London's Transport Network: Adaptation and evolution

March 2014

About this publication

This anthology offers expert contributions on key opportunities and challenges facing London's transport network in the future, addressing demographic pressures, changing behaviours and shaping the network. It is meant as a resource for practitioners delivering transport on the ground today, and a platform for considering different approaches in strategic planning going forward.

In part, this publication builds on the themes and discussion from Future of London's Spring 2013 seminar series, 'London's Transport Network: Adaptation and evolution'.

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Future of London is an independent, not-for-profit forum and policy unit focused on the challenges facing urban regeneration, housing, transport and economic development practitioners.

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Introduction

By Jennifer Johnson
with materials from John Lett,
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The 2011 Census for England and Wales was a game-changer for the Capital: the city was home to about 400,000 more people than the London Plan released that year had assumed. Rising birthrates and a small increase in in-migration, coupled with a steady decrease in out-migration, contributed to this change.

With a change to the baseline population came increases in population projections. The 2011 London Plan expected the capital to be home to 8.82 million people by 2031; 2012 GLA population projections raised that to 9.67 million. Alarming figures are one thing – but what does this look like on the ground?

The Mayor's 'Vision 2020' and the Draft Further Alterations to the London Plan have already begun to examine how this growth is reflected in the Capital's strategic priorities. The latest Strategic Housing Land Assessment found that there are enough sites to bring forward the necessary net housing growth – though there are non-planning barriers to delivery that must be overcome, and affordability concerns to address. Bringing forward employment space to support a corresponding increase in jobs is also a priority, as is infrastructure to underpin both this housing and employment land.

As London grows, its transport network is vital to a sustainable and prosperous future. Large amounts of investment are being channelled into major projects such as Crossrail; improvements to urban and suburban networks like the London Overground; and cycling – now funded at unprecedented levels.

But pressure on London's road networks is increasing, with competition for space and capacity between a wide range of users. The population and demographic changes predicted over the next 20 years, coupled with the need for a more environmentally sustainable system that helps London meet its climate change targets, call for a long-term and holistic approach to transport planning.

In Spring 2013, Future of London began looking at transport planning in London, and at how it can adapt to changes in demographics and urban form, and influence sustainable travel choices. In partnership with Transport for London, we ran a three-part seminar series – 'London's Transport Network: Adaptation and evolution' – that examined adapting to changing demographics, challenging travel behaviours and shaping the road network.

This anthology builds on the seminars, with new contributions from speakers and other engaged professionals. These are meant to be resources for practitioners delivering transport on the ground today, and a platform for considering different approaches in strategic planning going forward.

A substantial increase in population figures:

	2011 Census	2011 London Plan	2012 GLA constrained	2012 GLA unc'nstrn'd
2011	8.17	7.8	8.2	8.2
2016		8.06	8.7	8.76
2021		8.32	9.1	9.22
2031		8.82	9.67	9.95
2036			9.89	10.26

Can the shift away from private transport keep pace with growth?

The big picture: trends to date, and challenges to come

By Simon Nielsen
Head of Strategic Analysis, Transport for London

Travel demand in London has grown strongly over the last decade, driven by the rapid increase in London's population.

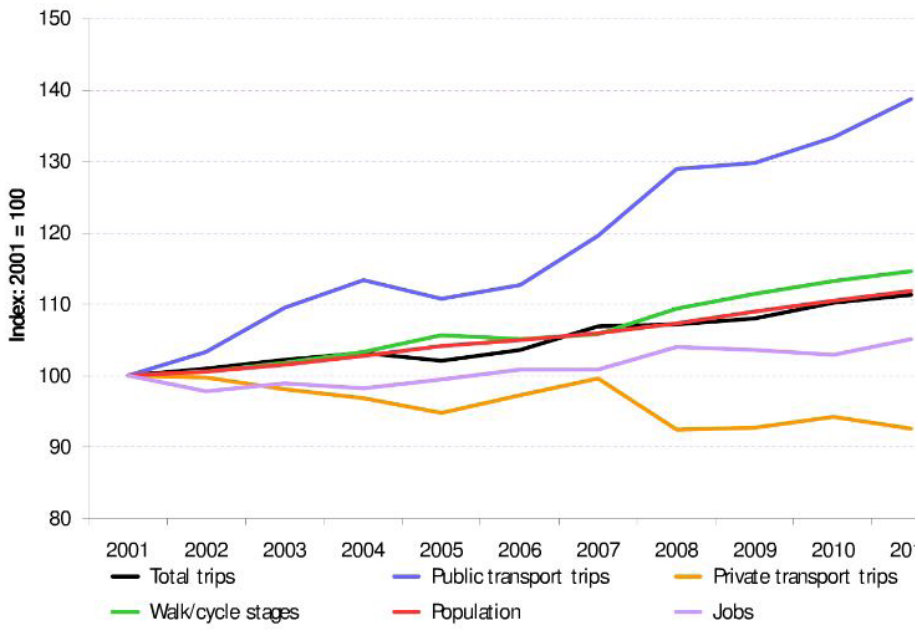
This growth in overall demand has been accompanied in recent years by a progressive shift in mode share from private transport towards public transport, walking and cycling. Since 2000, the public transport mode share for London has increased by 10 percentage points and **in 2012, 44% of journey stages in London were made by public transport, compared with 33% by private transport.**

This trend towards higher public transport mode shares has been building since the early 1990s, and has accelerated since the year 2000, including through the recent economic downturn. In practical terms, **if mode shares had not changed in this way, all else being equal, there would have been almost two million additional car driver trips per day in London in 2012.** Cycling has been the fastest growing transport mode in London in recent years, with an 80% increase in cycle journeys since 2002, while the percentage of road traffic in London has continued to drop.

This sustained and continued upwards shift in the public transport mode share is unprecedented in London and most other major cities in the world, and is all the more impressive given that it has been achieved in the context of substantial overall growth in the demand for travel. Increased travel by public transport is both more efficient and more sustainable than travel by private motor vehicle.

However, London's population is set to continue to grow and this will present a fresh set of challenges. New projections of London's future population, based on the 2011 Census, suggest that London's population could increase by the size of the cities of Birmingham and Glasgow combined by 2031. Although signifying a vibrant and successful city, this rapidly expanding population will further exacerbate demand pressures on transport networks, meaning that new infrastructure and services planned to cater for growing demand as part of the Mayor's Transport Strategy will be required some years ahead of their original timeframes.

Within the increase in travel demand, there have been some very different trends:



Total daily trips increased by almost the same rate as London's population – both up by 11% on 2001. This increase was driven by a 39% increase in public transport trips. In contrast, private transport trips decreased by 7%, despite the increase in population over the same period.

Carrots, sticks, feathers and hammers: settling in for the steady work of changing Londoners' behaviour when it comes to transport choices

Nudge, nudge, wink, wink – Why we're all choice architects now

By Ben Plowden, Director of Strategy and Planning, Surface Transport, Transport for London

Have you ever woken up with a raging hangover and sworn you'd never drink again - only to do the same thing a few weeks later? How about driving at 80 (or even 90) mph on the motorway? Or how about paying cash for something – such as building work – to avoid either you or the builder having to pay tax?

The chances are that you answered 'yes' to some – or even all – these questions. Two possible interpretations arise. The first is that you are a) an alcoholic, b) law-breaking, c) a tax-evader (delete as appropriate). The second is that you are a normal, fallible human being, prone to doing things that you know are bad for you – or even illegal.

How should policy makers respond to the fact that people make bad choices?

One answer that has gained currency in recent years is to develop a behaviour change campaign. Top of politicians' summer holiday reading list in 2008 was *Nudge*. US academics Richard Thaler and Cass Sunstein introduced their readers to beguiling ideas such as 'choice architecture' and 'soft paternalism'. *Nudge* seemed to offer policy-makers the prospect of getting people to do the 'right' thing without even realising it. We would all eat more vegetables and invest in our pensions through clever 'framing' of choices.

Two problems arise with this hypothesis. First, there is nothing new about 'behaviour change', either as a goal of public policy or as a policy tool. The aim of nearly all public policy is – and has always been – to influence the behaviour of individuals and organisations. Policymakers have long tried to get people to do 'good' things – take more exercise or save for retirement. Or they have sought to deter them from doing 'bad' things – smoking or armed robbery.

The second problem with the *Nudge* hypothesis is that **behaviour change is *hard*. Its difficult to persuade people to do things they dont want to do like walking instead of driving.** And it's equally hard to get them to stop doing things they like doing. Another doughnut, anyone?

There are basic psychological issues at play here. There is growing evidence that much behaviour is habitual and unconscious, rather than considered and 'logical'. People generally get up at the same time each day; travel to work in a predictable way; take (or don't take) a certain amount of exercise; eat and drink a consistent set of things, and so on.

This doesn't mean habitual behaviour is irrational. In fact, it's highly cognitively efficient. You'd soon go mad if you had to use a cost-benefit calculus to make everyday choices about food, travel and shopping from first principles. But the prevalence of habitual behaviour in everyday life means policy makers need to apply the right measures to change this behaviour.

Two types of measures *can* change habitual behaviour. The first is a shock – a sudden, significant change in the context in which people make habitual choices. Nature is good at administering shocks. Flooding or a tree on the line will force people to choose consciously when and how to get to work, rather than getting their usual seat on the 07:21.

Policymakers can also use shocks to try and change habitual behaviour – London's Congestion Charge is one example. People were charged £5 per day to do something that was previously free – driving into central London during working hours. This 'shock' was communicated a long way in advance. And Transport for London invested heavily in alternatives to driving, such as better bus services. But the result was that **the number of people driving into central London fell from around 200,000 to 150,000 a day following introduction of the congestion charge.**

The problem for democratically elected politicians is that they can only use shocks sparingly. People don't like surprises. Which leads to the second kind of measure that can change habitual behaviour – a sustained, long-term, multi-faceted policy programme, aimed at changing specific behaviours.

One of the best-known and most successful examples of such a programme is the long-running

effort to reduce smoking in the UK. In the 1970s, about half the UK adult population smoked. By 2012, just over a fifth of adults were smokers.

This is a remarkable achievement by any standards, particularly given the addictive power of nicotine. So what are the wider lessons from the smoking cessation programme?

The first is that the evidence of harm arising from the behaviour – ill-health and premature death in the case of smoking – must be fully established and uncontested. Secondly, *all* political parties must agree that Government and public agencies have a legitimate role in tackling the behaviour in question. And third, policymakers need to use *all* the tools in the policy toolkit over an extended period – typically beyond one electoral cycle.

To discourage smoking, politicians from all parties have used both 'hard' and 'soft' policy measures over many years. Taxation has raised the price of tobacco and sales have been banned to under-16s. Meanwhile, public information campaigns have highlighted the dangers of smoking and the NHS has provided free counselling.

Such measures can act as 'sticks' or 'carrots', providing negative or positive incentives to smokers. **Combining sticks and carrots, administered as hard or soft measures, creates a map of policy measures applicable to any desired behaviour change.**

Mapping policy options: Sticks and carrots, hard and soft measures

Such a multi-dimensional approach was applied to another example of successful policy-led behaviour change – the significant change in Londoners' travel behaviour achieved during the 2012 Olympic and Paralympic Games. Delivering this change was essential to the success of the first ever 'public transport Games', in order to accommodate the huge number of additional trips by people traveling to and from the venues every day.

Transport for London invested significant sums before the Games in increasing the capacity of London's rail, Underground and bus networks. This was supported by pre-Games engagement with London businesses; advance publicity about possible transport congestion; and real-time information during the Games. These measures led to **30% of Londoners changing their normal travel behaviour during the six weeks of the Games, along with 20% of freight deliveries taking place at different times.**

National success in reducing smoking and London's success in changing travel patterns in the summer of 2012 show that major behaviour change is a legitimate – and attainable – public policy goal. But such change requires commitment to use of the full policy tool kit – hard and soft, sticks and carrots. Without such a commitment, nudging and winking may be the best we can expect.

Building partnerships to save lives: looking beyond road safety and air quality to the physical health benefits borough and transport authorities can deliver

The important role of transport in public health

By Lucy Saunders (FFPH), Public Health Specialist, Greater London Authority and Transport for London

The transport sector has been aware that it has a role in public health for decades. This role has focused on reducing the direct harms caused by air pollution, road traffic collisions, and other transport health and safety issues.

In recent years, this role has been seen as somewhat peripheral by the public health community, who have been tackling a rising tide of what we call 'non-communicable diseases'. These are often also known as 'lifestyle diseases' as they are linked to how we live our lives: what we eat, smoke and drink, and how much we move about. In London, roughly a third of deaths are a result of heart disease and another third arise from cancers, both of which are the leading non-communicable diseases worldwide as a result of changing lifestyles over recent decades.

By comparison, deaths in road traffic collisions fall within the 2% of deaths categorised as 'accidents', so while such deaths are shocking, tragic and unacceptable, they do only account for a very small proportion of all deaths and are therefore not a major priority for the public health community. Poor air quality contributes to other health conditions rather than directly causing deaths, so **in spite of some calculations suggesting up to 8% of all deaths in some London boroughs arise from poor air quality, it is often invisible in the statistics.**

For decades, the National Health Service has been trying to tackle 'lifestyle' conditions – i.e. diseases caused at least partly by lifestyle choices – such as heart disease, diabetes and cancers, with limited success. Back in 1992, when the government first realised we had an obesity problem which needed to be tackled, they published a strategy called 'Health of the nation' and set a target to reduce the proportion of adults who were obese to no more than 7%. This target was not met: obesity has increased year on year since we started recording it in 1993, and we have no reason to think that it will not carry on increasing.

In March 2013, in recognition of the fact that the NHS has little influence over individuals' lifestyles and therefore cannot tackle these conditions on its own, responsibility for public health was shifted from the NHS to local authorities. Local authorities are now responsible for improving the health of their populations and **will need to demonstrate progress against 68 indicators of health.**

Public Health Outcome Measures that can be delivered through local transport interventions:

High Level Outcomes	Wider Determinants	Health Improvement	Healthcare Improvement
Healthy Life expectancy	Children in poverty	Low birth rate	Preventable deaths
Health inequalities	Pupil absence	Breastfeeding	Premature deaths from cardiovascular disease
	16-18 year olds NEET	Early childhood development	Premature deaths from all cancers
	Employment for people with a LTC	Childhood obesity	Early death from respiratory diseases
	Sickness absence rate	Injuries in under 18s	Suicide
	Killed and seriously injured on roads	Wellbeing of looked after children	Quality of life for older people
	Violent crime	Diet	Hip fractures in over 65s
	Population affected by noise	Adult obesity	Dementia
	Use of green space for exercise	Physical inactivity	
	Social connectedness	Diabetes	
	Older peoples perception of safety	Cancer screening coverage	
		Access to non-cancer screening	
		Take up of NHS health check	
		Self reported wellbeing	
		Falls and falls injuries in the over 65s	

Health Protection
Air pollution
Chlamydia
Vaccination coverage
HIV late presentation
TB treatment
Sustainable development plans for public sector orgs

Two of these indicators will be readily recognisable to the transport sector as relevant to their work: **air quality** and **serious injuries and deaths on the roads**. However, to look at these two indicators as the only health-related responsibilities of transport would be to miss its most important role in public health in London.

Transport also plays a central role in **physical activity levels.** The main way in which people are active in London is through walking for public transport trips; cycling will also play an increasing role here. Physical activity levels are low across the whole country, and in London only around 20% of the population are considered to be meeting the minimum activity levels needed for good health. This means the majority of adults are not even managing to get their bodies moving for 150 minutes per week. In some London boroughs, up to 40% of adults don't manage even 30 minutes of activity in a week – this is known as being 'physically inactive' and poses significant harms to their health.

Physical activity is vital to preventing and treating the main causes of sickness and death in London. Being physically active reduces the risk of death, coronary heart disease and stroke by 20-35%, reduces the risk of some cancers between 20-50%, and the risk of type 2 diabetes by 35-50%. No medication or combination of medications can deliver health benefits as significant as walking and cycling can, and therefore the transport

Indicators of a healthy street environment:

system, and more specifically street environments, are central to public health.

There are also many other health indicators that local authorities are being measured against which relate to street environments, such as access to services and green space, social interaction and self-reported wellbeing. When you take all of these factors into consideration you can see the central role of London's streets in the public health function of every local authority. **If we get our streets right, we can make great progress in improving the health of Londoners.**

Creating streets which are pleasant and attractive places to be as pedestrians, cyclists and public transport users is key. For public health, this needs to be done rapidly and at scale to meet the challenge of rising obesity, diabetes, dementia and a growing, ageing population. Such action should garner support from a wide range of stakeholders, given that benefits extend beyond health to include goals such as supporting local economies, improving resilience, reducing carbon emissions and improving quality of life.

An ode to cycling: the many arguments in favour of prioritising 'the humble bicycle' – even for those who may never ride one

London's most efficient transport choice: The bicycle?

By German Dector-Vega, Director, Sustrans London

By various measures, cycling is indisputably the most efficient mode of transport:

Almost 99% of the energy that goes into pedalling is transmitted directly to the wheels, making the bicycle a mechanical marvel.

Apart from the initial spend of buying a bicycle and sporadic maintenance costs, journeys on a bike are free. And, let's face it, you can ride a bicycle almost to its destruction and it will still keep going (just look at the bicycle the average Dutch citizen rides).

The carbon footprint for bicycle production is relatively low, and surprisingly, on a bicycle you can use less energy than walking to cover the same distance. This makes the bicycle one of the least carbon-intensive modes of transport.

In traffic terms, a bicycle only uses a fifth of the space used by a car, with a car in London carrying on average less than two passengers – and with London's narrow roads, space is at a premium.

And there's all the other stuff: cycling produces no noise, it helps you stay physically active and consequently healthy, and if you buy a bike with no gears and small handlebars, it might even make you look trendy.

It is surprising then that the bicycle is not yet widely seen as the most efficient mode of transport and potentially one of the most effective mass people-movers for cities.

In terms of opposition to cycling, let's leave the dogma and the Jeremy Clarkson image of cyclists aside for a minute. Even if you never want to cycle – even if you hate it and everything to do with it – it is in your interest that more people in London cycle.

Here's why:

Currently almost 3% of all daily trips in London are made by bicycle. That is more than half a million trips every day. What's more, many of those half-million trips concentrate in the city centre, making up 24% of all trips in

Central London during peak periods. In fact, many streets in Central and Inner London have more bicycles than cars or bus passengers during the rush hour. So, what if those 500,000 trips were not made by bicycle, but by something else instead?

The Jubilee Line, for example, currently carries a similar number of passengers every day. To increase the line's capacity by 17% (about 85,000 more passengers) took several years of planning and cost £160m. In comparison, cycling is one of the cheapest ways to address growth in demand.

To move all these cyclists by bus instead would cost the city approximately £1.5m per day of additional subsidies and require a 50% increase of the bus fleet. That is more than 500 additional buses on already busy streets.

And forget about all those extra trips being made by car – that would make Mexico City or Jakarta look car-shy by comparison, and London would have to look more like Houston, Texas to cope (trust me, not a pretty sight).

In short, more people on bikes equals less cars jamming your way, polluting your air, less people on buses taking your seat and less armpits on the Tube.

True, these examples are extreme, and transport doesn't work entirely like that. We all make different transport choices on different days for different purposes. But the point is that the bicycle is a real choice.

In fact, cycling is such a good choice for the city that many future urban challenges (such as population growth, air quality, noise, energy consumption and congestion) could all be addressed by the use of the humble bicycle.

Of course, every transport mode plays its part, including taxis, freight vehicles, and even the car (less so, but it does) – but the bicycle can and should play a key role for the city at the same level as the almighty bus and the Tube.

London's choice to invest £930m in cycling in the next decade is not a political move; it's not a fashion statement or a crazy idea. It's not even a daring move. It is a very sensible transport choice that must gain traction, regardless of the future political panorama.

Why? Because simply and without a doubt, bicycles are one of the most sensible choices for the future of our city.

Parsing the functions of London's roads to make sure policies and physical improvements do the job for the people who use them, and the city as a whole

The challenges facing London's roads

By Edward Rhys-Thomas, Principal Policy Advisor, Transport for London

London is growing, and is growing faster then predicted. Over the next 20 years, London's growth is expected to be equivalent to absorbing the populations of both Birmingham and Leeds. This growth provides an imperative and great opportunities to transform the city.

An efficient public transport network is essential to accommodating London's growth, and with the commitments set out in the Mayor's Transport Strategy (MTS), the Capital's network continues to improve.

However, to maintain London's pre-eminent global position we also need to improve our roads and streets, catching up on decades of under-investment and lack of strategic direction. A range of schemes in recent years have delivered improvements (streetscape, safety, cycling, congestion-busting) in different parts of the Capital, but the scale of the challenges means many problems on London's roads and streets remain unaddressed.

These challenges are very much linked to the many functions London's roads need to perform. **These functions can be grouped into six categories**, and by exploring each in turn, we can begin to understand the challenges faced by the road network.

1. Moving

Roads should help people, goods and services to get from A to B, and enable efficient and reliable movement by a range of different modes.

Congestion currently costs the London economy around £4bn every year. Even with all the policies set out in the MTS, congestion in London will rise as London's rapid growth increases demands on the road network. Congestion not only impacts private vehicles but also freight and bus journey times, cyclists and also pedestrians as they wait to cross busy roads.

2. Living

Roads should provide welcoming and inclusive places for all, which support vital economic, cultural and community activities.

Streets are not simply for getting around, they also shape a city and how people perceive it. The quality of London's streets and places affects businesses and the city's bottom line and London's global standing. Areas of London where large numbers of people lack access to economic opportunities are often those where the public realm has been neglected. Investment in the public realm may help restore confidence in such areas, helping

London's streets and roads can range from internationally known destinations to local centres and therefore the challenges they face can vary significantly.

establish a positive cycle and enabling people to participate more easily in local economies and communities.

3. Unlocking

Roads can help to improve the accessibility, connectivity, and quality of areas earmarked for major growth to deliver the homes, jobs and new economic sectors that London needs as it grows.

London needs more than **40,000 new homes every year**, but many potential development sites are constrained because of poor road access and the inability of the road network to cope with increased demand. There are many potential opportunity areas across London that could deliver significant numbers of new homes and jobs. This issue must be tackled, alongside improvements to public transport, to unlock the full potential of different areas of the city.

4. Functioning

Roads need to ensure essential access for deliveries and servicing, and allow the upgrade of utilities under the roads to serve London's growing needs and support a digital city.

The value of freight moved per annum on London's roads is £200bn. Businesses and the overall functioning of London rely on getting goods and services to and from premises which often front onto busy streets. Therefore efficient access and the provision of loading and stopping facilities are fundamental.

5. Protecting

Roads need to provide a safe environment and help to reduce collisions, particularly for vulnerable users, and ensure streets where people feel secure.

Keeping people safe as they go about their daily lives is a fundamental part of making London a great city. The safety of London's roads is critical. In 2012, **3,018 people were killed or seriously injured** (KSI) on London's roads. While the number of KSIs has been reduced significantly over the last decade, the rate of improvement has slowed over the last five years and the 2012 figure is actually 8% higher than in 2011. Clearly, major challenges remain.

6. Sustaining

Roads need to reduce their environmental impact by reducing emissions and supporting greener, cleaner, quieter streets. This can help to achieve a healthier and more active city.

Road transport accounts for around 60% of particulate emissions in London and nearly 50% of emissions of nitrogen oxides (NO_x) in London. It is estimated that particulate pollution contributed to an equivalent of 4,300 premature deaths in London in 2008. Meanwhile, road transport generated 6.8m tonnes of carbon dioxide (CO_2) in 2010 – around 70% of the CO_2 emissions from transport.

It is clear the challenges the road network faces are numerous and growing. We are starting from a difficult point with forecast deterioration in congestion. There is a need to tackle this while at same time delivering transformed places.

London's growth and increasingly diverse population will exacerbate challenges. Demand for the space on roads and streets is growing and there is often conflict between users. Therefore we need to agree a clearer vision and direction for London's roads and a better framework for making decisions.

Only by taking a new approach can we effectively address the challenges in a co-ordinated way across the whole of London's road network and deliver the better outcomes that Londoners want.

A snapshot of the work of the Roads Task Force, and considerations in putting its framework into practice

Paving the way for an optimal road network

By Jennifer Johnson with materials from John Dales, Urban Initiatives, and Professor Peter Jones, UCL

London's roads dominate the way the city moves: 80% of people's trips and 90% of goods movement take place on the road network. Roads also play a signifcant role in shaping urban realm, accounting for 80% of the Capital's public space. Given that roads perform vital functions in supporting London's residents and economy, and given their undeniable role in shaping the urban landscape, their future deserves thoughtful strategy.

Part of the challenge in developing a vision is the wide range of roads to consider, from a multi-lane arterial motorway to the main road through a local town centre. Even the term 'road' can be a challenge: for some, 'street' may better distinguish a road's place functions from other road types.

Different users also expect different qualities or functions from the same road: accessibility may be paramount for one, legibility the priority for another, or efficiency, safety, attractiveness, conviviality, successfulness, diversity and so on. Users' needs and expectations can also be in constant flux, subject to a range of factors including why they're in a place and how they're moving through the area.

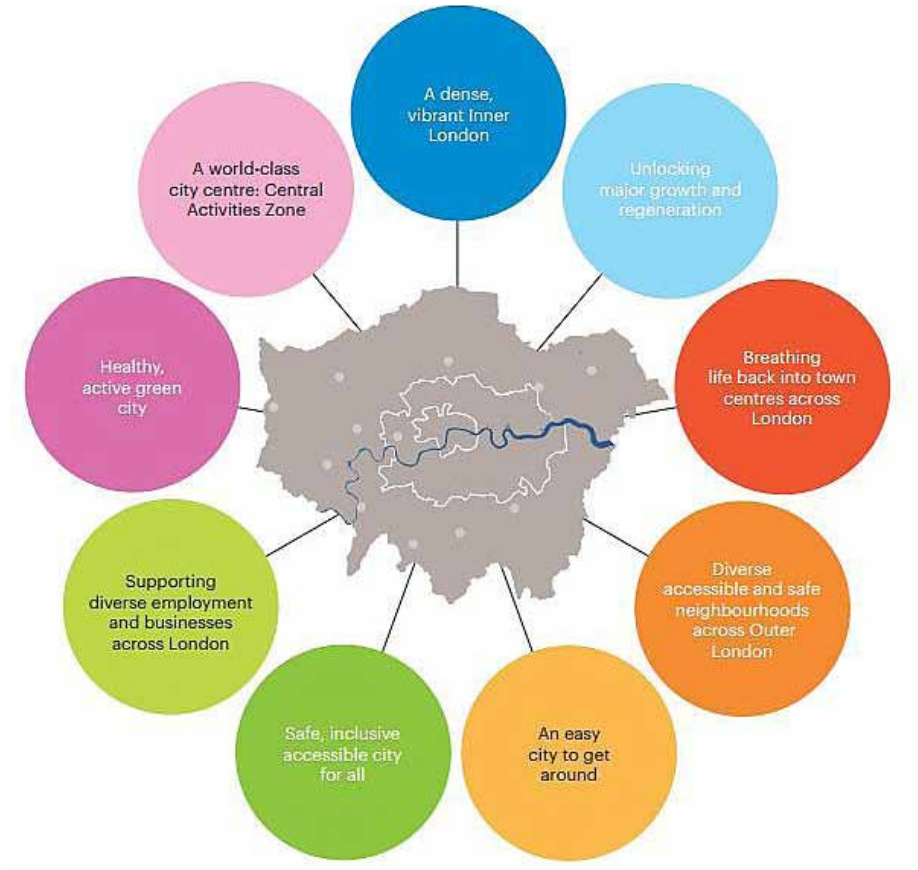
It follows, then, that thoughtful planning of London's road network must consider the whole range of functions, qualities and users. This need was recognised by the Mayor of London, who established the Roads Task Force (RTF) to better understand the challenges facing the Capital's road network, and to inform a long-term investment strategy. The RTF's findings, published in July 2013, set out a vision for 'world-class streets and roads in London, fit for the future'.

The RTF identified five sets of tools that key stakeholders have to deliver this vision:

1. Infrastructure and assets fit for the future: improving the foundations of the system
2. Making more efficient and flexible use of space: optimising movement and delivering successful places
3. Intelligent systems and management: delivering world-class network operations
4. Changing behaviour/ managing demand: enabling different choices
5. Substituted, re-located or enhanced capacity: maintaining space for different functions and unlocking growth

Part of the strength of the RTF's work is in the typology framework it uses to consider the spectrum of

The Roads Task Force vision



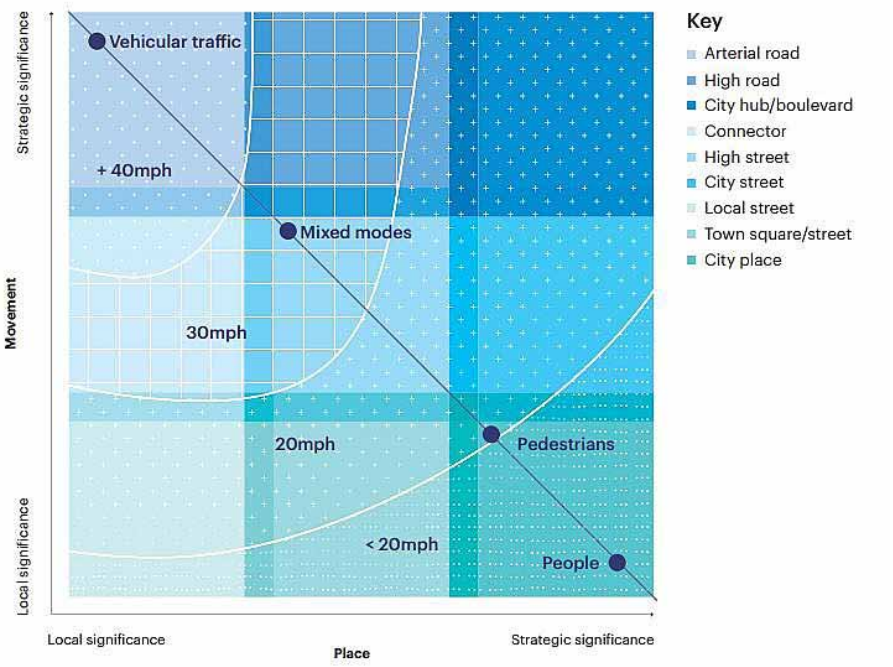
road functions. It establishes nine 'street-types' on axis of place and movement (from local to strategic significance), also considering vehicular speeds and user types. This framework and these tools provide a common starting point to consider the strategic planning of London's road network.

As local authorities, Transport for London and other key stakeholders employ this framework, they must do so with an eye to resilience. Here, the thoughtful consideration of **funding** is paramount. In this time of tightened public spending, increasing the efficiency of existing assets and finding creative financing mechanisms for the construction of new transport infrastructure are critical.

Sustainability must also play a part. The Mayor of London is committed to reducing CO_2 emissions by 60% to 2025. Transport comprises a significant portion of the Capital's emissions; road vehicles alone account for 80% of transport-related CO_2 emissions. Encouraging active modes of transportation in place of private vehicle use would work towards reducing this.

Changing modal choice for short trips may have particular potential. National Travel Statistics in 2011 indicated that 43% of trips under five miles in London were walked or cycled, compared to 22% made by public transport, and 35% using other modes. A substantial proportion of the combined 57% that rely on vehicles could be shifted to an active mode.

Roads Task Force's 'street-types': balancing movement and place functions



If increasing the modal share of walking and cycling is desirable, planners and designers must pay attention to the particular needs of these users to **create workable streetscapes**. For example, reducing the volume of traffic can leave more space on streets to accommodate more of the road qualities pedestrians and cyclists seek. Good work on prioritizing active modes has already been done in London. In addition to the ideas outlined in the RTF's report, the Mayor's Vision for Cycling and TfL's Urban Design Kit are among the strategic tools that support the delivery of streets that people want to spend time in. Applying this collection of strategies will be key.

The last point on resilience is **allowing for uncertainty**, including demographic change, new technology, and beyond. Anticipating modal share and number of trips may be particularly difficult: recent decades have shown that actual increases in private vehicle use have not been as high as the Department for Transport's nationwide projections suggested. Road planning, then, must be on-going, building in flexibility where possible and monitoring for change.

From buses to cyclists, private vehicles to pedestrians, roads are crucial to London's population and economy. The strategic planning of the Capital's network received a boost in 2013 through the work of the Roads Task Force. Now, it is up to key stakeholders and in particular the public sector to continue this momentum in support of London's roads and streets – and, most importantly, their users.

Optimising streetscape to create enjoyable urban space – and to help develop the mode-share London needs to combat congestion

Smarter Streets are the future of London

By Tim Long, Principal Transport Planner, London Borough of Camden.

The views in this article are the author's own and are not necessarily those of the Clear Zone Partnership or the London Borough of Camden.

London's predicted population growth will place considerable pressure on public transit and streets, which are already frequently congested; new approaches need to be adopted to move people more efficiently and economically. This requires reducing congestion and prioritising walking and cycling, since they need the least amount of space.

Many roads and pavements are already congested and appear to have reached their limit. To address that challenge, the Clear Zone Partnership pioneered an approach called 'Smarter Streets'. **This new design technique simplifies and de-clutters streets to create more space and better quality places.**

The Clear Zone Partnership involved the London Borough of Camden, the City of London and City of Westminster councils, and aimed to reduce air pollution by creating innovative street designs and using new technologies. Analysis identified that traditional streets are composed of many different spaces or items of street furniture which only serve a single purpose. Instead, Smarter Street designs were created with multi-purpose spaces and items of street furniture, to simplify and de-clutter streets. This releases space to improve walking and cycling, create better quality places, and reduce costs and maintenance. A range of Smarter Streets measures were developed which are described below.

Raised loading bays

Congestion often occurs where pavements cannot be widened or are pinched by loading bays. This congestion can be reduced by raising loading bays to pavement level, to encourage more people to walk on them. These raised bays serve two purposes: a wider footway most of the time and loading space when required. A good example is Bernard Street outside Russell Square Tube station, where loading and parking bays have been raised to double the width of the pavement in this busy location.

Their success quickly spread to include raised coach bays in Holborn, taxi bays in Drury Lane, and motorcycle bays in Great Queen Street, and have been adopted by Transport for London and many other councils.

Raised loading bays in Bernard Street

Central island cycle parking

A decade ago, the Clear Zone Partnership designed the first scheme to install cycle stands on the road in central London in Malet Street. Instead of building a raised island to separate the contraflow cycle lane from the road, a row of cycle stands was installed and protected at both ends by pedestrian islands to help people cross the road.

This Smarter Streets approach created a multifunctional design and easier-to-use cycle parking at road level. It was also cheaper to construct, as it required much smaller raised islands, not moving drains and raising fewer utility covers. A similar approach was used in Holborn, which is a dual carriageway with white line hatching down the centre of the road. Better use was made of this central area by replacing the hatching with cycle stands and providing an informal pedestrian crossing.

The central island with cycle stands and a pedestrian crossing in Holborn

New benches and bins

A new range of benches and bins was designed by the London Borough of Camden and Factory Furniture using Smarter Street techniques. They deliver best practice in minimising anti-social behaviour, which often results in benches being removed, making it harder to walk and creating lower-quality, less social spaces. The benches save space by being double-sided: the design allows more people to sit at once, and appears to have encouraged people to share the bench. They also act as a vehicle blocker. Another version was designed with bins recessed into both ends; this has yet to be built. The bins' multifunctional design means they can also be used as a bollard and a seat.

The new benches and bins in Great Queen Street

The Cricklewood bollard

Even more compact, multi-purpose seating was developed in Cricklewood. Here the pavements were de-cluttered but there was very little space for benches. Instead, a new bollard was proposed by the London Borough of Camden and designed by EAST, using Smarter Street principles to provide a perch seat and directional signage.

Smarter Street places: Great Queen Street

The best example of a place where several Smarter Street designs have been used together is the junction of Great Queen Street and Drury Lane near Covent Garden. **Great Queen Street was the first scheme in the UK to remove traffic signals, saving about £200,000.** This enabled 11 traffic signal posts and a traffic signal control box to be removed, as well as 64 metres of guard railings, two telephone boxes, a parking meter, bollards and three lamp posts, creating space for a new public square.

Great Queen Street was highlighted by the Home Office website as an excellent example of de-cluttering. It was possible to remove the traffic signals by designing the junction as a shared space to maintain pedestrian crossing facilities. Shared space is a Smarter Streets technique as it allows pedestrians and other types of transport to use the road together, reducing congestion, compared to signals which only allow pedestrians or vehicles to cross at one time.

Raised bays were also provided for loading and motorcycle parking to widen the footways. The new benches and bins helped to minimise clutter and maximise seating and space. **These Smarter Streets designs transformed Great Queen Street from a complicated, congested junction into a high quality small square with less congestion for everyone. As a result it has been estimated that the Great Queen Street scheme created a total economic uplift of up to £50m a year for the properties in the area.**

The Great Queen Street scheme

The Capital will undergo significant population growth over the next 20 years. Streets are finite spaces and many are already congested, but can be improved for pedestrians and cyclists by using the Smarter Street principles. In this way Smarter Street designs are the future of London.

Conclusion

By Jennifer Johnson

Seventy years ago, Sir Patrick Abercrombie shared his plan for a post-World War Two London. Transport – and particularly traffic congestion – was amongst the problems his plan sought to address, alongside poor housing, insufficient open space, a haphazard mix of housing and industry, and urban sprawl. Today, the so-called Abercrombie Plan is remembered for the elements that have been realised, among them the Green Belt and the New Towns movement. But what of its transport proposals?

Cars and roads were central to Abercrombie's vision for the Capital. Inspired by the American road network, motorways connected segregated land use zones and facilitated the shipment of raw materials and goods. Rail also had its place in the plan, with electrifying the network and building tunnels for tracks amongst its proposals.

In practice, this transport vision went largely unrealised. Constructing its ring roads, and in particular the innermost motorways in its series ('A' and 'B'), would have involved extensive demolition – a difficult prospect to swallow in light of the wartime damage to much of the city centre. The rail improvements put forward also weren't realised – for the most part. One of the Abercrombie Plan's rail proposals called for two new Tube lines to better connect east and west London, but a tight funding environment following the war did not make them a delivery priority. The need for a new east-west line continued over subsequent decades and is finally under construction today: we know it as Crossrail.

Today's rapidly-growing London has placed the city at another

Abercrombie's Road Plan, showing arterial roads and rings 'A', 'B' and 'C'. Source: http://goo.gl/mZ3d01

important junction for strategic transport planning. In 2013, Mayor Boris Johnson's 'Vision 2020' presented an ambitious agenda for London to government and to the world. Transport was positioned as a vital ingredient for London's competitiveness as a global city and economic powerhouse, with an extensive and varied list of priorities.

Part of Vision 2020 was also the announced intention to develop a Long Term Infrastructure Investment Plan (IIP) for the Capital. Aimed at central and local policymakers, investors and the general public, the Plan sets infrastructure as an absolute requirement for a resilient and competitive London. Transport, energy, waste, water, green infrastructure, telecommunications, and social infrastructure – including housing – all fall within the IIP's wide remit. That spectrum is already ambitious, but the IIP's mandate is even more so: to clearly identify the capital's infrastructure needs through 2050, cost them, and find ways to fund and finance them.

What has emerged in this anthology is the pressing need to consider the future of the Capital's transport network … and its complexity. London's growing population will place pressure on an already-stretched transport network, and will see the city's urban form continue to change as growth is necessitated in new areas. The role transport plays in health outcomes and in sustainability terms means that supporting walking and cycling and understanding behaviour-change mechanisms must be included in any strategic transport plan. Roads need thoughtful attention here, from grasping their functions to employing smart design; the momentum from the Roads Task Force work must continue. And all this needs to happen while improving and maintaining the existing network, and at the same time delivering a package of major new infrastructure projects ranging from the 2018 opening of Crossrail to resolving the issue of London's airport capacity.

Abercrombie might be disheartened to see his transport vision largely unfulfilled in modern London. Certainly, transport planning today has different - and sometimes broader - ambitions, exemplified in the cross-sector work around London's Infrastructure Investment Plan. By placing strategic transport planning alongside other infrastructure, the Capital has an opportunity to thoughtfully embrace growth.

At this critical point, the transport network must adapt to new population pressures, and evolve in the way it supports healthier and more sustainable travel choices. There's clearly work to be done. Future of London will continue to support capacity building and knowledge sharing in the sector.

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