

National Infrastructure Commission: critical infrastructure challenges

Sustrans' submission on London's transport infrastructure

January 2016

Summary

Sustrans is a leading UK charity enabling people to travel by foot, bike or public transport for more of the journeys we make every day. We welcome the opportunity to respond to the National Infrastructure Commission's call for evidence on London's Transport Infrastructure. We are also responding to the Commission's call on Northern Connectivity.

Many of the apparent challenges facing London, northern cities and cities across England are similar in nature. Infrastructure investment can support the local and regional authorities in tackling them.

For London, improving economic productivity, maintaining competitiveness, protecting our environment and improving public health are key challenges faced by the city. Meeting these challenges is made more difficult by London's projected population growth, which will increase pressures on space, services and transport. Sustrans has ruled out increasing motor-traffic capacity as a strategic option due to its impact on congestion, public health and quality of life.

Sustrans consider that strategic options for investment include:

- modernising London's roads to cater for increasing demand from walking and cycling and to unlock suppressed demand for sustainable modes – improving the efficiency of the road network and its impact on quality of life;
- overcoming strategic barriers to walking and cycling, including major roads, railways and rivers – barriers that sever communities and economic opportunities (this includes specific proposals for a new bike bridge across the Thames); and
- integrating major public transport investment with improvements to cycling and walking connectivity.

This approach would help unlock a potential 4.3 million journeys (roughly 20% of all daily journeys) that could be cycled in London, alleviating significant pressure on London's roads, buses and railways, and lead to a significant shift in the number of journeys made by foot. Improving quality of life through modernising London's roads – catering for and unlocking walking and cycling - will be key to maintaining London's global competitiveness and its contribution to the national economy.

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

The major economic and social challenges that face London over the next two to three decades are economic, social and environmental. They include:

Improving economic productivity – and maintaining competitiveness

- Ensuring that journey times do not deteriorate under the pressure of population and employment growth
- Reducing absenteeism from work against a backdrop of increasing sedentary, inactive lifestyles and rising obesity
- Managing congestion and competing demands for London's road space – both are critical to London's ability to attract investment and provide a good quality of life

Improving Public Health

- To dramatically reduce the number of people killed and seriously injured on London's roads
- To reduce air pollution and its impact on Londoners health - researchers at King's College London estimate air pollutants (particulate matter and NO₂) contribute to the deaths of nearly 9,500 people each year¹
- To improve physical activity levels through walking and cycling, helping to tackle a range of non-communicable diseases and obesity, reducing the burden on the health care system

Protecting our environment

- To reduce London's contribution to climate change

Meeting these challenges against a backdrop of rapid population growth

Each of the challenges above will be made more difficult by population growth. The result of growth will be to place ever greater demand on services, green space, infrastructure and the environment.

The population of London was 8.3 million in 2012.² By 2021, the Office for National Statistics project that the population of London will reach over 9 million, growing at a rate of 117,000 new residents per annum.³

Without action to plan and cater for this growth, London will struggle to maintain a good quality of life for its citizens – let alone improve it. Similarly, increasing pressure on public transport and roads will hold back the capital's productivity growth and its contribution to the national economy and global competitiveness.

Active travel (walking and cycling) can provide a significant contribution to overcoming these challenges. It has the potential to rival other forms of mass transit if catered for strategically.

Transport for London undertook analysis in 2010 to understand the potential contribution of cycling to meeting London's travel demand, looking at the short trips Londoners make during the day and without bulky loads. It identified 4.3 million journeys that are made by mechanised modes each day, such as by car, powered two-wheeler, bus or rail, that could be cycled. This represents a 23% share of trips made in London.⁴ Despite substantial recent growth cycling currently makes up just 2%.⁵ This stark contrast between the reality today and London's potential highlights the contribution cycling can make if catered for by road infrastructure.

Having recognised this potential and set a target of 1.5 million trips per day by bike, the Mayor of London is investing roughly a quarter (£913 million) of the £4 billion Roads Modernisation plan in creating a cycling network of the standard required to enable everyday cycling. Transport for

London calculated an overall benefit-cost ratio of 2.9:1 for this cycling investment.⁶ With further investment, London could cater for the 4.3 million journeys identified in the 2010 study. Maintaining long-term investment in improving road infrastructure for cycling, and also walking, over the next two to three decades will make a major contribution to meeting the major economic, social and environmental challenges outlined above.

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?

Directly increasing the road network is unsustainable

It is widely recognised that increasing road capacity generates more traffic, particularly in urban areas where congestion suppresses demand.⁷ The temporary benefits of a wider road and smoother traffic flow result in diverted journeys (people shifting their trips in time or route to make use of the new capacity) or induced travel (longer trips becoming more acceptable with better conditions on the road). This effect increases overall traffic levels, and increases it during peak periods until congestion returns to its original levels. The effect of this is to worsen congestion at other points on the network with no improvement to journey times or reliability.

When a second bore of the Blackwall Tunnel opened in 1966, traffic increased by over 100% – more than double the original use.⁸ The effect on congestion was negligible, as drivers who had previously avoided the route, driven at other times or not driven at all, quickly made use of the newly available space returning congestion to its original state.

That motor traffic grows because of increases in road capacity has been recognised since at least the SACTRA report on Trunk Roads and the Generation of Traffic in 1994.⁹ This report was released after almost a decade of road improvement projects that failed to reduce congestion – despite that being their objective. Increasing road capacity in London will have major negative effects, including:

- increasing the volume of traffic – resulting in deteriorating air quality, increased road danger and the severance of communities
- expediting congestion to other parts of the road network – generating new air pollution hot spots
- encouraging mode shift to private motor vehicles from public transport, walking or cycling or generating new trips entirely – reducing the efficiency of roads

It is important to note that average car ownership in London is much lower than elsewhere in the country. As the population has grown over the past decade, traffic levels have continued to decline (see figure 1). This is the result of significant and sustained investment in providing Londoners with travel choices: public transport, cycling and walking alongside constraints on private motor travel.

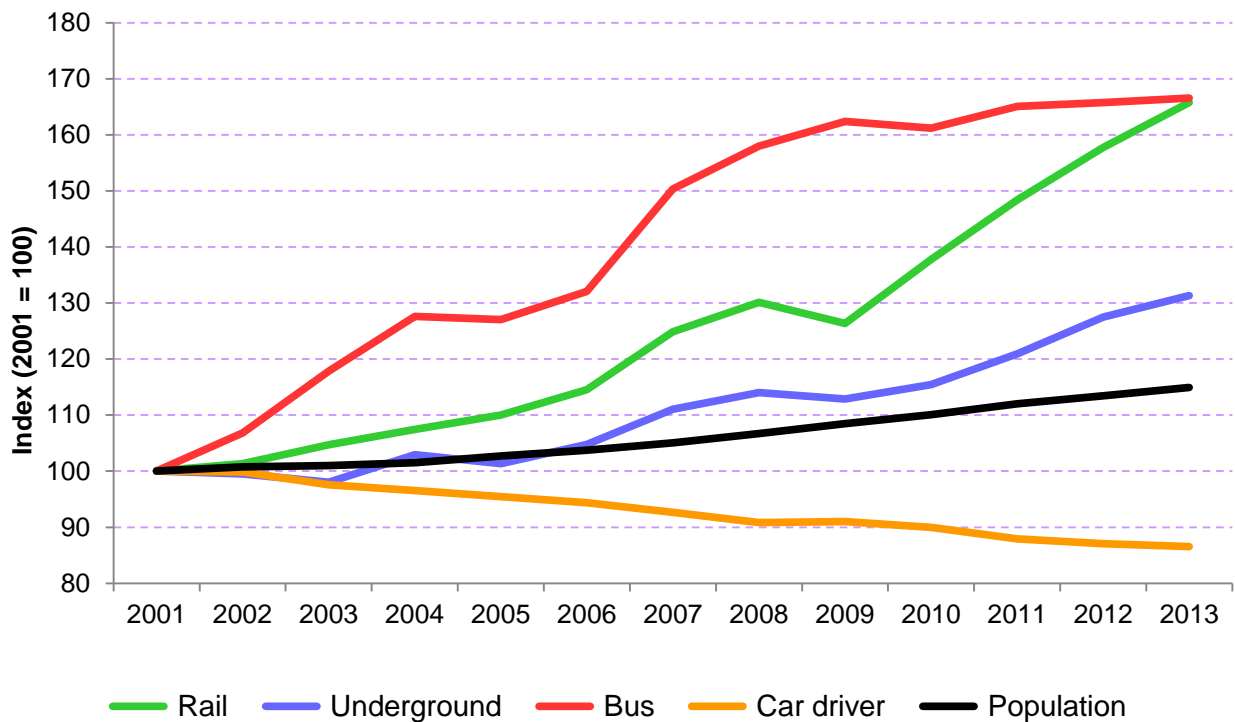


Figure 1: growth in journey stages on selected modes, 2001-2013 (Transport for London Travel in London 7)

There are a number of proposals to build new road capacity in London. Sustrans is firmly of the view that this will harm London's economy, not grow it – increasing congestion, air pollution and road danger, damaging London's productivity and quality of life.

Maximise the efficiency of the existing road network through walking and cycling

The majority of journeys are of walking and cycling distance, improving road infrastructure for these modes would make London's road infrastructure much more efficient.

The way Londoners travel has changed dramatically over the past two decades but more needs to be done to continue this trend. The densification of London, particularly inner London, means that investment in a diverse range of non-car transport options has become viable, the range and quality of public transport pulling people to use non-car modes. Meanwhile congestion, the cost of motoring, restrictive parking policies and mix-use development has pushed people away from car use.

The scale of change is substantial. Department for Transport data shows that in 2013 private vehicle use in London reached its lowest point since 1993.¹⁰ Since 2000 there has been a ten percentage point shift away from private transport to walking, cycling and public transport. This has occurred against a background of a population that has grown every year since 1988, accelerating from the mid-1990s onwards.¹¹ The volume of road traffic in London has decreased 11% since 2001. Car driver trips are 13% lower, despite a 15% increase in London's population over the same period.¹² The scale of change shows what can be achieved when policy and strategic infrastructure investment are aligned.

Cycling has grown dramatically and will continue to grow in future. Twice as many people are now cycling in London than in 2000. More people cycle now than use the Docklands Light Railway and London Overground combined.¹³ There was a 10% increase in cycling between 2013 and 2014 alone.¹⁴

The Transport for London study, mentioned earlier, identified 4.3 million journeys that are made by mechanised modes, but could be cycled. This represents a substantial 23% of the total 18.5 million journeys a day.¹⁵ While cycling has grown dramatically, particularly for commuting to central

London, it still makes up only 2% of journeys across Greater London.¹⁶ This potential remains largely untapped.

Walking is strategically important for London. At some point in a journey, everyone walks. Walk-all-the-way trips have grown in line with population growth. The increase in trips entirely made by foot from 2008 – 2013 was 9.3% - the same increase as population growth over the same period.¹⁷ However, short walking stages, as part of trips by public transport, have grown dramatically from around 2.8 million in 2006/7 to 4.2 million in 2012/13. Walking provides the link between all other modes as well as a key means to make local trips, but with a growing population the walking environment will deteriorate without sustained investment. In turn this may impact London's competitiveness as a place that attracts skilled labour and investment.

Active Travel (walking and cycling) has the potential to rival other forms of mass transit if catered for strategically. Sustrans consider there to be three routes to achieve this; each of which requires infrastructure investment.

1. A strategic network of cycle routes

Many complete journeys (door-to-door) could be made by bicycle - particularly those commuting within inner and central London, where the journey distances are easily cycled. According to TfL only 14% of cycling potential has been met in central London and 9 per cent in inner London.¹⁸ The Infrastructure Commission should recognise the important contribution to travel in London that cycling could make given the right road infrastructure conditions. Hence, the need for continued investment in a strategic cycle network, which provides safe and direct routes between homes, jobs and services. Major transport projects, such as Crossrail and Crossrail 2, should integrate with the cycle network and provide opportunities to expand and contribute positively to it.

Investment in new road infrastructure that is good for cycling is popular. Recent consultations by Transport for London and London Boroughs, for example, have drawn an overwhelming number of supportive responses. The most high-profile, "East – West Cycle Superhighway", on the Embankment received nearly 14,500 responses with a support rate of 84%.¹⁹ In an independent poll by YouGov, 64% of Londoners supported removing traffic lanes for cycle superhighways.²⁰

A strategic network of cycle routes is a vital ingredient to meet London's future challenges. The creation of a safe and direct network for cycling should be a goal of investment in London's road infrastructure over coming decades.

2. Overcoming strategic barriers to local journeys - including east London river crossings

Road, rail and water present obstacles to movement – they sever communities and create longer, more circuitous journeys than the crow flies. Journeys are concentrated onto bridges and tunnels available, which, for people on foot or on bikes, often means sharing with high volumes of traffic. Consequently, they are danger hot spots with poor air quality. Providing strategic crossings for walking and cycling can unlock suppressed demand by providing advantageous journey times to other modes and a much more pleasant environment to travel in. This improves local journeys times and quality of life, through healthier journeys and better places.

2.1. A new bike bridge for London: improving connectivity to jobs and cross-river journey times

As the Commission will be well aware, the river Thames presents a major barrier to development in east London. Crossings are few and far between compared to west London. For the crossings between south London and the Isle of Dogs there is a specific existing demand that far exceeds capacity.

This demand will only increase. Over the next two decades at least 110,000 new jobs will be created on the Isle of Dogs and at least 4,000 new homes will be built immediately across the river at Canada Water.²¹ Furthermore, major growth is planned around six 'Opportunity Areas' in south London within close cycling distance of the Isle of Dogs and its growing job opportunities.

In 2008, Sustrans proposed a new bike bridge between Rotherhithe and the Isle of Dogs. The bridge is highlighted in HM Treasury's National Infrastructure Plan. Described as, "[a]n interesting proposal made by Sustrans, and worth looking at in more detail, would be a new pedestrian and cycle bridge from Rotherhithe to Canary Wharf."²²

With support from Transport for London and local businesses, we revisited the case for a bridge in this location in 2015. Using an example design, our feasibility study and outline business case analysis suggested a likely benefit-cost ratio of 2.6:1 with a base cost of approximately £88 million. Further development work is needed to identify the detailed business case and feasibility (further information is presented overleaf).

Providing cross-river connectivity in east London is vital and a walking and cycling bridge between the Isle of Dogs and Canada water could make a nationally significant contribution between strategically important development sites for new homes and jobs in London.

3. Integrating walking and cycling with public transport

Major public transport schemes, such as Crossrail and Crossrail 2, have the potential to dramatically increase rail capacity in London unlocking new housing sites and new areas of focus for employment growth while potentially alleviating pressure on national rail services. However, the benefits of these projects will be limited in scope if they fail to unlock local walking and cycling potential. Providing accessible walking and cycling links to stations, as well as interchange facilities – such as cycle parking – will ensure that new or improved stations benefit the largest catchment area possible.

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?

The criteria for the prioritisation of schemes should be weighted according to the strategic challenges set out in response to the first question and to what extent they tackle the challenges. Importantly, the environmental and social impacts should be considered with equal weighting to economic impacts.

Significant priority should be placed on maximising the efficiency of the road network – particularly through providing infrastructure for cycling and walking for short journeys, where there is significant potential. Through a strategic cycle network, greater capacity is provided for short trips from London's finite road space.

Cycles are able to make much more efficient use of road capacity. While a car occupies one passenger car unit (PCU) of road space to convey on average 1.3 people, a bicycle occupies 0.2 PCU to convey one person. In other words, a cycle uses a fifth of the space of a car to transport the same number of people. Transport modelling in the Netherlands suggested that given the same space, buses could convey 9,000 people per hour, while cycles could convey 14,000.²³

With London's population continuing to increase, the space efficiency of road based transport schemes should be a major consideration for their prioritisation. It should also take into account the flexibility and resilience of walking and cycling to disruptive events.

What might their potential impact be on employment, productivity and housing supply in London and the southeast?

1. Strategic Cycle Network

Increasing productivity through quicker journey times: for many short journeys in London, cycling is the fastest mode of travel. TfL have estimated a daily value of time saved if the Mayor's cycling target is reached to be in the order of £530,000 a day or £190 million a year.

Increased spending power: cycling is the cheapest mode of travel after walking. TfL estimate that those who will cycle regularly in London as a result of investment in the cycling network will collectively save £190 million per year.²⁴

Increasing productivity by improving health: People who cycle regularly take 1.3 fewer sick days than those who don't. TfL have calculated that reaching the Mayor's current cycle target of 1.5 million cycle journeys per day will provide £30 million in savings to businesses each year, through increased productivity. Reducing mortality through exercise (physical activity) as a result of 1.5 million cycle journeys in London is estimated to save the NHS, care services and others £183 million each year.²⁵

2. A new bike bridge for London: improving connectivity to jobs and cross river journey times

Sustrans' work on the development of a feasibility study and outline business case for a cycling and walking bridge between Rotherhithe and Canary Wharf has highlighted that a bridge in this location would:

Provide a significant contribution to active travel in London, connecting new homes and new jobs

- Cater for at least 10,200 cycle trips per day – the equivalent capacity of 10 full Jubilee line trains or 127 buses
- Cater for 3,400 cycle crossings during the AM peak – as busy as other central London bridges for cyclists
- Put the growing population of the Rotherhithe peninsula within walking distance of the Isle of Dogs

Have far reaching benefits

- Reduce crowding on the Jubilee Line – currently at the highest measure of crowding during the AM peak (over 4 people per square meter) between Waterloo and Canary Wharf²⁶
- Uplift land values in the surrounding area by c10% according to previous examples
- Negligible emissions

Provide value-for-money

- Monetised benefits circa £10 million per annum, including journey time savings of £7.9 million
- Full project cost c£200m
- Benefit-cost ratio c2.6:1
- Buildable by 2020, following a full and transparent procurement process

3. Maximising walking and cycling benefits through Public Transport

3.1. 'Cycle-proof' new stations, railways and above-station developments: 'cycle - proofing' involves ensuring that structures, buildings and streets are safe and attractive for cycling. Public Transport works should improve cycle and pedestrian access to and from stations within the catchment area (approx. 5km), and enhance permeability through the site. Provide interchange facilities, such as cycle parking, for cycles of all types (including non-standard cycles, such as hand-cycles or tricycles) to cater for growth in mode share and a diversity of users. Overcome local barriers to cycling, including major junctions or physical severance caused by road, rail or waterways. Crossrail delivery should include the redesign of such junctions, and construction of new infrastructure to overcome severance such as bridges or new crossings.

3.2. Increasing housing supply through cycling: the current Public Transport Accessibility Levels (PTALs) tool provides the framework for maximum housing densities in London. Overcoming barriers to walking will improve the transport accessibility rating of areas and therefore increase their potential contribution to housing supply. PTALs do not currently include cycling access. As a general rule, including cycling in accessibility scores will increase the accessibility of an area and thus its potential housing supply. For the scores to reflect the reality, however, the developers should improve the cycling connections to and from their site, without which any modifications to accessibility scoring to take account of cycling may not be a fair reflection of perceived accessibility by bicycle. Ensuring new developments – particularly those linked to new transport, such as those unlocked by Crossrail 2 – should address barriers to walking and cycling in and around the sites. This will improve transport accessibility and thus increase potential housing supply in the surrounding area.

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

Maximising the benefits by prioritising cycle connectivity

The planning and construction of Crossrail 2 is an opportunity to offer door to door sustainable travel options for the growing London population. Central to this will be the connectivity for cycles and pedestrians to and from stations and through the sites. To make the most of this opportunity, the Crossrail 2 project must be an exemplar of integrated and accessible station design and master-planning, particularly focussed around walking and cycling.

By actively improving local cycle connectivity, Crossrail services will become more accessible across a larger area, improving the catchment area and thus likely ridership of the scheme.

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

- What innovative funding mechanisms could be considered to support delivery of key schemes?

Vehicle Excise Duty: In the spring budget, the chancellor announced that he would be engaging devolved administrations on the allocation of revenue derived from Vehicle Excise Duty. There is

likely a large contribution that can be made to Transport for London in general, or on a scheme by scheme basis, from vehicle excise duty contributions in London.

Mayoral Community Infrastructure Levy: The Mayoral Community Infrastructure Levy (MCIL) was established to contribute toward the cost of Crossrail. Together with the section 106 agreement, development in London is expected to contribute c£600 million to the c£15 billion cost of Crossrail through MCIL. Sustrans consider that the MCIL should be utilised to improve walking and cycling access to new development sites and new Crossrail and Crossrail 2 stations.

Ensuring developments provide high quality walking and cycling links: swathes of London will be unlocked for development as a result of Crossrail 2 and other strategic public transport projects. With developments carrying out master planning and street works as part of their developments, ensuring that they deliver a high quality of design for walking and cycling will be a key means to add-value to London's accessibility and connectivity. The London Plan provides a good policy framework for this to take place and the GLA and Transport for London are equipped with the skills and expertise to provide best-practice guidance. Planning frameworks surrounding Crossrail stations should prioritise improvements to local streets for walking and cycling as part of their development. This would add value to Crossrail stations and development sites without extra cost.

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?

Many global cities are taking bold steps toward more sustainable transport systems. Of those cities with similar populations, Paris and New York are developing strategic cycle networks, while also creating new public spaces from their roads.

- The New York City Bicycle Masterplan outlines 900 miles of planned network. Cycle commuting in New York is on course to have tripled over the ten years from 2007 to 2017. The exemplary project of new public space is Times Square. It is now a bustling pedestrian plaza where it had previously been a car dominated interchange.
- Paris has similar aspirations to triple the share of trips by bicycle by 2020 – to 15% share of trips, enabled by a 1,400km network of routes by 2020. A number of new public spaces have been created from traffic interchanges, most famously La Republique, which is now the largest pedestrian square in the city.

Many of these strategies have been adapted from those developed in smaller cities, such as Copenhagen, Amsterdam, Seville, Cambridge and pioneering Cities of Latin America, including Bogota and Medellin. Each have focussed on improving the overall mobility of the city (integrated travel, rather than mode specific improvements) and on quality of life.

Contact Details

[contact redacted]

Sustrans, 70 Cowcross Street, London, EC1M 6EJ

[contact redacted]

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Registered Charity No. 326550 (England and Wales) SC039263 (Scotland)

VAT Registration No. 416740656

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