrated in Figure 2, is fundamental to London's ability to act as a global employment centre. This depends critically on the transport

¹ <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan>

² <https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy>

³ The Transport Supporting Paper in particular considered London's economic and social challenges:

https://www.london.gov.uk/sites/default/files/Transport%20Supporting%20Paper_3.pdf

⁴ McKinsey (June 2012), Urban world: cities and the rise of the consuming class

⁵ A number of locations make up London's global employment core (the West End, City, Isle of Dogs; Stratford is emerging as a further centre and may be joined by Old Oak Common). All are dependent on a shared set of network benefits generated by the radial transport system focussed on central London.

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/386126/TIEP_Report.pdf.

See Chapter 3, pp30 – 41.

network serving London and the wider south east⁷, which remains one of the densest and most comprehensive in the world, and which consequently represents a national asset of immense value.

Figure 1: The relationship between employment density and productivity in the 100 largest employment centres

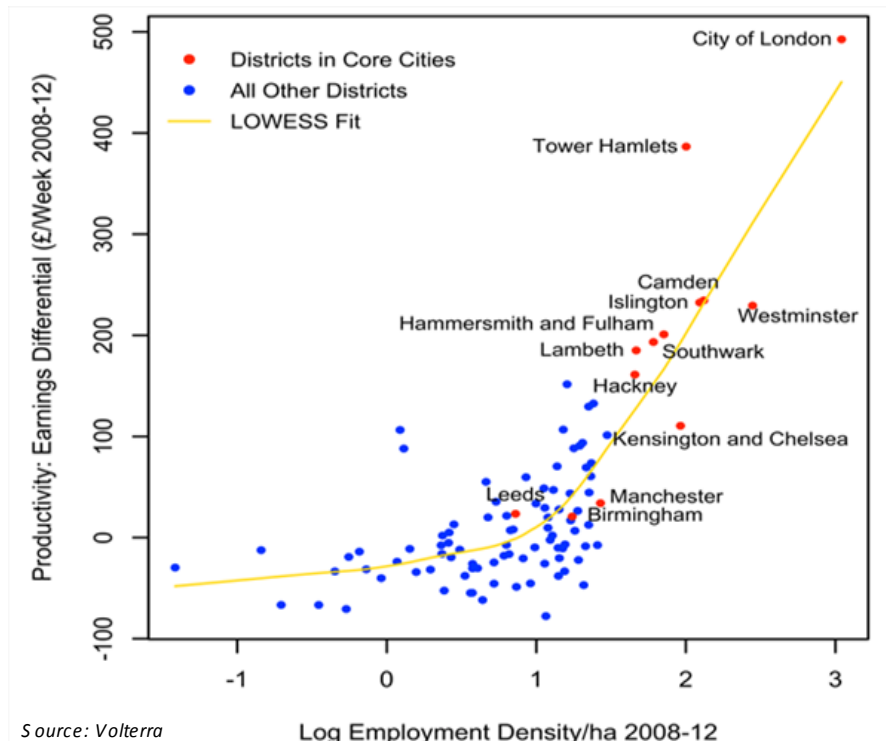
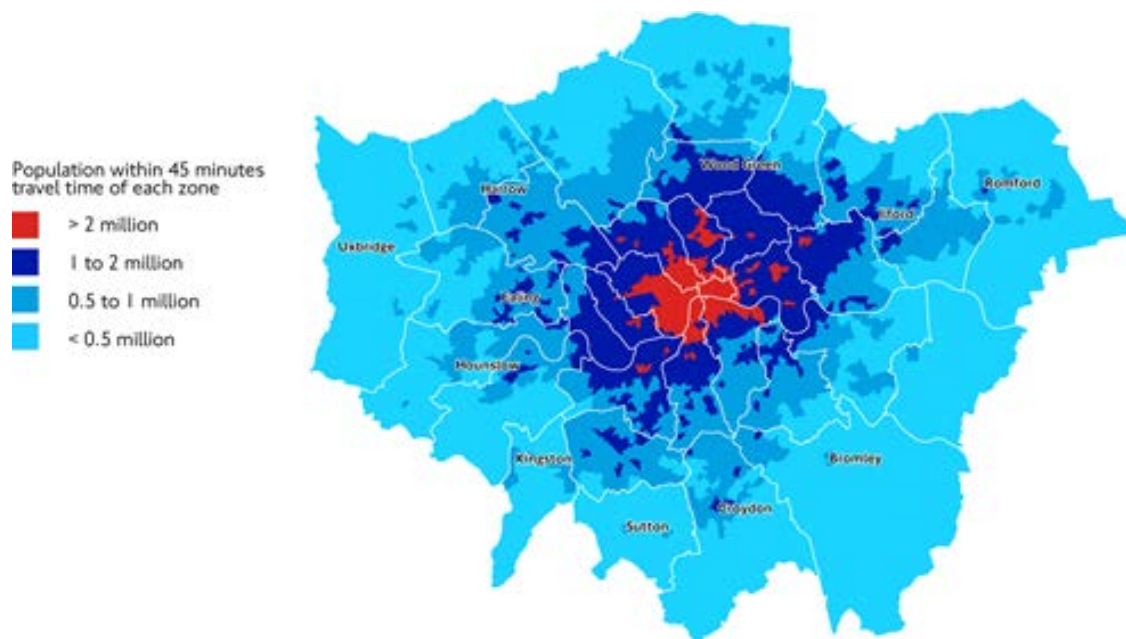


Figure 2: Accessibility: total population within 45 minutes' travel time



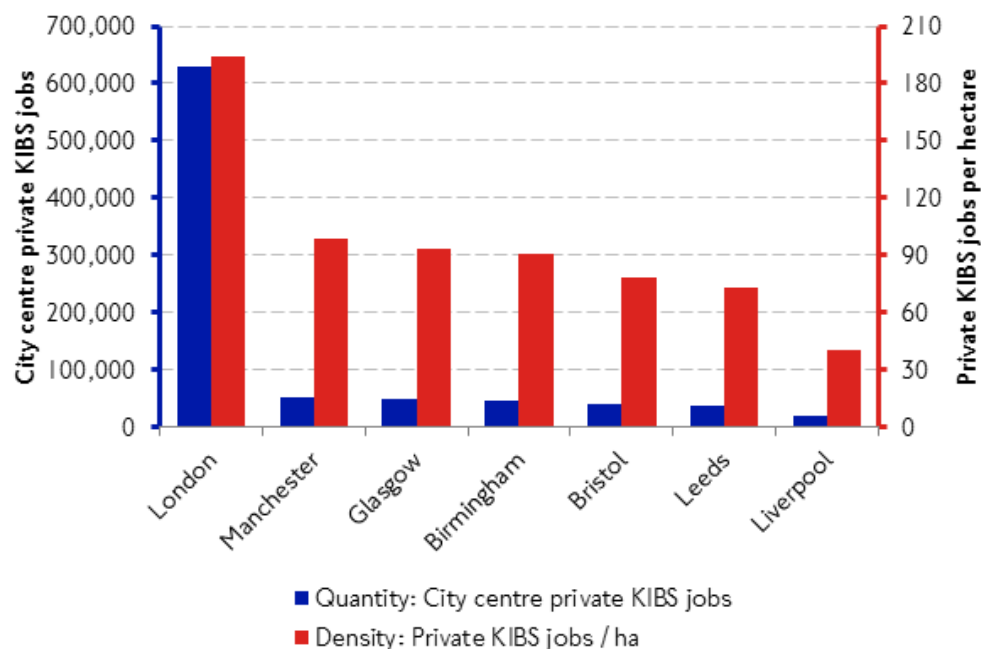
⁷ Around 1 million London workers live outside the city.

5. There is in fact considerable scope to further increase employment density in London's global employment core and to unlock substantial additional economic potential. Doing so will depend on further expanding the labour supply on which the area can draw.

The economic potential cannot be unlocked through any feasible alternative means, eg through 'decentralising' employment growth across different parts of London or other UK city centres

6. London's employment core hosts around 12 times the volume of Knowledge Intensive Business Services (KIBS) activity that each of the next three strongest centres host, at around twice the density, as shown in Figure 3. It is clear from this that to replicate in other UK cities the conditions that support London's global role would require investment on a vast and likely unaffordable scale.

Figure 3: The volume and density of knowledge intensive business services jobs within seven UK city centres⁸



7. While there is a strong case for making the UK's other major city centres more internationally competitive by growing them, it is vital that this is seen as complementary to efforts to build on London's existing strength rather than as an alternative to it. If London loses its competitiveness in the global markets in which it competes, overseas cities that can compete for these markets, rather than other UK cities, will attract much of the activity that is displaced. In this scenario the whole UK will lose out, including other cities which benefit from the interrelationships with London as a global hub. It is worth noting that cities such as Paris have plans for massive investment in new public transport to boost their competitiveness.⁹

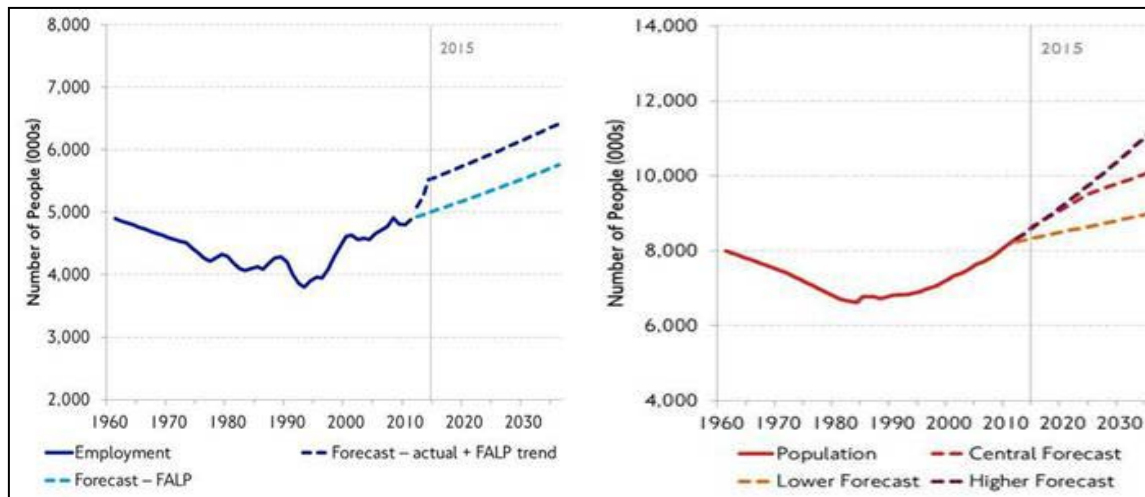
Growth in London's employment core will drive population in the wider city and region, in turn sustaining employment growth in other parts of London and far beyond

⁸ Based on data from "Investing in City Regions," Volterra, November 2014.

⁹ €40 billion of investment is committed to public transport to support the "Greater Paris" project.

8. London's population is forecast to increase from 8.6m million to over 10m by 2036 while employment is projected to grow by 700,000 to 6.3 million, with recent forecasts suggesting even higher growth is possible. This depends however on supportive policies to expand the effective labour supply available in London's key employment locations. Without these the likely outcome, based on historical trends, illustrated in Figure 4, is not stability but a failing economy and decline, with serious implications for the wider national economy. In particular there is a need to tackle the major threats that transport and housing supply constraints represent.

Figure 4: Historic trends and projected growth in London's employment and population to 2036



9. London's economic growth is fundamentally dependent on rail and tube capacity and connectivity – eight in ten arrivals in the morning peak are by rail (including the Underground and Docklands Light Railway). Despite committed investment, the scale of growth in travel demand is such that between 2011 and 2041, crowding is forecast to increase by 60% on the Underground and 150% on rail services¹⁰. Some of the greatest pressures on TfL and national rail services are on a north east / south west axis, which is benefiting relatively little from the current or planned investment. Whilst the current focus is on east-west (Crossrail) and north-south (Thameslink), the north east – south west axis has been acknowledged as needing additional capacity for many years.
10. The pressures are already being felt, with 8 out of the 10 busiest days in the history of the Underground being in October and November 2015. There are also enormous growth challenges on the national rail network. For example, the South West main line into Waterloo, the busiest section of the network, requires approximately 20% additional capacity to deal with existing overcrowding even before anticipated demand growth of 40% to 2043. This represents a key economic challenge since it has major implications for London's labour supply. For example:
- it threatens to reduce people's willingness to participate in London's labour market;
 - access to the network is constrained at times, ie station closures owing to crowding;
 - other productive trips are crowded out;

¹⁰ There has been a shift from car to public transport over the last 15 years of around 11 per cent.

- there has already been substantial ‘peak spreading’, and further opportunities for retiming trips are limited.

To ensure London has an adequate supply of labour in the future housing supply constraints must be tackled

11. The London Plan identifies a need for 49,000 new homes per year,¹¹ while delivery has been around half this rate over the last 10 years or so. The resulting poor affordability of housing reduces the quality of life the city offers its labour force, which has damaging consequences for its international competitiveness:
 - business leaders rate the cost of housing as the second most important obstacle to improving London’s competitiveness;¹²
 - the functioning of the city depends on the availability of a variety of workers including those on lower pay;
 - the inequitable nature of access to London’s housing market is starting to damage its reputation as a city of opportunity and will affect the ability of London firms to recruit and expand.
 - there are also indirect economic impacts through impacts on disposable incomes.¹³
12. Capacity has been identified within London for 423,000 homes over 10 years,¹⁴ and the 2015 London Plan has put in place new policies to support additional supply through higher density development, linked directly to public transport accessibility. Assuming the backlog has already been made up, capacity (not yet identified) is expected to be needed for a further 500,000 homes in the decade from 2025. The London Plan identified key Opportunity Areas (including the Upper Lea Valley) and Areas for Intensification.

Despite its overall economic strength, there remains widespread and persistent social deprivation together with serious economic underperformance resulting from it

13. Tackling the inequalities in life chances that exist in London, by becoming a city of genuine economic and social opportunity for all, will not only be valuable in itself but will improve the quality of life of the city as a whole and strengthen its competitiveness. London’s complex and diverse economy depends on its ability to attract a wide range of workers at different income levels. It is worth noting that almost a quarter of London’s workforce earns less than the London Living Wage. Meanwhile, lower income workers are moving further out, leading to a ‘hollowing out’ effect and transport has become more unaffordable for such workers,¹⁵ threatening the ability of London’s core employment locations to attract the workforce balance needed in the future.

¹¹ To also address the existing backlog, 62,000 new homes per year will be needed.

¹² London First, “Home truths,” March 2014

¹³ Cushman & Wakefield Affordability Watch 2015

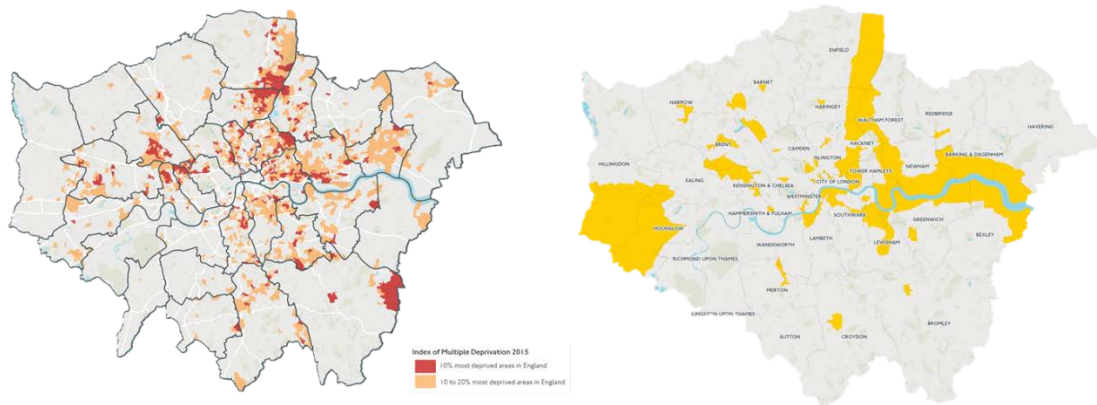
¹⁴ It will be critical in this period to ensure that the pipeline of approved units translates into delivery. Whilst on average over 50,000 housing units are given planning approval in London each year, only around 27,000 units are actually delivered. There is currently a pipeline of 261,000 approved units.

¹⁵ In 2014, it took at least an additional hour of work at National Minimum Wage to cover travel costs from outer London compared to 2005.

Furthermore, the social exclusion this could lead to could have wider consequences, damaging the reputation of the city as a place to live and invest in.

14. Pockets of deprivation exist across London and there are some geographical concentrations as shown in Figure 5.

Figure 5: The distribution of deprivation in London, 2015 (left) and London's Opportunity Areas and Areas for Intensification (right)



Some of the greatest unrealised opportunities for development are in locations in most need of regeneration

15. There is a close correlation with the Opportunity Areas identified in the London Plan, as shown in Figure 5. The Opportunity Areas:
 - are generally former industrial areas, with historically poor transport links to central London;
 - are typically trapped in a cycle of a poor quality built environment and low investment, remaining isolated from the wider success of the city;
 - represent London's main reservoirs of brownfield land and unlocking comprehensive development in them must play a crucial role in accommodating London's housing and employment needs.
16. The problems these areas face are of a scale and complexity that require coordination, in a way that markets alone are unable to achieve. New transport is a vital element and can act as a powerful coordinating mechanism for the other investment that is needed to bring about regeneration.

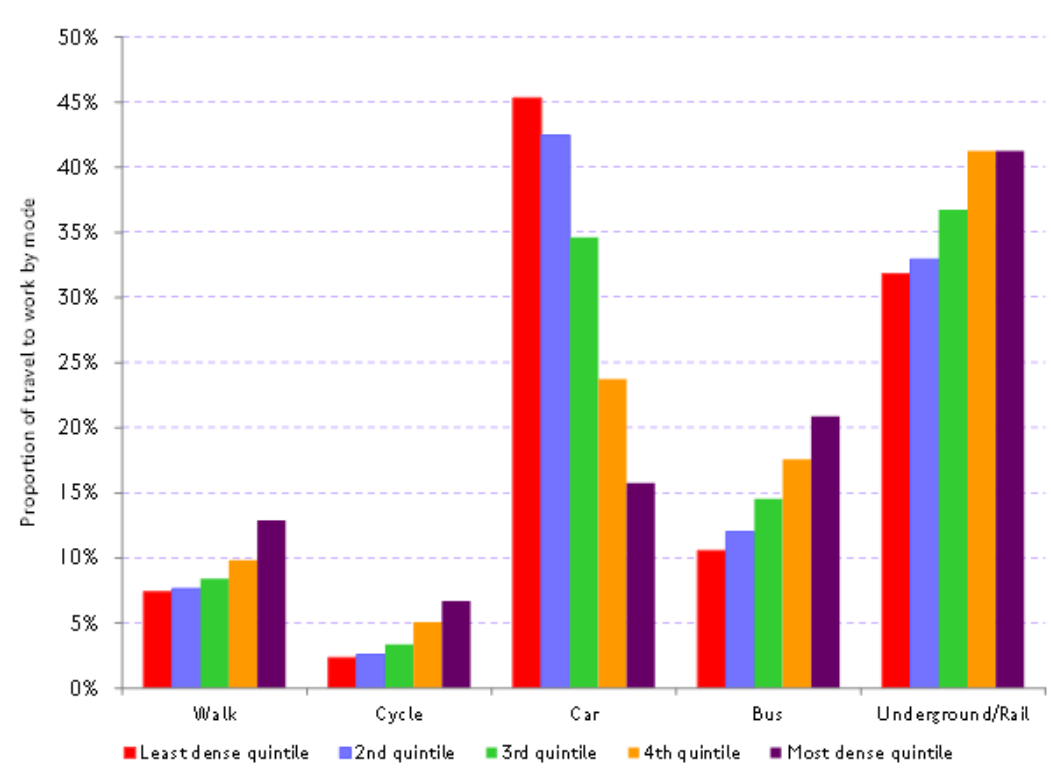
Additional housing potential must also be unlocked more widely across inner and outer London if we are to meet the overall needs identified above

17. While London's town centres remain vital to the city's economy, many major and district centres face decline in their traditional roles in retail and office markets. There are, however, opportunities for boosting housing supply in these locations in an affordable and sustainable way through transit oriented residential development. New connections can change market expectations, unlocking investment to make denser and better quality housing viable. This will help gain local communities' acceptance for additional housing beyond that which they are already required to deliver. Planning policy also requires adequate transport provision as a condition for development.

Transport investment is essential to enabling the higher density development needed if London is to meet its growth challenges sustainably

18. The relationship between housing densities and travel behaviour in terms of choice of mode for journey to work is shown in Figure 6. This shows that 15% of people living in the densest fifth of London use car for travelling to work while 45% do so in the least dense fifth of the city. Given the congestion pressures facing London's roads¹⁶, this indicates the importance of new housing being delivered through transit orient development at high densities.

Figure 6: 2011 travel to work mode shares of London LSOAs¹⁷ by density quintile



¹⁶ The rate of growth in congestion we now expect on London's by 2031 has doubled, from 15% forecast in the MTS to 30%.

¹⁷ Lower Super Output Areas.

19. Improvements to the quality of London's urban fabric and environment will be important in maintaining and enhancing London's global competitiveness. Ensuring that new development and urban realm are well designed directly contributes to people's quality of life and well-being and will be ever more important as densities increase.
20. There are also growth pressures to accommodate more housing beyond London's boundaries. Focussing London's growth as far as possible within its boundaries is more sustainable than the alternatives and the London Plan aims to accommodate London's forecast population growth and need for housing within the Greater London boundary. Transport investment is critical to enabling the densities that this will require. Delivering more housing in reasonably close proximity to key employment areas also makes sense if we are to ensure an appropriate range of workers are available to meet London's labour supply requirements.

2.What are the strategic options for future investment in large-scale transport infrastructure improvements in London - on road, rail and underground - including, but not limited to Crossrail 2?

- **How should they be prioritised, taking account of their response to London's strategic transport challenges, including their impact on capacity, reliability, journey times and connectivity to jobs?**
- **What might their potential impact be on employment, productivity and housing supply in London and the southeast?**

21. In recent years there has been an ambitious programme of investment to both expand London's public transport system and renew and upgrade the existing assets. Crossrail and Thameslink will be fully open within the next four years and the programme of modernising the Underground is well underway. This scale of investment has been possible through growing fare revenues, a strong commitment from successive Governments with grant funding, and prudential borrowing.
22. Key priorities for the coming years include the re-signalling of the Circle, Metropolitan, District, Hammersmith and City Lines and the Deep Tube Programme, which will mean new rolling stock and signalling on the Piccadilly, Central and Bakerloo Lines. We also need to get the most from London's existing railways - creating additional capacity on the network by introducing faster, more frequent, metro-style services and maximising the benefits of the heavy rail infrastructure that is already in place.
23. This investment will keep London moving for the next decade or so – ensuring that the large and complex public transport network can handle growing demand and at the same time enable a shift away from car use and meet transport users' growing expectations. It is vital that this programme is continued and its importance was recognised in the provision for capital grant funding made in the 2015 Spending Review (although the implications of the removal of the revenue grant need to be more fully understood).

The need for a pipeline of long term infrastructure investment, with Crossrail 2 at its heart

24. It is clear however that a pipeline of further large scale strategic interventions to provide 'new infrastructure' are going to be needed to meet London's growth challenges beyond the next ten years. This will help drive long term productivity and improve the public finances. We are cognisant of funding and supply constraints and our aim is to develop this into a coherent, phased and manageable programme that is affordable for London and the UK, with a strong focus on managing down costs and maximising value for money. A stable long term pipeline of investment will offer greater certainty for our supplier base, allowing better planning. Failing to achieve this can add 15% to project costs.
25. London's integrated strategic planning process, with the London Plan and the MTS at its heart, provides a framework for identifying and prioritising investment needed over the next 20 years, with TfL's business planning cycle providing more detailed prioritisation over the shorter term. The Mayor has also produced a 2050 Infrastructure Plan for London which looks to the longer term.

Together, these processes address all the different dimensions, geographies and transport modes involved in a city such as London over multiple decades

26. It is likely that new versions of the London Plan and MTS will be produced for the next London Mayor. We do not want to pre-empt this wider process here – but it is clear already that Crossrail 2 will need to be at the heart of these strategies and the pipeline of schemes and the NIC must support its ongoing development as a matter of urgency. Such an intervention requires a significant commitment of resources at the planning and development stage. Without this it will not be possible to meet the timescales for delivery that are required to meet the overall strategic planning challenges that have already been identified and are generally agreed upon.

Our focus for the NIC

27. Key considerations for determining the appropriate allocation of resources for major new ‘national’ infrastructure are set out below. Given the focus of the NIC these are narrower than those which underpin the London Plan and MTS. These are intended to assist the NIC in making its recommendations to the Government on prioritisation of national resources for large scale transport infrastructure - and more immediately those required for planning and developing them. The following should be considered:
- the scope for unlocking genuine economic potential through intensifying or transforming the way land is used, as expressed through economic performance measures such as GVA, and the extent to which this is additional at the national level;
 - the key constraints that prevent people and places from realising their economic potential, including both transport bottlenecks and shortages of housing;
 - the wider impacts including the sustainability implications of alternative strategic choices;
 - the ‘economic payback’ of large scale infrastructure investment and the implications for national level funding through the impacts on fiscal receipts associated with the economic performance benefits;
 - the opportunities for regional and local funding from development that is unlocked and other sources;
 - the pressing nature of the strategic challenges and the timescale for addressing them, in particular the threats to continued growth arising from constrained transport capacity and inadequate connectivity as population pressure increases.
28. The current MTS and London Plan both contain explicit support for prioritising a major new radial rail route serving central London on a northeast – south west axis and the Strategic Outline Business Case submitted to the Government in June 2015 sets out the case for this in detail, together with the expected impacts on capacity, journey times, housing supply, employment and productivity.
29. In particular, the scheme provides a major expansion of the system of radial transport links serving London’s global employment centres. This will relieve the growth constraints that are expected by the time it is due to open in the early 2030s. As well as solving a series of critical transport bottlenecks, it will connect the network serving London’s global employment centres to major

development areas, facilitating the dense new housing needed to help meet London's long term labour supply requirements. The key benefits include:

- crowding relief to a network forecast to be operating under stress despite significant planned and committed transport investments reflecting a combination of faster and more direct journeys, less crowded conditions on-train (notably SW, WAML, Victoria and Northern lines) and relief of crowding and delay at key stations, such as Waterloo, Liverpool Street, Euston and Vauxhall. For example, the scheme would contain growth in national rail demand at Waterloo - which currently stands at 82 million passengers per year - to 13% growth by 2041, rather than 50%;
- significant journey time benefits, eg a reduction of around 15 minutes between Wimbledon and Tottenham Court Road;
- 200,000 net additional homes (with appropriate new planning policies in place) over 20 to 25 years across London and the SE (the Crossrail 2 Growth Commission is reviewing this and an update will be provided to the NIC as part of TfL's 12 February submission). The land value uplift associated with these close to route homes only, and the associated impact of improved transport capacity and connectivity on housing density they represent, has been assessed at £15bn PV;
- once operational, up to 200,000 new jobs - between 50,000 and 70,000 new local jobs as a consequence of enhanced development, and some 135,000 in central areas;
- in addition there would be temporary employment of up to 60,000 construction jobs (including supply chain).

30. As part of the development of Crossrail 2, many alternatives have been considered, including on Network Rail solutions as well as alternative schemes. While it is feasible for a package of alternative schemes¹⁸ to address some of the problems in the same corridors, there are considered to be no feasible alternative schemes, either individually or cumulatively, that could generate the combination of capacity and connectivity benefits that offer the transformative impact on economic performance that Crossrail 2 is expected to bring about.
31. The critical feature of Crossrail 2 is that it provides large scale new capacity across central London that addresses a series of bottlenecks associated with the mainline termini and onwards links from them. In contrast, improvements to national rail corridors in isolation would place extra pressure on London's crowded main termini, and on key pinchpoints on the Underground network. For example, while four tracking the West Anglia mainline is a prerequisite to Crossrail 2, its full benefits are contingent on the extra capacity within and across central London that Crossrail 2 delivers. Similarly, the benefits of increasing capacity on the South West mainline depend on the elimination of other bottlenecks on the routes that link it to the main employment centres.
32. By tackling a series of critical network bottlenecks and creating new and better connections (easing housing supply constraints on future labour supply), Crossrail 2 will facilitate a significant increase in the overall economic density of London's key global employment centres. This is the basis for the estimated increase in numbers of jobs of 135,000 in these very high value areas. The resulting net

¹⁸ for example four tracking the West Anglia lines between Tottenham Hale and Broxbourne, with five tracking improvements into Waterloo

additional Gross Value Added (GVA) to the UK economy is estimated to be in the range of £1.2bn – £7.9bn per annum by 2041 (ie up to £102bn). This analysis shows how Crossrail 2 offers the opportunity to achieve significant increases in the productivity of London and the UK and to cover much of its costs through increased wealth generation and tax receipts. Nevertheless given the widely dispersed nature of the issues that together need addressing if London is to meet its strategic challenges effectively, it is clear that no single scheme will on its own be enough.

33. We are asking the NIC to recommend that the Government take the necessary steps to enable a Hybrid Bill to be submitted before the end of this Parliament. This requires an application for statutory powers in the coming years which would allow the delivery phase to commence in 2020 and the scheme to open by 2030. The sponsorship and consent costs associated with this are £250 million and we are seeking the NIC's support for funding from the Transport Development Fund for a significant proportion of this. If insufficient funding is made available for these activities there is a risk of setting the project back by at least half a decade, which could constrain London's growth.

Integrating more areas into the transport network

34. This is why Crossrail 2 is the focus of our ask to the NIC. Nevertheless given the widely dispersed nature of the issues that together need addressing if London is to meet its strategic challenges effectively, it is clear that no single scheme will on its own be enough.
35. A mixture of further strategic, intermediate and smaller scale schemes is needed beyond Crossrail 2 to unlock development and tackle particular challenges by knitting more parts of the city into the transport network. This will fill gaps in connectivity to enable more areas of the city to fulfil their potential, help address London's housing challenge, and ensure Londoners can access the opportunities and benefits of the city's growth.
36. This includes schemes such as a Bakerloo Line Extension, which will improve connections between central London and key opportunity areas in south east London, unlocking major housing potential and an extension of Crossrail beyond Abbey Wood towards Ebbsfleet which will help realise the housing potential of a key area of the Thames Gateway. These will help develop other corridors that complement the cross London 'spines' of Crossrail, Thameslink and Crossrail 2.
37. We are not seeking funding from the NIC for these other schemes but would welcome the support of the Commission for greater devolution of powers and funding mechanisms to enable cities like London to develop and progress such a pipeline of investment to help drive economic growth for the UK and tackle the challenges we face.
38. For example, in more recent years there has been an increasing focus on ensuring a similar 'upgrade programme' for our roads, as well as rail. London's roads are vital to the efficient day to day movement of people and goods and in fact support the majority of journeys made in the city. The Roads Modernisation Plan represents the first tranche of investment associated with this programme. It does not however provide sufficient funding to realise the fuller vision; in fact a large funding gap exists for sustained and more strategic roads investment.

39. Unlike public transport modes, which generate revenue from fare payers, there is very little cost recovery on the roads. Under the new system of VED announced by Government, revenues will be ring-fenced for spending on strategic roads in England (those operated by Highways England) from 2020/21. It is vital that the strategic road network within London (which was transferred from the Highways Agency in 1999) also benefits from this funding stream, with projects such as New Thames crossings vital to unlock jobs, homes and growth across the east of London by addressing the severance that hinders integration of the economy north and south of the river.
40. TfL is working on a number of these potential infrastructure options to address the range of different challenges which will inform the development of any new MTS. But these are not alternatives to Crossrail 2.

3. What opportunities are there to increase the benefits and reduce the costs of the proposed Crossrail 2 scheme?

See separate submission with agreed deadline of February 12th .

4. What are the options for the funding, financing and delivery of large-scale transport infrastructure improvements in London, including Crossrail 2?

- **What is an appropriate local and regional contribution - given the potential distribution of benefits to business, residents, transport users and the wider economy - and how could this be achieved?**
- **What innovative funding mechanisms could be considered to support delivery of key schemes?**

41. Following the 2015 Spending Review, TfL's Operating Grant is being phased out; and, in light of the prospective full devolution of business rates, it is possible that from the 2020s funding of the renewal and upgrade of TfL's core Underground and rail network will come entirely from non-Government sources (i.e. a combination of fares, third party income and local taxes such as council tax and business rates). This represents an unparalleled step-change in TfL's relationship with central Government as TfL transitions to financial self sufficiency.
42. London is unique in that many of its transport projects have a substantial economic benefit and are partly or even fully self-funding, even under the current fiscal regime in which less than ten per cent of taxes paid in London are retained in London. The extent to which different schemes require central Government funding varies, with schemes such as the Northern Line Extension being entirely locally funded through developer contributions and retained growth in business rates. Crossrail has a Government contribution of around one third of the cost.
43. Building on PwC's 2014 Funding and Financing Study, the Crossrail 2 Business Case shows that London could contribute over half of the funding for the project, through direct contributions and borrowing against a variety of sources:
- Net revenues generated by train operations;
 - Over Station Development / sale of surplus land;
 - Continuing the Mayoral Community Infrastructure Levy (CIL), at an increased rate;
 - A continuation of the Business Rate Supplement (BRS) – currently hypothecated to Crossrail 1 – beyond the repayment of Crossrail debt;
 - continuation of the London-wide Council Tax Precept originally established for the Olympic Games, currently due to end after 2017/18.
44. If we are to be able to increase London's contribution to Crossrail 2 (and fund other needs of a rapidly growing city at the same time), then we need to enhance London's ability to capture and retain the additional revenues that will result from the economic benefit of major transport improvements, including effects on property values and business taxes. This could include consideration of:
- Stamp duty land tax (e.g. as a 'payment by results' mechanism within specified zones where growth in housing would be unlocked, or more widely, linked to delivery of housing targets);
 - Enhanced retention of business rates (including the proceeds from revaluation as well as stock growth);
 - Reform of residential property taxes (council tax)

- Borrowing capacity for opportunistic early land acquisition around planned transport investment corridors (as many local authorities, who do not face the same borrowing restrictions, do);
- CPO and MDC power to assemble land ahead of formal funding announcements;
- TfL to acquire land compulsorily not only for transport, but also for regeneration and housing;
- TfL to grant long leases on new residential buildings above its stations;

45. Some local sources of funding have limits. Fares on the Underground network are already quite high in London relative to other major cities around the world, but TfL currently does not achieve an operational surplus on its business as a whole so as to be able to fund major incremental capital investment. The ability of the Mayor to impose higher local taxes or to raise debt is severely constrained by central government. Congestion charges already fund a proportion of investment on the roads network, but in fact, relatively little revenue in London is raised from the roads, in stark contrast to the over 30% of TfL's income that comes from Underground and other fares. This means road improvements are either reliant on central government grants or contribution from public transport users. The Silvertown project will be funded by new tolls on road users, which could offer a model for a way forward for some schemes, but will not help solve the wider problem of how to provide the funding needed to cater for a growing population.
46. Londoners pay about £0.5 billion a year through Vehicle Excise Duty (VED). This money currently goes to central Government for general public expenditure, but from the end of the decade, all VED in England will go into a Roads Fund to pay for sustained investment on the English Strategic Road Network (the network managed by Highways England). Given that VED is linked to the specific address of the vehicle owner, there is a particularly strong and justifiable basis for hypothecation of the revenue raised in London for use on its strategic roads or transport infrastructure, or devolution of the power to determine VED structure to London.
47. It is likely however that even the sources set out above will be insufficient to fund the investment needs of transformational schemes such as Crossrail 2, as TfL has made clear in its submission. Crossrail 2 also generates a very significant proportion of its transport benefits (around 30%) from origins outside London, as well as housing impact in the wider South East, national supply chain impacts, and significant employment and productivity gains at the national level, so in the absence of more radical devolution proposals (which are likely to be many years hence), support from the Exchequer is both appropriate and necessary.
48. As regards financing and delivery, TfL's investment programme is financed using a mix of sources including borrowing from the PWLB, from the capital markets, and using private finance in models for projects such as the Silvertown river crossing. In each case, the decision is made based on value for money considerations.

5. How have major metropolitan areas in other countries responded to similar challenges and priorities? Are there any lessons to be learned and applied in London?

49. There are a handful of city regions in the world of a similar scale and level of development to London¹⁹, including Paris²⁰, New York²¹, Hong Kong²² and Singapore²³. While all of these cities face competitive challenges, London is growing at a faster rate than the others²⁴. All have policies in place that seek to encourage higher density development around rail stations, reduce dependence on the private car and support greater use of sustainable modes. London can be regarded as a strategic planning leader, with well integrated land-use and transport strategies in place to deliver sustainable growth. It has been unique in delivering a major shift away from car and to more sustainable modes in terms of relative shares (around 11% since 2000). However, compared to other cities the funding to support growth is less secure and the time cycle for funding is not integrated with planning cycles.
50. In Paris, the planning authorities and RATP have developed a long term land-use planning and transport investment strategy, known as 'Grand Paris' with an estimated investment requirement of €200 to €300 billion of investment to 2025 (although this horizon is now expected to be extended). The plan includes 100 major urban reconstruction projects and is expected to deliver approximately 70,000 housing units per year as well as office space through densification of urban areas around new stations. Investment of €40 billion in public transport is envisaged, with a significant emphasis on improving orbital connections between existing outer high density housing areas. It is however important to recognise that the spatial development context in Paris is very different to London's, with greater constraints in the city centre and a more polycentric pattern of employment, which is less reliant on agglomeration benefits.
51. The city state of Singapore has had a consistent strategic policy approach towards growth and development since 1971, based on transport-orientated development along mass transit spines connecting into the central business district (CBD). Since the early 1980s Singapore has been investing in expanding and improving its metro network to improve access to the CBD. Bus services act as feeder services, with easy interchanges at metro stations and don't duplicate metro lines. The Land Transport Authority (LTA) owns metro infrastructure and invests in new capacity. There are plans in place to double the length of the metro network by 2030. Funding is provided by Government and future fare incomes, which support borrowing. Around a third of the operator's revenues are raised from non-fares sources, such as rental incomes and advertising at metro stations.
52. MTR, the urban transit agency of Hong Kong, is notable for being very active in property development not just at stations but in the catchment areas around them. The government grants

¹⁹ The population of London's metropolitan area is 13.9m using the Eurostat definition. The wider labour market catchment, extending across the wider south east has a population of 23m (GLA).

²⁰ The Greater Paris population is around 12m.

²¹ The population of the metropolitan area of New York is around 12m, with around 20m in the wider labour catchment area.

²² Hong Kong's population is 7.6m.

²³ Singapore's population is 5.5m.

²⁴ Around 1.5% p.a. in London and between 0.5% and 1.3% p.a. in the other cities.

exclusive property development rights for land in the vicinity of metro station areas to MTR below market rates. Hong Kong has been a pioneer in using this approach to fund railway projects, and other cities are increasingly looking to implement it. TfL's land holdings are more localised than MTRC and focussed on operational requirements, and there is a much more circumspect approach to the scope of planning powers, which means only land needed to meet railway requirements can be included at present.

53. New York also has a different spatial pattern to London, heavily affected by its specific site and the density of commercial and residential development in Manhattan. Plans in New York include an additional subway (2nd Avenue) and better connections between the boroughs. New York's funding reflects the set up of city, states and federal levels, and includes cross subsidy from road crossings and a small but significant employment tax. There is also the use of developer contributions for specific schemes (such as the Hudson Yards). It is worth noting that New York is receiving 50% of its funding for the 2nd Avenue & East Side Access projects (as well as 50% for the emerging proposals for a new Hudson River rail capacity project) from the Federal Government – higher than Crossrail 1 or the proposals for Crossrail 2.