

# Proposals to improve safety and security

## 5.15 Improving public transport safety

### 5.15.1 Introduction

<sup>479</sup> Londoners desire safety and security for each and every stage of the door-to-door journey. They also depend on a public transport system that is well-maintained so that it gives them confidence that they can travel without fear of injury from crime, sabotage, negligence, equipment failure or terrorist attack. It is also important to ensure health and safety risks to passengers and staff are kept as low as reasonably practicable. A duty is placed upon TfL and other operators to ensure staff safety through the Health and Safety at Work Act.

### 5.15.2 Keeping transport networks safe and well-maintained

<sup>480</sup> The application of a structured approach to health and safety across all public transport modes includes rigorous inspection, maintenance regimes and safety management systems. These are kept under regular review and improved as required, subject to agreement with the relevant authorities

such as the Railway Inspectorate. TfL ensures compliance with driver and vehicle safety standards across London's taxi and private hire fleet. It is the intention of the Mayor that health and safety remains embedded in the work culture of operational staff to ensure passenger and staff injury and fatality rates remain very low across all modes.

<sup>481</sup> Overall on LU and DLR, the rate of injury to customers and staff is low when compared against rising passenger numbers and the increased vehicle kilometres of services operated. London Buses' customer and staff fatalities, and major and minor injury rates, also remain low, especially when viewed against a backdrop of increased service provision. TfL continues to promote best practice initiatives for operators, improved risk assessments and improved driver training and recruitment procedures, but injury rates have fluctuated in recent years.

**Proposal 63**

The Mayor, through TfL and working with the London boroughs, Network Rail, train operating companies, the police and other stakeholders, will seek to reduce fatality and injury rates on London’s transport system further; and will aim to reduce London bus road user fatality, major and minor injury rates.

482 TfL will continue to plan and prepare for major incidents by drawing on industry best practice to prepare and rehearse contingency plans for major incidents on the transport network and to prepare recovery plans.

## 5.16 Improving road safety

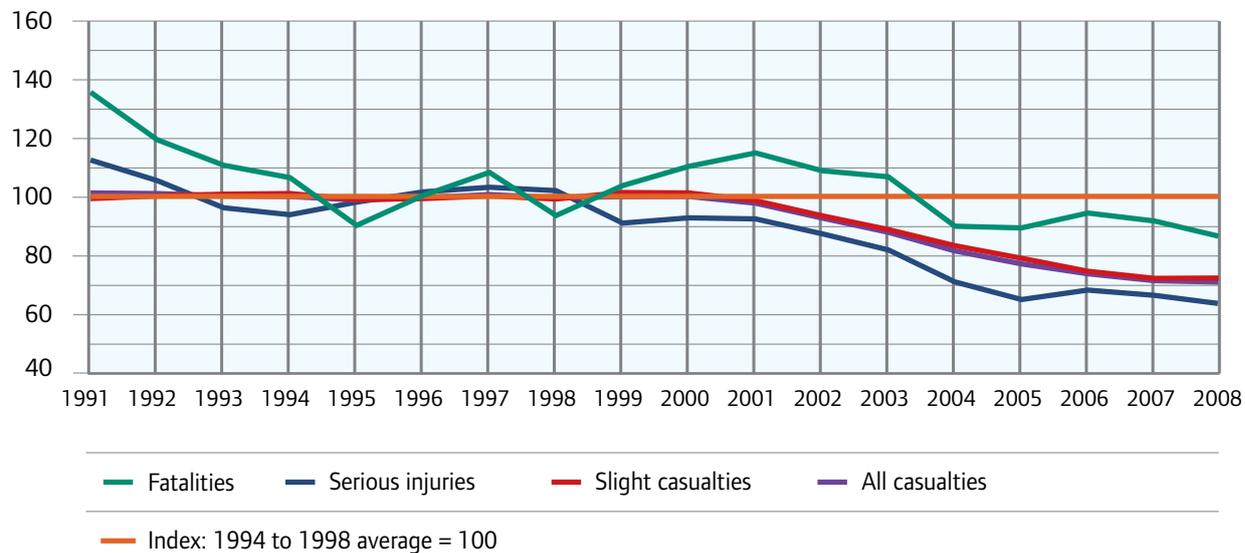
### 5.16.1 Introduction

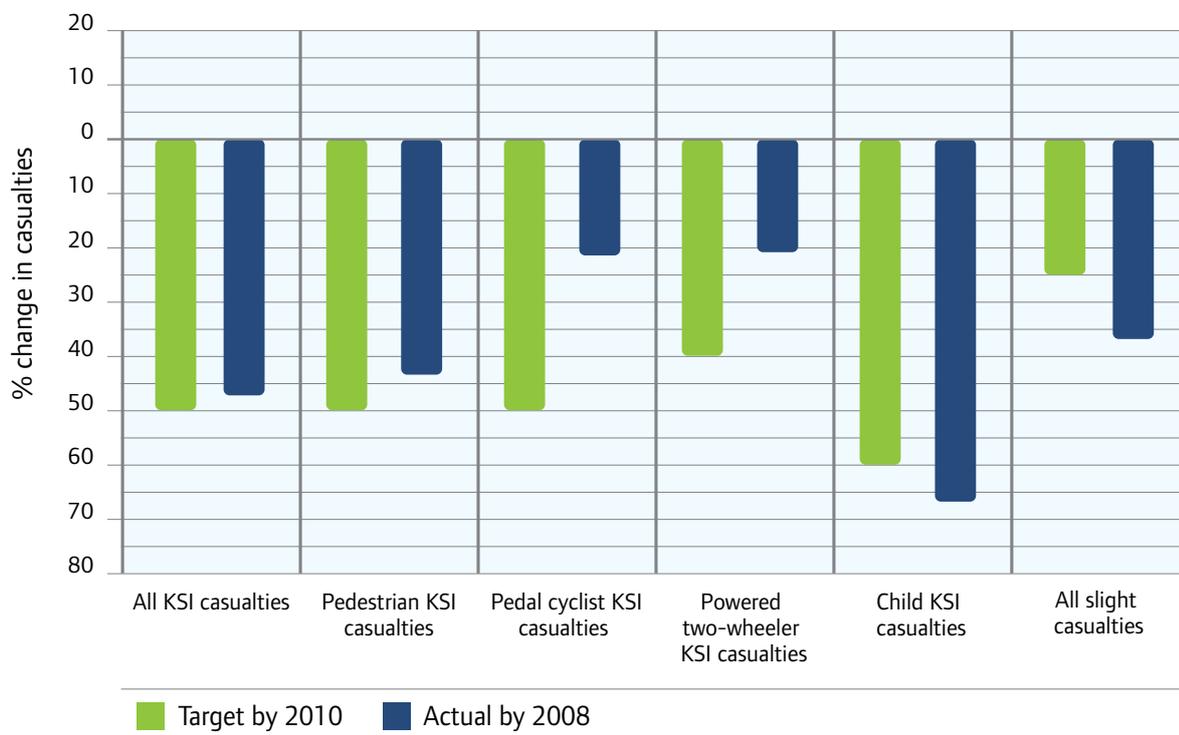
483 In recent years the number of casualties from road traffic collisions have fallen significantly (Figure 48), but despite the progress made London still has an unacceptable number of road casualties each year. The Mayor proposes to improve London’s record, a commitment demonstrated by signing the European Road Safety Charter in July 2009.

### 5.16.2 Progress and the scale of the challenge

484 Figure 49 shows the excellent progress achieved over the past decade by category of casualty. By 2004, London had achieved the national target – a 40 per cent reduction in

**Figure 48:** Trends in road casualties, 1991 to 2008



**Figure 49:** Road casualties by casualty category

the number of KSIs (killed or seriously injured) in road collisions, a 50 per cent reduction in the number of child KSIs and a 10 per cent reduction in slight casualties compared to the 1994 to 1998 average. Reaffirmed by the Mayor, more challenging targets were set in 2006 to be achieved by 2010. These included a 50 per cent reduction in total KSIs, 60 per cent reduction in child KSIs and for the slight injury rate to fall by 25 per cent by 2010. New targets were set for a reduction in pedestrian and cycle serious injuries and fatalities by 50 per cent.

<sup>485</sup> By the end of 2008, pedestrian KSIs were down by 43 per cent, but cyclist and powered two-wheeler KSIs fell by only 21 per cent overall. However, there were still 204 fatalities, 3,322 serious injuries and a further 24,627 slight injuries. Figure 50 highlights the casualty break-down by mode of travel.

<sup>486</sup> In 2008, collisions and casualties in London were estimated to cost society at least £1.3bn, excluding damage-only collisions. Research has found that around 30 per cent of road casualties were not reported by the police in

STATS19 data, so the road safety problem is under-estimated. Improving road safety will not only reduce direct costs and the burden on society, but will generate productivity savings and contribute to smoothing traffic as collisions are a major cause of disruption and will encourage more cycling.

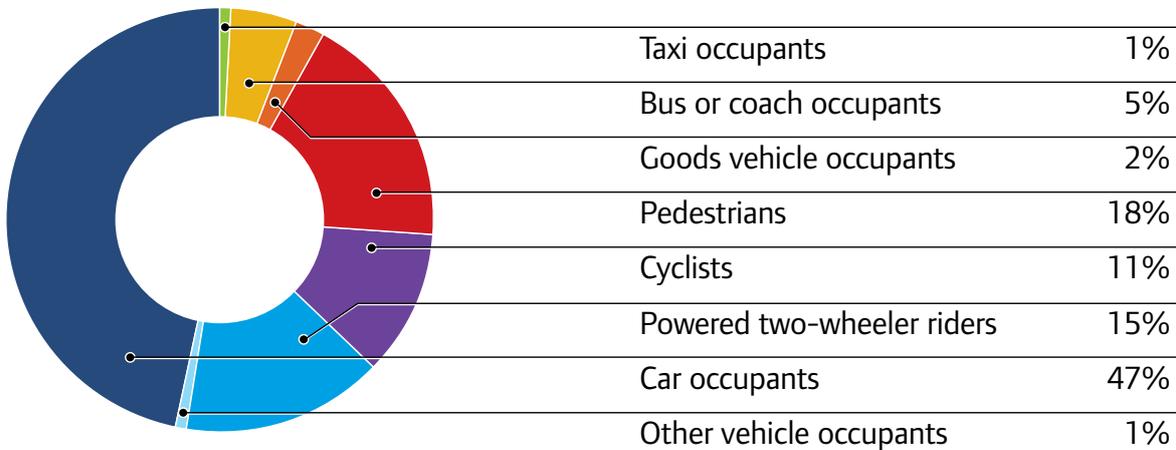
487 By 2017, TfL’s Business Plan commitments aim to achieve a 63 per cent fall in the total number of KSI casualties to approximately 2,470 KSIs per year, compared with the 1994 to 1998 average of 6,684 KSIs. Casualty reduction targets by 2020, compared to the 2004 to 2008 baseline are to be set for the UK by the DfT in 2010. Road user groups are likely to have individual targets and TfL will work towards achieving the new targets. If current

funding levels are retained, it is estimated that casualty reductions over the new 2004 to 2008 baseline may continue to 2031. At the level of funding identified in the TfL Business Plan 2010 to 2017/18, an overall reduction in the KSI casualties of 50 per cent compound to a baseline from 2004 to 2008, is anticipated across London.

**Proposal 64**

The Mayor, through TfL, and working with the London boroughs, police, Highways Agency, road safety partnerships, and other stakeholders, will seek to achieve any new national road safety targets and such further road safety targets as the Mayor may set from time to time.

**Figure 50:** Casualties by mode, 2008



## Spotlight

### Improving road safety for pedestrians, cyclists and powered two-wheeler riders

The Mayor seeks to continue the significant improvements in overall road safety of the past decade, particularly for pedestrians, cyclists and powered two-wheeler riders, who are at more risk of injury compared to other road users.

Pedestrian casualties have been reduced by over 40 per cent since the mid 1990s, but they remain the majority of vulnerable road user KSI casualties. Further improvements to pedestrian safety are, for example, urban realm enhancements, 20 mph zones and initiatives in schools.

Over the same period, cycling in London has increased by over 100 per cent, while KSI casualties have reduced by a fifth. Engineering solutions such as 'advanced stop lines' are complemented by events including ones where cyclists and HGV drivers see the road from each

others' perspective. The Cycle Safety Action Plan sets out over 50 actions to further improve cycling safety in London.

About 200,000 trips are made each day by powered two wheelers. In central London, usage has increased by about 40 per cent over the past decade while across London KSI casualties have been reduced by about a fifth. This has been achieved through targeted initiatives, such as the successful 'BikeSafe London' programme with active involvement from the police.

In addition to continuing to run innovative campaigns addressing the specific problems vulnerable road users face, TfL is looking at the interaction between these groups while supporting police enforcement of the rules of the road for all road users.



- 488 The Mayor, TfL and the boroughs will adopt national policy and set targets that are appropriate at a London-wide or borough level in a new Road Safety Plan for London. Additionally, the Mayor has re-affirmed his commitment to the European Road Safety Charter.

#### Proposal 65

The Mayor, through TfL, working with the police, Highways Agency, London boroughs, road safety partnerships and other stakeholders, will develop a new Road Safety Plan to reflect any new road safety targets to be set by the Government or the Mayor and review progress every five years.

- 489 A continued mixture of engineering, education and enforcement will help reduce the number of casualties on London's roads. New initiatives, such as intelligent speed adaptation (ISA) and average speed (time over distance) cameras, could also be used where they are demonstrated to be effective and value for money.

### 5.16.3 Injury inequalities

- 490 Some modes of transport, powered two-wheelers (motorcycles and scooters), cycling and walking in particular, suffer from disproportionately high casualty rates. By 2008, the number of KSIs for those using powered two-wheelers had fallen by only 21 per cent on the 1994 to 1998 average and is a cause of concern for the Mayor.
- 491 Reducing the rate of injury to cyclists is of paramount importance if the number of

cyclists is to grow. Busy roads and larger vehicles can pose significant safety hazards, especially for infrequent cyclists. Improving cyclist safety will help overcome a barrier to delivering the Mayor's cycling revolution. Pedestrians also currently suffer from a high injury rate per distance travelled, and have the highest number of KSI casualties; therefore, improving pedestrian safety will help encourage more people to walk.

- 492 Those who live in the most deprived areas of London and ethnic minority groups suffer a disproportionately high number of road casualties.
- 493 To ensure value for money, it is vital that safety initiatives are targeted, based on sound data and research evidence, especially using the London-wide body of collision and casualty data, analysis and research held by TfL. This provides a valuable resource for key stakeholders such as boroughs and the police. It is also important to monitor road safety schemes to ensure their success and inform future measures.

#### Proposal 66

The Mayor, through TfL, will continue to monitor road safety schemes and publish road safety casualty reports and research.

### 5.16.4 Educating road users

- 494 Communication with all road users is vital to improving road safety. It is particularly important that the messages reach children and other vulnerable groups who may not



**Figure 51:** An example of road safety campaign material

generally interact with transport authorities. For pedestrians and cyclists, it is essential to be aware of measures they can take to avoid injury on the road and conversely for other road users to be aware of their needs.

- <sup>495</sup> TfL road safety campaigns start with an early intervention with children aged three in the Children's Traffic Club and evolve as target groups age. The 'Don't die before you've lived' campaign targets teenage pedestrians while other campaigns (see Figure 51) aim to educate young drivers, cyclists, motorcycle and scooter riders.

- <sup>496</sup> Recent campaigns have used a variety of new and innovative methods to spread the road safety message. TfL works in partnership with key stakeholders including borough road safety officers, London Councils and organisations such as the Royal Society for the Prevention of Accidents (RoSPA). The aim is to provide suitable education materials and campaigns targeted to address issues highlighted by research. Training for cyclists is proposed as a means of improving the conditions for cycling under 'Continuing the cycling revolution'. Road safety education is also a key component of school travel plans.

### Proposal 67

The Mayor, through TfL, and working with the London boroughs, police, DfT, and other stakeholders, will undertake public information and engagement to improve road user behaviours and reduce the risk of collisions.

#### 5.16.5 Cyclist safety

- <sup>497</sup> One in three pedal cycle fatalities in London are from collisions with left-turning HGVs. In 2008, of the 15 pedal cyclist fatalities nine involved an HGV and five of these included a left-turning manoeuvre by the lorry. Research has shown that HGVs without sideguards are involved in a disproportionately large number of fatal collisions with cyclists considering the very small number of HGVs without sideguards. HGVs with sideguards can have additional mirrors or electronic warning devices fitted to improve safety.

- 498 In order to deliver the Mayor's cycling revolution, more needs to be done to resolve conflicts, both real and perceived, between HGVs and cyclists. This includes improved facilities for cyclists as well as better driver training and safety technology.
- 499 Advanced stop lines provide a safer location for cyclists at road junctions. They enable cyclists to pull away within view of other motorists, so they are less likely to be involved in a collision. It is important that cars and lorries do not encroach into advanced stop line areas.

#### Proposal 68

The Mayor, through TfL, the police and working with the DfT, London boroughs, road freight operators and other stakeholders, will improve safety for cyclists in the vicinity of HGVs and other vehicles, by:

- a) Encouraging the Government to amend legislation and remove the current exemption for HGVs being fitted with sideguard protection
- b) Working to increase the number of HGVs with sideguards or fitted with electronic warning devices that detect cyclists
- c) Raising awareness among drivers of the safety benefits of advance stop line areas

- 500 FORS has been well-received by those operators who have signed up so far. The scheme offers driver training and safety workshops, coupled with introductory offers for driver profiling to monitor driver behaviour.

In order to further improve safety standards, a subsidised driving licence check service is in place to help operators check for licence endorsements held by prospective drivers.

#### Proposal 69

The Mayor, through TfL and working with the DfT, London boroughs, road freight operators and other stakeholders, will seek enhanced vehicle and driver safety from organisations operating corporate fleets by working with the freight sector and other stakeholders, promoting increased membership of the Freight Operator Recognition Scheme, and encouraging operators to uptake and demonstrate freight best practice.

### 5.16.6 Work-related road safety

- 501 Recent research has shown that 28 per cent of KSI casualties are associated with vehicles driven in the course of work. Therefore the Mayor, TfL, Metropolitan Police (Met) and other partners will work with operators to improve vehicle quality and employee behaviour. For example, in 2008 TfL distributed 15,000 'Fresnel' lenses to HGV drivers to help improve their in-cab visibility of cyclists.
- 502 TfL has introduced a vocational BTEC qualification for new bus drivers and service controllers in London to improve safety and customer service through defensive driving training and health, safety and security. TfL offers driver training and safety workshops, and GLA staff members who drive for work will

undergo eco-driver training to reduce emissions and develop safer driving behaviour. Taxi and PHV drivers will also be eligible for this training.

- 503 Those working in road maintenance face some of the most hazardous working environments in the Capital. London-specific trends will be examined through the future Road Safety Plan for London.

#### Proposal 70

The Mayor, through TfL, and by working with the DfT, London boroughs and Health and Safety Executive, will seek to improve road safety by developing initiatives and working with employers to increase work-related road safety and to reduce casualties involving work-related vehicles and activities.

### 5.16.7 Road safety engineering

- 504 Improving facilities to make routes safer for pedestrians and cyclists remains a top priority in encouraging mode shift, as non-motorised users suffer disproportionately per kilometres travelled. Nevertheless, it remains necessary to address the needs of car occupants, who continue to form the majority of casualties, and all of the other main modes including motorcycles, scooters, goods vehicles and buses. Between 2001 and 2009, road safety engineering schemes on the TLRN had reduced collisions by an average of 30 per cent at 270 sites across the network. Any physical engineering measures implemented will be developed with due regard for emergency vehicle access.

#### Proposal 71

The Mayor, through TfL, and working with the London boroughs, Highways Agency and other stakeholders, will implement targeted physical engineering and other design considerations to improve road safety across London's road network.

- 505 Improving facilities for cyclists and pedestrians is also addressed by improvements to the quality of the urban realm for pedestrians, cyclists and all disabled users. Giving these groups more priority will reduce the collision rate as vehicle speeds are reduced and drivers are made more aware of the risk they pose to pedestrians and cyclists.

### 5.16.8 Road safety enforcement

- 506 It remains necessary to target those road user groups who are frequently the cause of the most serious collisions. Drivers breaking the law by drink or drug-driving and speeding contribute to a large number of serious collisions. In parts of London there are large numbers of uninsured drivers and unlicensed vehicles that contribute to high levels of 'fail to stop' collisions (also known as 'hit and run'). Excessive and inappropriate speed is a factor in many collisions and the enforcement of existing speed limits is key to reducing the likelihood and consequence of collisions. TfL has already committed funds to trials in its own fleet of time over distance speed camera technology and ISA technology which automatically limits the speed of the vehicle to the legal maximum. Current research suggests implementation of 'voluntary' ISA could ensure

compliance with the local speed limit in every vehicle, and could reduce the number of collisions resulting in injury by around 10 per cent and fatal collisions by around 20 per cent.

- 507 Over the course of this strategy it is hoped that such technology will become more widespread through TfL encouraging companies to fit the technology. The fitting of ISA to company cars and vans, following suitable trials and on the basis it can be shown to be value for money, would reduce the disproportionate number of those driving for work being injured and reduce their levels of occupational road risk. Depicted by the red zones in the ISA speed limit map (Figure 52), many London boroughs have introduced 20mph zones, particularly in residential areas with positive road safety effects which are enhanced when accompanied with enforcement.

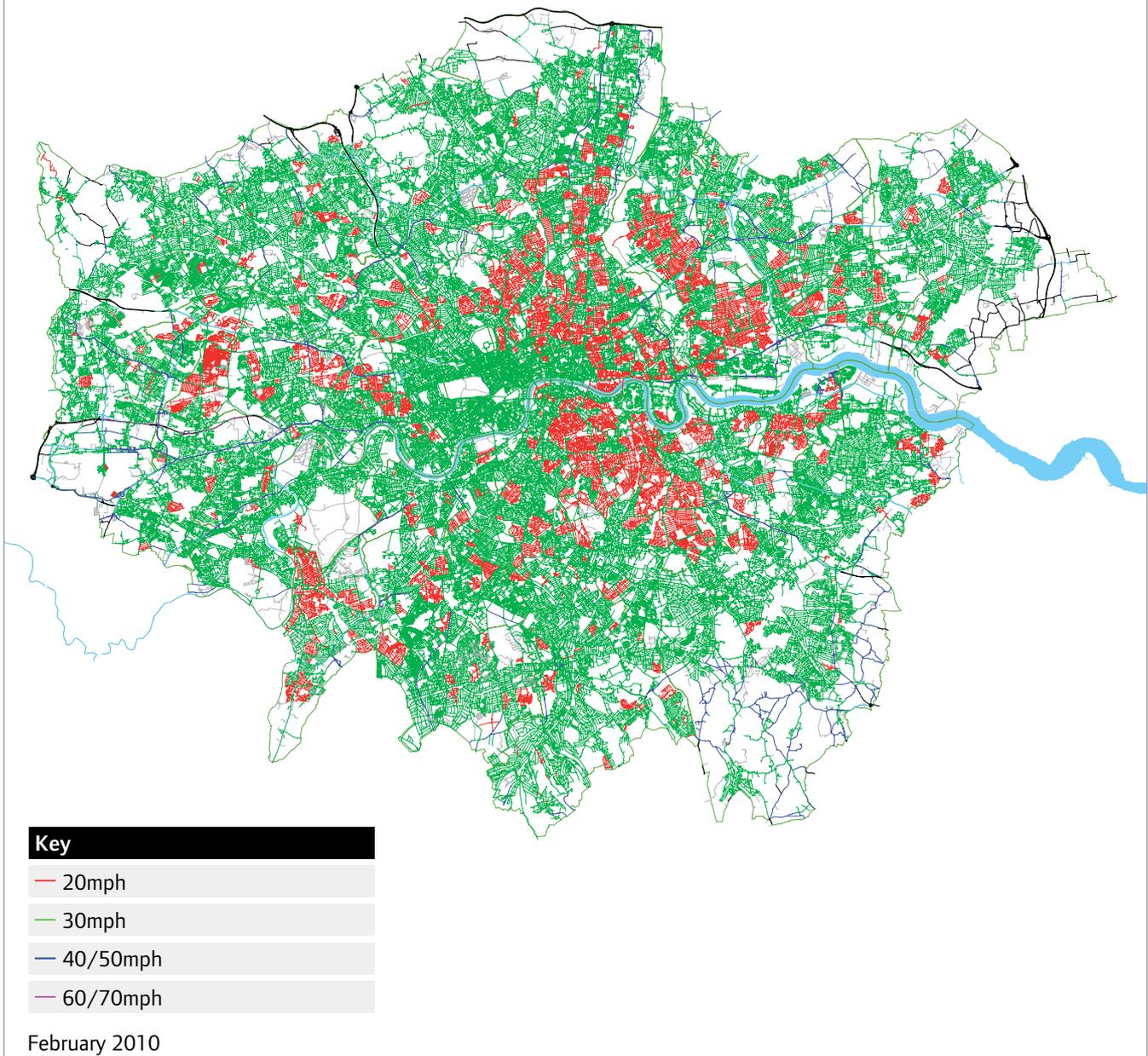
### Proposal 72

The Mayor, through TfL, and working with the DfT, London boroughs, vehicle manufacturers and other stakeholders, will encourage the introduction of voluntary 'intelligent speed adaptation', subject to the outcome of trials in corporate fleets, including freight, passenger transport and company cars and vans.

#### 5.16.9 Speed limits

- 508 The frequency and severity of road collisions and casualties are closely related to vehicle speeds. In residential areas, 20mph zones are generally popular with residents and make the streets safer for pedestrians and cyclists. This in turn encourages more use of these modes, with environmental and health benefits. Research has shown that 20mph zones have reduced



**Figure 52:** Speed limits on London's roads

casualties by over 40 per cent where they have been implemented in London.

- 509 Speed enforcement is currently delivered by more than 800 fixed ‘spot’ and mobile speed cameras operated by the London Safety Camera Partnership. Red light running is also enforced by cameras at more than 250 locations. Average speed cameras could help reduce the variability in speeds that can be caused by heavy braking at ‘spot’ camera sites and improve safety.

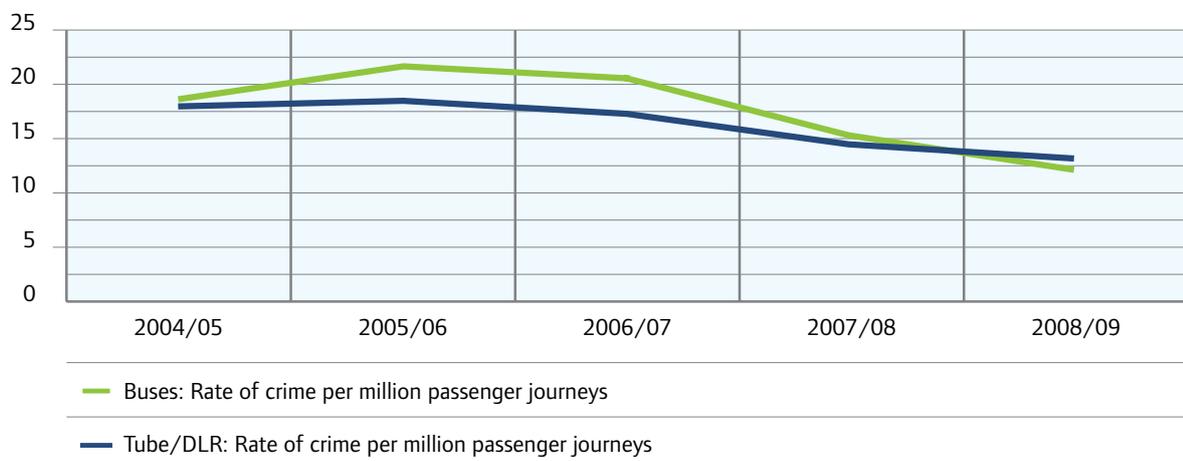
### Proposal 73

The Mayor, through TfL, and working with the police, London boroughs and other partners will continue implementing effective enforcement measures, targeted at locations with poor collision records across London’s road network, including new average speed cameras which will be trialled subject to local consultation, for example, on main roads and for enforcing speed in 20mph zones.

## 5.17 Reducing crime, fear of crime and antisocial behaviour

### 5.17.1 Introduction

- 510 This section sets out proposals to reduce crime, antisocial behaviour and make every journey safer. The Mayor, TfL, local authorities, the police and other public bodies share a statutory duty to consider crime and disorder and community safety in the exercise of all their duties.
- 511 The rate of crime on the bus, Underground and DLR networks is falling (Figure 53). There were 12 crimes per million passenger journeys on London’s buses and 13 per million passenger journeys on the Underground and DLR in 2008/09.
- 512 As patterns of crime are likely to vary over the course of this strategy, the proposals are drafted to meet current priorities while offering flexibility to respond to future challenges. Activity in this area will be informed by robust evidence based on comprehensive intelligence and analysis. Progress will be rigorously assessed through performance management.
- 513 As well as combating crime and antisocial behaviour, these proposals aim to help people feel safer when walking, cycling, or using PHVs. Reducing crime and the fear of crime has direct economic and social benefits, can improve people’s quality of life, mental health and wellbeing and encourages walking, cycling and public transport use.

**Figure 53:** Crime rates on Tube/DLR and buses since 2004/05

### 5.17.2 Developing successful partnerships to deliver a safer transport system

<sup>514</sup> Partnership working is fundamental to achieving the vision of a transport system that is safe and feels safe, where people travel and staff work confidently without fear of crime or unwanted behaviour. The work of a number of agencies including local authorities, the Met, City of London Police, British Transport Police (BTP) and transport operators determine how safe travelling in London feels. Targeted initiatives, for example, on youth crime or violence against women, reflect the need to make travelling as safe as possible.

#### Proposal 74

The Mayor, through TfL, and working with the London boroughs, transport operators, police and local communities, will establish a statutory community safety partnership for transport and travelling in London. These partners will seek to ensure a strategic, effective, integrated and financially sustainable approach to improving safety and security across the transport system. The partnership will develop and implement a rolling three-year community safety strategy to tackle crime, fear of crime and antisocial behaviour. The strategy will set out shared priorities, objectives and targets based on a joint annual strategic assessment.

### 5.17.3 Prioritising resources

- <sup>515</sup> Today, overall levels and rates of crime on the transport system are low. This has been achieved through a combination of investment in visible policing and enforcement; improving design; introducing new technologies; changing environments; and listening to, and informing, staff and the travelling public. However, perception of safety and security is not determined simply by the actual level of crime, but by factors such as the behaviour of other passengers and media reports. Because tackling crime and the fear of crime is complex, it is vital that the resources available to all agencies are used in a targeted and coordinated fashion, based on a common understanding developed from shared intelligence. Improved coordination will also help partners deliver improved value for money.
- <sup>516</sup> Research confirms that people feel safer and reassured if shared public space, such as public transport, displays visible signs of being controlled. Uniformed staff, visible on the transport system, play a key role in helping to further reduce crime and antisocial behaviour and improve perceptions of personal security.

#### Proposal 75

The Mayor, through TfL, and working with the London boroughs, police and other stakeholders, will make best use of available resources, basing decisions on evidence and shared intelligence, to:

- a) Increase the visibility and accessibility of uniformed staff and officers, including special constables, at the right times and locations and provide them with the right powers to maximise their impact on crime, antisocial behaviour and public confidence in travelling in London
- b) Target enforcement activity on priority crimes, antisocial behaviour and behaviour that feeds the fear of crime using a problem-solving approach
- c) Create a small joint intelligence unit between TfL and policing agencies to improve intelligence sharing and the efficiency and effectiveness of resource deployment

### 5.17.4 Neighbourhood policing

- <sup>517</sup> Responsibility for policing the transport system is shared between the Met, BTP and City of London Police. They are responsible for different transport networks, geographical areas and jurisdictions. The Mayor wants policing on the transport system to be seamless, delivered through a neighbourhood policing model focused on transport hubs and interchanges. Each police service – the Met, City of London Police and the three areas of the BTP that cover London – has implemented a neighbourhood policing structure but they are not coterminous. This can make local coordination challenging and sometimes be inefficient. There are some excellent examples of joint working and collaboration between the local transport policing teams, but there

is still room for improvement. Strengthening the current local policing model could be achieved through improved coordination and alignment of local policing areas, collaboration, joint tasking and deployment arrangements at specific locations.

#### Proposal 76

The Mayor, through TfL, and working with the London boroughs, police and other stakeholders will integrate local policing structures on the transport system; improve coordination and deploy resources collectively. Joint tasking of uniformed staff will help maximise their effectiveness.

### 5.17.5 Increasing public confidence in policing and transport safety

<sup>518</sup> Public confidence in the safety of travelling around London is enhanced not just by the visibility of policing and uniformed staff, but knowing how and where to report crime and antisocial behaviour, and knowing that reports will result in action. Currently a number of different channels for reporting exist. Improved coordination between these channels may increase the effectiveness of the response.

#### Proposal 77

The Mayor, through TfL, and working with the London boroughs, police and other stakeholders, will integrate reporting systems for antisocial behaviour, crime and disorder on the transport system.

### 5.17.6 Engagement and education

<sup>519</sup> Inconsiderate and antisocial behaviour can have a significant impact on people's perceptions of safety and on their journey experiences. Such behaviour can create a sense of unease for staff and other passengers and increase fear of crime. The Mayor is committed to improving behaviour on public transport and bringing about a shift in public opinion about what is acceptable behaviour and what people should expect of others when travelling. To achieve this will require a multi-pronged approach combining elements of enforcement with education and social marketing to persuade people to be more considerate of others when travelling. The current 'Together for London' campaign is an example of the type of initiative that can be pursued to promote positive and considerate behaviour on public transport and the Capital's roads.

<sup>520</sup> Public perceptions of safety and security can be influenced positively by the provision of good quality travel information and an awareness of the safety and security initiatives on the network. Improving the quality and availability of information about travel options and services, such as wayfinding and real time travel information enables individuals to make informed decisions and increases their confidence to travel. Improving signage for pedestrian routes across London will not only encourage walking, but will help pedestrians to feel reassured when making these journeys. Proposals to improve the pedestrian environment are contained within sections 5.14 and 5.18.

### Proposal 78

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce a package of measures including marketing, education and engagement activities to help passengers make informed, safer travel choices, and raise awareness of the effect of inconsiderate and antisocial behaviour on others.

### Proposal 79

The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will seek to ensure that:

- a) Safety and security considerations are incorporated into the planning and design of transport facilities
- b) Existing transport infrastructure, including pedestrian routes and cycle parking facilities, are kept in a good state of repair and have adequate lighting, signage, clear lines of vision and CCTV coverage where appropriate

## 5.17.7 Designing out crime

<sup>521</sup> Ensuring that the transport system and the wider public realm is kept in a good state of repair and designed to minimise opportunities for crime and disorder is a key priority and statutory duty for the Mayor. TfL, local authorities, the police and transport operators will work with the community to implement affordable, high quality design and instigate environmental improvements that improve safety, security and the ambience on the transport system from door-to-door.

## 5.17.8 Using technology efficiently and effectively

<sup>522</sup> Technology has an important role to play in reducing opportunities for crime and antisocial behaviour and improving confidence to travel. Passenger surveys have identified that CCTV, improved lighting, Help points and availability of service information enhance safety and security on the transport system. TfL has made significant investments in CCTV across the network and there is now an extensive system on LU, DLR, London Overground and the bus and road networks. CCTV can reassure the public and act as a deterrent to criminals. It can be a valuable tool in apprehending perpetrators of crime on the network and providing evidence to secure convictions.

**Proposal 80**

The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will exploit the opportunities provided by new technology to prevent crime and disorder.

**5.17.9 Safer travel at night**

<sup>523</sup> London is a 24-hour city where people travel throughout the night. Research shows that fear of crime and antisocial behaviour is heightened when travelling after dark, particularly for women and older people. In some areas, travel choices late at night are limited, so people may be forced to choose more risky options, such

as walking unknown routes or using illegal cabs. Measures to improve the safety of taxis, PHVs and to combat illegal cabs are proposed in section 5.5 (Taxis, private hire, coaches and community transport).

**Proposal 81**

The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will seek to:

- a) Improve the safety of night-time public transport services
- b) Improve the safety of cabs
- c) Provide better information about, and access to, safer travel options





### 5.17.10 Responding to the threat of terrorism

- <sup>524</sup> London's position as a world city makes it a high profile target for terrorist groups. Much work has been undertaken in response to the lessons learned from the July 2005 terror attacks with the aim of strengthening London's resilience to the threat of terrorism. A range of interventions have been made including long-term investment in infrastructure, improved operational procedures, staffing levels and policing initiatives that will help to safeguard the transport system from potential attacks. The interventions have been carefully balanced against the needs of passengers who use the system to go about their daily lives.
- <sup>525</sup> The preparedness and vigilance of the police, other emergency services and transport staff

are essential to reducing opportunities for terrorists to attack the transport system. The implementation of successful counter-terrorism plans will also contribute to London's successful hosting of the 2012 Games. Joint security arrangements and emergency response plans between TfL, the police and emergency services are in place to deter or respond to potential attacks. Plans are reviewed and tested regularly.

#### Proposal 82

The Mayor, through TfL, and working with the London boroughs, police and other emergency services and stakeholders, will seek to reduce the likelihood and impact of potential terrorist attacks on the transport system.

# Proposals to improve London's environment

## 5.18 'Better streets'

### 5.18.1 Introduction

<sup>526</sup> The Mayor has set out his ambition to revitalise London's public space in his manifesto 'London's Great Outdoors'. Public spaces help to define a city and a well designed built environment – encompassing the historic and new – can bring communities and people together. They can also encourage physical activity and recreation, restore a sense of pride in an area and attract businesses and jobs.

<sup>527</sup> The transport system – in particular station buildings and forecourts, streets and other pedestrian thoroughfares including squares and piazzas – form a key element of London's urban realm and therefore play an important role in meeting the Mayor's ambition. Achieving bold improvements to such buildings and spaces is therefore one of his priorities.

<sup>528</sup> London's Great Outdoors was accompanied by 'Better Streets', a practical guide intended to make the vision for great spaces a reality. It sets out how 'better streets' can be created and proposes a series of actions to deliver them. The underlying principles include finding a new

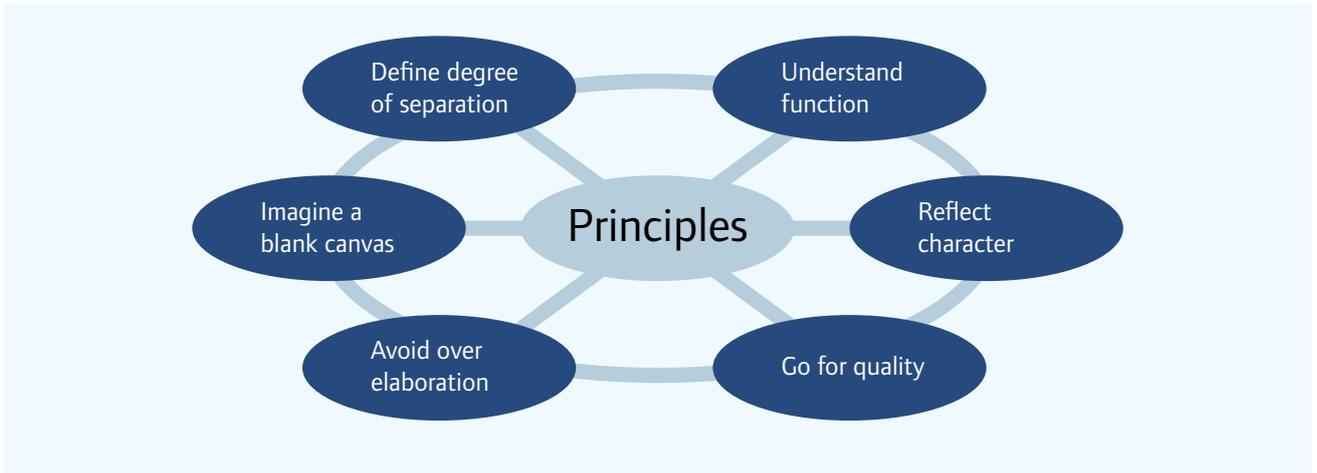
working balance between the different users of London's streets and spaces, distinguishing our streets with good quality sustainable materials with high levels of craftsmanship, and reflecting local character. This approach applies to all streets and spaces rather than just flagship schemes. Improving the streetscape effectively will require coordination and integration with other public bodies to create imaginative and liveable environments for everyone.

### 5.18.2 The principles and stages of creating 'better streets'

<sup>529</sup> The enjoyment of the built environment and setting of the historic environment can be curtailed by unnecessary signs and guardrailing that restrict pedestrian movement. Consolidating remaining street features helps, while major rethinking of the function of streets can have dramatic effects. Figure 54 shows six principles for 'better streets' and Figure 55 the five stages to improve them.

<sup>530</sup> Because 'better streets' must be sensitive to location and context, the key to their successful creation is found less in highway design manuals than in the imaginative application of certain principles to the design of the urban realm.

**Figure 54:** Six principles for 'better streets'



Major public space projects will transform neighbourhoods. However, in most cases, street design should not draw attention to itself.

It should be based on simple and robust principles which reflect the characteristics of London and its neighbourhoods.

**Figure 55:** Five stages to improve streets



Public spaces are part of what helps to define a city. Well-designed public spaces have many benefits. There are actions to improve public space that can be carried out quickly and

achieve substantial improvements in the short term, while others may require consent and longer design and procurement processes. It is possible to work in five layered stages.

- 531 There is no one design or template of 'better streets' that can be applied to existing streets. Each location and context is unique; streets will fulfil different purposes, have different vehicle and pedestrian flows and will have their own character. Over-elaborate design is rarely impressive over the longer term. Simplicity of design, ensuring every feature is carefully justified and where care is taken to minimise the clutter of lighting, signage and materials, creates the best streets. The quality of materials is important and must allow for the street to reflect the character of the surrounding buildings and spaces.
- 532 There are several layers of intervention that can improve London's streets (see Figures 54 and 55). There are 'quick wins' that can achieve substantial improvements in the short term, while others may require longer design and implementation processes. Through incremental stages, streets can be improved to different extents. The simplest starting point is tidying up the existing streetscape and decluttering the street, for example, removing unnecessary road markings, signs, guardrailing and bollards. Further steps seek to merge functions, for example, moving a road sign to an existing lighting column rather than it having its own pole, and rethinking traffic management options such as reducing carriageway width and providing more generous pavements for pedestrians. The final stage is where the whole street is recreated, rethinking the road space and how road users interact in order to provide a 'balanced street'.

- 533 In designing such spaces across London, the needs of all users and, in particular, those with reduced mobility, visual impairment and deaf people should be taken into account. Equally, the creation of such spaces should give due consideration to the local historic and cultural context, being aware of the physical streetscape and environment within which such a space is created.

### 5.18.3 Application of 'better streets' principles to town centres

- 534 For town centres, the package of possible solutions could include improved facilities for pedestrians, cycling, essential deliveries and 'better streets'. Regeneration benefits may be realised too. Improvements need to be considered on a location by location basis and solutions that are appropriate to the local context.

#### Proposal 83

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will use the principles of 'better streets' to seek to improve town centres, in particular: removing clutter and improving the layout and design of streets; enhancing and protecting the built and historic environment; increasing the permeability of streets; and creating clear and easily understandable routes and spaces to make it easier for cyclists, pedestrians and disabled people to get about.

### 5.18.4 Application of the principles to create 'better streets'

- 535 Designing streets primarily for motor vehicles has a detrimental effect on the ability of pedestrians to move, the setting of the historic environment and the enjoyment of the street scene. Making streets attractive for cycling and reorganising them by removing gyratories and one-way streets can improve the urban environment.
- 536 Schemes removing the dominance of motor vehicles in streets especially where there are heavy pedestrian flows are sometimes termed 'shared space' schemes and vary considerably. A common element is the changed way vehicles and pedestrians interact. A balanced street is one that has minimal clutter, uses good quality materials and encourages a degree of negotiation between road users. There are few if any traffic lights with formal crossings understated. Each improvement must be designed in the local context, be consulted on (including with blind and visually impaired groups) and be carefully monitored.

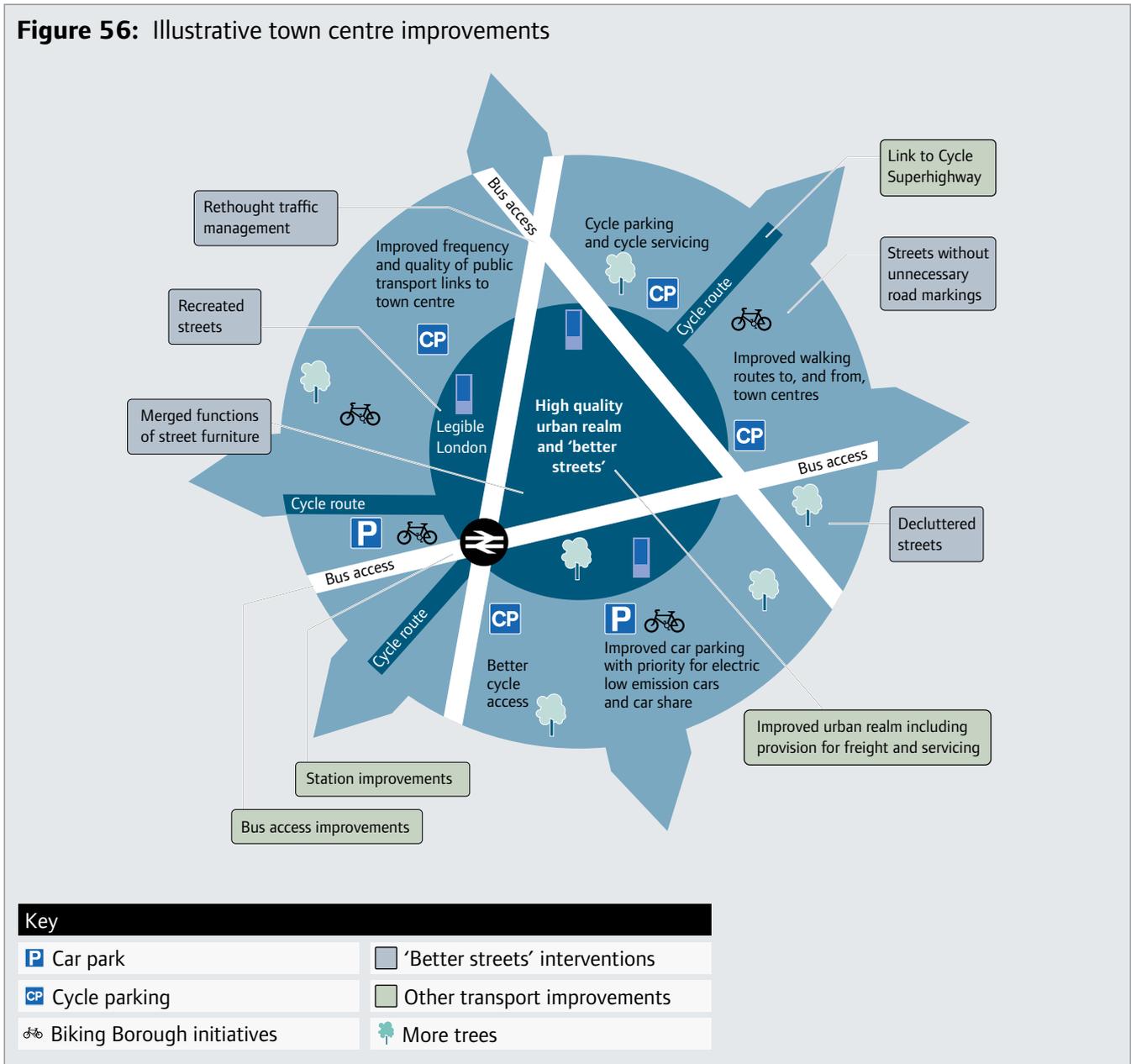
#### Proposal 84

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce accessible for all, 'better streets' initiatives. Consideration will be given to trialling the removal of traffic signals where safe and appropriate.

### 5.18.5 Making the most of infrastructure investment to improve streets and town centres

- 537 With good design input and, where appropriate, local consultation, there are opportunities to improve the built environment when installing new transport infrastructure. This can range from small scale footway improvements when installing bus stops and street lighting, to comprehensive urban realm, pedestrian and cycle schemes associated with railway station schemes.
- 538 Each town centre is unique and each fulfils distinct commercial, educational, leisure and increasingly, residential functions for its catchment area which generate demand for passenger and freight transport. In addition to urban realm improvement, a package of further measures can reduce the environmental and social impacts of such demand and improve the amenity and quality of the town centre.
- 539 Pedestrians can benefit from improved walking routes to town centres, cyclists can take advantage of improved parking, cycle superhighways and local cycle hire schemes. Public transport access can be improved with new facilities or service enhancements. Parking arrangements for low or zero emission cars could also help encourage more environmentally friendly town centre access for those unable to travel by public transport, foot or bicycle. Park and ride schemes may also be suitable, in some circumstances, at some town centres to further reduce the number of vehicles entering the area. Figure 56 illustrates these improvements.

**Figure 56:** Illustrative town centre improvements



540 Proposals in smarter transport of freight and services (section 5.24.3) and parking and loading (5.26) will help ensure appropriate freight access arrangements are in place so local businesses are able to get the goods and services they need without adversely affecting other road users. DSPs could help ensure deliveries take place at the most appropriate time, with well-trained staff using environmentally friendly vehicles, optimising the use of loading facilities.

**Proposal 85**

The Mayor, through TfL and the LDA, and working with the London boroughs, Network Rail and other stakeholders, will seek to implement integrated and complementary improvements to town centres, streets and pedestrian and cycling routes directly adjacent to where major public transport investment projects are being delivered, using sustainable materials.

## Case study

### The Cut, Southbank

The Cut, spanning Southwark and Lambeth, is now a lively ‘better balanced’ street which includes housing, shops, restaurants, both the Old and Young Vic theatres and a college. Previously dominated by traffic, it has undergone a transformation. The project was a successful collaboration between the Cross River Partnership, TfL, the boroughs, the local community and business groups who have delivered a ‘better balanced’ shared space street. The Cut features:

- Improved pedestrian access by providing widened footways and raised tables, redesigned carriageway and junctions
- Improved quality of the shared urban realm, with quality materials (York stone), rationalised elegant street furniture, demarcated outdoor dining and new cycle stands
- Improved sense of wellbeing and personal safety of people using the street, with the introduction of better lighting levels and a strict time-restricted waste management system, new trees and solar-powered parking meters
- Improved trading environment for local businesses – pedestrian surveys show that evening and weekend footfall on The Cut has increased by more than 35 per cent which has greatly enlivened the area and benefited local businesses

The transformation has also encouraged the use of more sustainable means of transport, with average traffic speeds dropping from 29mph to 17.4mph and lower vehicles numbers, creating a more pleasant and safer environment for pedestrians and cyclists.



## 5.19 Improving noise impacts

### 5.19.1 Introduction

- <sup>541</sup> London's transport system delivers significant economic, social and environmental benefits to the city. However, it can have negative impacts on the local environment. Ambient noise from transport in London is higher than elsewhere in the country and this can influence an individual's health and wellbeing.
- <sup>542</sup> A fifth of Londoners are annoyed or disturbed in their homes by noise compared with one in 10 nationally, with buses and lorries creating the most disturbing noise. Noise can interfere with sleep, speech and concentration, and there is increasing concern at the potential physical health effects. Minimising transport ambient noise and improving perceptions of noise levels therefore has benefits for the quality of life of Londoners.
- <sup>543</sup> The strategy will assist in the management of noise in the context of sustainable development. The Mayor is committed to reducing ambient noise from transport. He controls the GLA Group's vehicles and transport system and wants to influence other transport sources of ambient noise, for example, aircraft.

### 5.19.2 Reducing the noise impacts of roads and public transport

- <sup>544</sup> Reducing ambient noise via engineering and design solutions is integral to transport operation. TfL monitors noise pollution by the number of noise-related complaints received, the proportion of the TLRN covered by lower noise road surfacing and by the proportion of buses in the fleet at least two decibels (2dB(A)) quieter than the legal limit. For the first time in three years, the number of complaints received increased by 16 per cent during 2007/08. This can be attributed to major construction work on the East London line and complaints associated with announcements from Tube PA systems. TfL is addressing these issues by using Best Practical Means in construction works, amending PA systems, the Tube's rail maintenance and track replacement works programme, and through considering the noise impact of transport projects.
- <sup>545</sup> There is further scope to take action where people are significantly exposed and affected by transport noise. Under the Environmental Noise (England) Regulations 2006 (as amended), noise 'hot spots' have been identified where the relevant highway and rail authorities are required to assess the scope and need for additional noise management in the context of sustainable development. For example, noise barriers, though expensive, may be a solution in some areas and regulations governing the provision of sound insulation may be reviewed.

### Proposal 86

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will target the provision of noise reduction measures and noise mitigation measures in areas significantly affected by transport noise, to improve perceptions of noise and reduce the impacts of noise on dwellings and people, by:

- a) Timely and effective rail maintenance and replacement works
- b) Working to the TfL Health Safety and Environment policy
- c) Ensuring all new transport projects consider noise mitigation
- d) Introducing road maintenance programmes to replace road surfaces with low noise surfacing where possible
- e) Improving traffic management and signal control techniques
- f) Introducing speed enforcement measures which do not encourage noisy, rapid acceleration and deceleration
- g) Introducing quieter buses
- h) Procuring new, quieter public sector service vehicles, potentially through joint procurement to achieve efficiency

- 546 Many of the strategy's proposals to introduce lower carbon/lower air pollutant vehicles will have noise reduction benefits. The Mayor's Electric Vehicle Delivery Plan is one part of his strategy to decarbonise transport and improve

air quality in London. Another benefit of stimulating the market for EVs is the very low noise emission from these vehicles.

- 547 Although engineering and design solutions and regulation and enforcement can go a long way to reducing ambient noise, changing people's behaviour can also make a big difference.
- 548 Better freight management is being pursued by TfL, working with freight operators, in its London Freight Plan, for example, through DSPs. However, more can be achieved by introducing additional noise reduction measures through the supply chain. London Councils run the London Lorry Control Scheme which restricts the movements of HGVs in the city at night and weekends. It aims to limit noise impacts in residential areas. FORS members, for instance, could demonstrate quiet delivery practices using the 'silent approach' method, supported at selected sites by the Noise Abatement Society. Adoption of these practices may improve the efficiency of deliveries and the wider road network by enabling out-of-hours servicing.

### Proposal 87

The Mayor, through TfL, and working with London Councils, London boroughs, freight operators, and other stakeholders, will explore opportunities to use the London Lorry Control Scheme to encourage companies to operate quieter vehicles as well as to promote improvements in air quality, and reduce CO<sub>2</sub> emissions.

549 Wider education initiatives can encourage people to employ driving styles that reduce emissions and reduce noise. TfL has carried out a campaign for eco-driving to reduce CO<sub>2</sub> emissions, and this will be extended to include noise.

#### Proposal 88

The Mayor, through TfL, and working with the London boroughs, motorist organisations, freight operators and other stakeholders will encourage quieter driving through publicity campaigns aimed at private drivers and motorcyclists, and training programmes for professional drivers.

### 5.19.3 Aircraft noise

550 Aircraft noise is a particularly difficult issue for London as Heathrow is located on its western boundary. With prevailing winds, most flights approach over the city. An independent study of public attitudes to aircraft noise for the DfT concluded the public is more annoyed by aircraft noise now than in 1985 when the last major study was carried out. As highlighted elsewhere in the strategy, and the draft replacement London Plan policy 6.6b, the Mayor is opposed to further expansion at Heathrow due to its adverse noise and air quality impacts.

551 The Mayor is also keen to explore with the Government and aviation stakeholders, such as the national air traffic control service, ways of varying flight paths to reduce aircraft noise impacts, such as the preferred direction of approach for night landings. There is European Commission legislation concerning the noise performance of aircraft.

#### Proposal 89

The Mayor, through TfL, and working with the DfT, the national air traffic control service and the European Commission, will:

- a) Encourage the development and use of quieter aircraft
- b) Seek to coordinate flight paths so they minimise their impact on London

## 5.20 Enhancing transport's contribution to the natural environment

- <sup>552</sup> London's rail, road, cycling, walking, river and canal networks provide essential habitats for wildlife across the city. Approximately two-thirds of London's land area is occupied by green spaces and water. LU alone manages about 10 per cent of the wildlife habitats in the city – more than 4,000 hectares across London and parts of the surrounding counties.
- <sup>553</sup> Due to its linear nature, the transport system provides a multitude of green corridors along which plants and animals can thrive and, as much of this property is inaccessible to the public, it provides a safe and undisturbed refuge for wildlife. Transport buildings can also play a role, for example, with green station roofs.
- <sup>554</sup> To illustrate the importance of transport land in supporting biodiversity, around 550 plant, 42 bird, 14 mammalian, 538 invertebrate, three reptile and three amphibian species have been recorded on TfL's land. This includes

deer, water voles, pipistrelle bats and great crested newts.

- <sup>555</sup> London's transport operators have a duty to promote biodiversity and support the UK and Mayor's biodiversity strategies. LU, Network Rail and the Highways Agency all have Biodiversity Action Plans and the boroughs have local biodiversity protection and enhancement policies in their Local Development Frameworks. Proposal 113 in this strategy describes how there will be an additional 10,000 street trees by 2012, with the aim of additional two million trees by 2025.

### Proposal 90

The Mayor, through TfL, and working with the DfT, Highways Agency, London boroughs, Network Rail, and other stakeholders, will make the most of open spaces across the transport system (for example, green spaces alongside railway lines, roads, rivers, canals, cycling and walking routes, green grids and on roof tops) to improve the quality and diversity of London's natural environment.



## 5.21 Improving air quality

### 5.21.1 Introduction

<sup>556</sup> Despite improvements in recent years, transport in London remains a significant source of air pollutant emissions contributing to the overall concentrations of pollutants in the air and adversely affecting the health of Londoners.

<sup>557</sup> There are two main air pollutant emissions from ground-based transport:

- Oxides of nitrogen (NO<sub>x</sub>) – consisting of both NO and NO<sub>2</sub>
- Particulate matter (PM) of varying size fractions, notably PM<sub>10</sub> and PM<sub>2.5</sub>

<sup>558</sup> The extent to which transport affects air quality can clearly be seen from Figure 57 and 58 which show measured NO<sub>2</sub> and PM<sub>10</sub> concentrations. The highest levels are found around busy roads and diesel-operated rail lines, with a clear concentration around Heathrow.

### 5.21.2 European Union and national air quality objectives

<sup>559</sup> The Mayor has a legal obligation to put forward policies and proposals for the implementation of the national air quality strategy and to achieve in Greater London the air quality standards and objectives prescribed in regulations made under the Environment Act 1995. These regulations transpose into UK law the European Union directive on air quality establishing limit values for PM<sub>10</sub> and NO<sub>2</sub>.

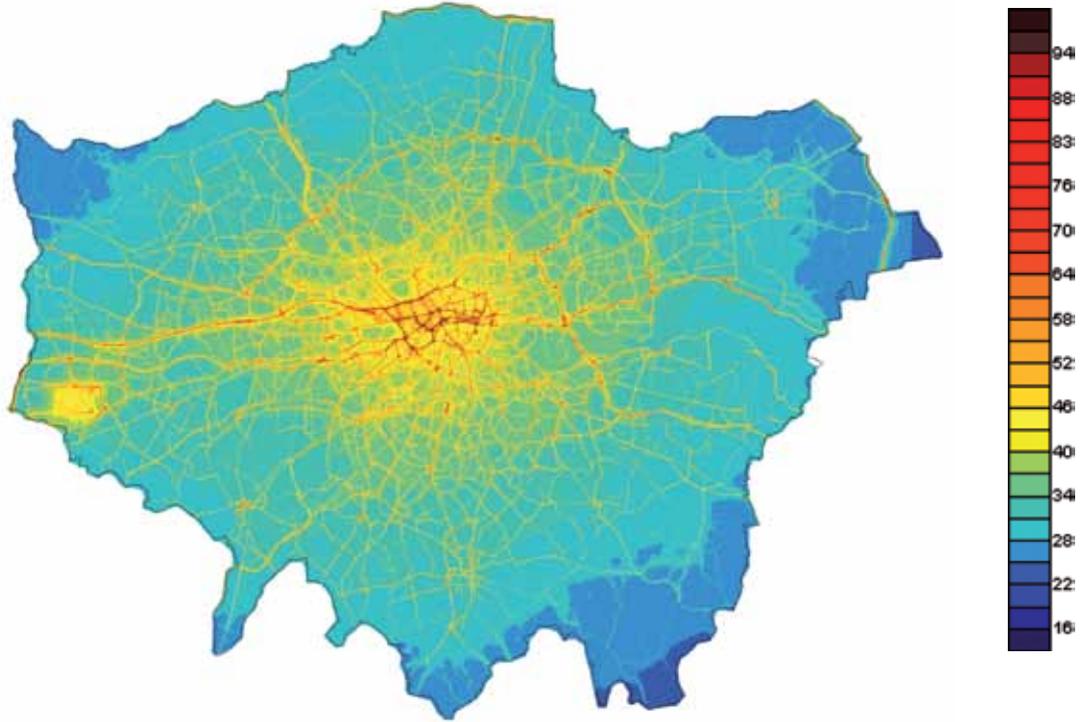
<sup>560</sup> For PM<sub>10</sub> a small number of locations focused in central London are currently exceeding the PM<sub>10</sub> daily limit value (which was supposed to be met by 2005). For NO<sub>2</sub> wider areas of Greater London are exceeding the annual mean limit value, which was supposed to be met by 2010. The Government is in the process of applying for an extension to the deadlines for meeting these limit values to 2011 for PM<sub>10</sub> and 2015 for NO<sub>2</sub>. The directive has also established limit values for PM<sub>2.5</sub> and these limits are currently being transposed into UK law.

<sup>561</sup> Modelling suggests that without further action London will be at risk of exceeding the PM<sub>10</sub> daily limit value in a small number of central London locations near major roads in 2011. In 2015, the NO<sub>2</sub> limit values will be exceeded across Greater London, particularly around Heathrow, in central London and near major roads. Road traffic is a significant source of air pollutant emissions in London.

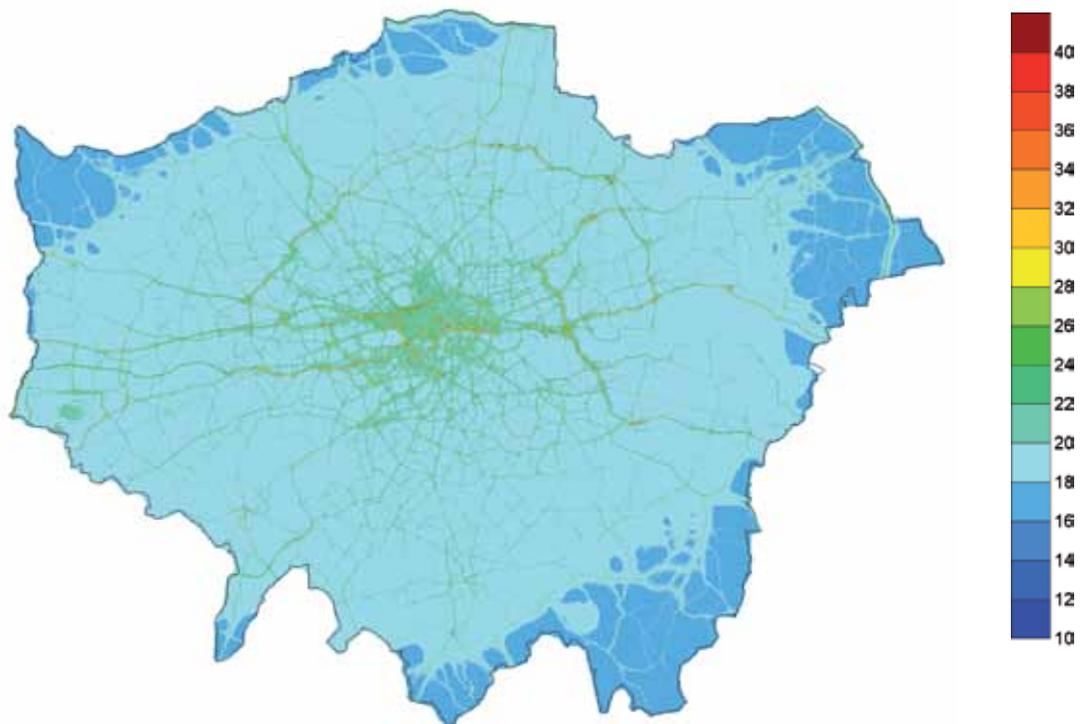
<sup>562</sup> Air pollutant emissions do not respect London's administrative boundaries. Around 40 per cent of London's PM<sub>10</sub> and 20 per cent of its NO<sub>2</sub> concentrations are caused by emissions outside London. Consequently, some of the most effective policies to address air quality need to be implemented on a national basis, for example: changes to vehicle excise duty, further national scrappage schemes, certification of NO<sub>x</sub> abatement equipment and establishing a framework for promoting ultra low emission vehicles.

<sup>563</sup> Nevertheless, London must play its part in helping the UK meet the EU limit values

**Figure 57:** NO<sub>2</sub> annual mean concentrations (µg/m<sup>3</sup>), 2008



**Figure 58:** PM<sub>10</sub> annual mean concentrations (µg/m<sup>3</sup>), 2008



and securing improvements in public health. Consequently, the air quality proposals in this chapter have been developed to help achieve the biggest improvement in air quality possible. In doing this, the Mayor is committed to demonstrating value for money for London's taxpayers and avoiding any undue burdens on London's economy, particularly its small businesses. Going forward, it will be necessary to adopt a proportionate approach which will secure improvements using incentives first. Where disincentives are required these will be targeted and cost-effective.

<sup>564</sup> While developing the policies in the strategy, particular attention has been paid to maximising co-benefits to help achieve other Mayoral objectives including those for climate change and noise. Improving air quality also requires capturing the benefits of other proposals found elsewhere in this strategy, for example, modal shift.

### 5.21.3 Behavioural changes

<sup>565</sup> Promoting behavioural change is an effective and relatively quick way of reducing vehicle emissions by providing Londoners with the necessary information to make smarter choices. Namely, more walking and cycling for short journeys and greater use of public transport where possible. When cars are needed, Londoners should be encouraged to adopt the most sustainable patterns of car ownership (for example, through membership of car clubs, car sharing, purchase of fuel efficient vehicles and use of smarter driving techniques).

### Proposal 91

The Mayor, through TfL and working with London boroughs, transport operators and other stakeholders, will encourage behavioural changes to reduce vehicle emissions, by:

- a) Promoting walking and cycling, the use of car clubs, car sharing, the use of fuel efficient vehicles and smarter driving techniques and raising awareness about air quality
- b) Implementing eco-driving training for all GLA/functional body, taxi and bus drivers
- c) The Mayor will also reduce emissions from the wider fleet by supporting eco-driving training for members of the public and freight drivers (through the existing FORS scheme) and tackling emissions caused by unnecessary idling
- d) Providing better information about emissions from private vehicles and the public transport fleet

### 5.21.4 Reducing emissions from public transport and the public sector fleet

<sup>566</sup> By reducing emissions from rail, buses, taxis, PHVs, the GLA and boroughs' own fleets, overall levels of emissions, particularly of PM and NOx in central London, can be reduced. To do this it will be necessary to electrify London's remaining diesel railways, introduce new requirements for buses, taxis, PHVs and passenger boats and to promote new technologies such as low emission taxis which will help achieve long-term improvements in air quality.

### Proposal 92

The Mayor, through TfL, and working with the London boroughs, DfT, Network Rail, train operating companies and other stakeholders, will introduce measures to reduce emissions, including:

- a) Cleaner buses
- b) Cleaner taxis and PHVs
- c) Further rail electrification, including the recently announced Great Western Main Line electrification scheme and the Barking to Gospel Oak line
- d) Cleaner passenger boats and other river vessels, which use more environmentally friendly fuels
- e) Encouraging the introduction and use of cleaner public service and local authority vehicles

### Proposal 93

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will take further action to reduce private vehicle emissions, by:

- a) Supporting the uptake of low emission vehicles, such as electric cars and vans
- b) Incentivising of low emission vehicles through pressing for changes to vehicle excise duty and parking regulations
- c) Working with the European Commission, the Government and vehicle manufacturers, the Mayor will encourage the development of new technologies which reduce vehicles emissions, such as better tyres which wear less, more sophisticated abatement technology and automatic hybrid-switching

## 5.21.5 Reducing emissions from private vehicles

<sup>567</sup> Tackling emissions from the London transport system and public sector fleets will not be enough by itself to meet the EU limit values, so further action to improve private vehicle emissions will be needed.

## 5.21.6 Tackling poor air quality at priority locations<sup>1</sup>

<sup>568</sup> Some locations have specific air quality problems as a result of the make-up of the vehicle fleet using them, traffic speed and other factors. The situation at these priority locations can be improved by tailored local action. This may include power washing roads and applying dust suppressants, focusing more hybrid buses on routes going through these locations and better enforcement of existing no-idling and no-stopping rules. Further improvements can be achieved by incorporating

<sup>1</sup> TfL has enhanced its understanding of local air quality. Rather than as individual sites (or 'hot spots') these need to be understood in their broader context as part of the road network. For this reason action will be targeted at larger connected corridors which will be known as 'priority locations' – see the Mayor's Air Quality Strategy for more detail

improved air quality measures into planned urban realm improvements and using scheduled refurbishment of the road surface to trial new surfaces. Where possible these measures should also deliver improvements for noise and CO<sub>2</sub> emissions as well as for air quality.

- 569 Any measures undertaken by TfL to improve air quality hot spots would be developed in close partnership with the relevant London boroughs, as these retain their own responsibilities for local air quality as part of the Local Air Quality Management process.

#### Proposal 94

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce targeted local measures at poor air quality priority locations to reduce emissions and improve local air quality.

### 5.21.7 London Low Emission Zone

#### Continuing the London Low Emission Zone

- 570 The Mayor will continue to operate the current LEZ scheme. The implementation of the next phase of the scheme in 2012, introducing a tightening of emission standards (to Euro IV PM) for HGVs, buses and coaches, will deliver further benefits for air quality.

#### London Low Emission Zone extension deferral

- 571 The Mayor has announced his intention to defer the extension of the London LEZ to LGVs and minibuses (previously known as Phase 3), which was due to be introduced in October 2010.

- 572 In the current economic downturn, the potential business costs and impacts for LGV and minibus operators associated with meeting the proposed emission standard (Euro 3 for PM) from 2010 are now more significant than when the LGV and minibuses phase of LEZ was confirmed in 2007. Having regard to the additional pressures facing business at this point in time, and to allow operators more time to comply and thus mitigate some of the potential impacts, the Mayor is proposing to defer the extension of the LEZ to LGVs and minibuses to an appropriate date in 2012. He will ask TfL to make the necessary variation to the Low Emission Zone Scheme Order.

- 573 TfL estimates that extending the LEZ to LGVs and minibuses in 2012 will reduce emissions of PM<sub>10</sub> by around eight tonnes and emissions of NO<sub>x</sub> by around 100 tonnes in 2011 through pre-compliance benefits. These are important in the context of meeting the 2011 EU daily limit value for PM<sub>10</sub>. While delaying the extension of LEZ to LGVs and minibuses will reduce its benefits to some extent, it will allow time for the economic situation to improve for smaller operators to take the necessary action. The Mayor considers that this approach strikes an appropriate balance for London between environmental and economic objectives.

- 574 A range of other measures is being proposed to reduce emissions, but extending the LEZ to LGVs and minibuses is considered an important element of the overall package. It is important that action is taken to ensure the achievement of the EU targets and deliver health benefits

for Londoners. There is a need to reduce road transport emissions from different sources, such as buses, taxis, HGVs, coaches, cars – and also LGVs. The Mayor's Air Quality Strategy sets out the proposed approach in more detail.

The Mayor will work with central Government, who need to play a key role in supporting action in London.

### Developing the London Low Emission Zone

575 This combination of reduced emissions from the public and private fleets, behavioural measures and targeted local measures may still not sufficiently reduce emissions in the Capital, particularly NO<sub>x</sub> emissions, which is a London-wide problem. Therefore, the Mayor will consider – if needed to meet outstanding issues – the tightening of standards beyond 2015, additional zones and/or the inclusion of other vehicles.

### Introducing a NO<sub>x</sub> standard

576 The Mayor proposes introducing a London-wide standard (Euro IV) for NO<sub>x</sub> emissions from 2015 for HGVs, buses and coaches in order to reduce these emissions and deliver benefits across London. This will include areas where emissions are particularly high in central, Inner and parts of Outer London such as around Heathrow. However, this will be subject to central Government delivering a national certification and testing scheme for NO<sub>x</sub> abatement equipment. The LEZ currently does not require operators to purchase newer vehicles to become compliant. An option is to fit a certified particulate trap to the vehicle. Similar compliance options must be available

for the LEZ to be amended to include an emissions standard for NO<sub>x</sub>.

### Consulting on changes

577 TfL will need to consult on a Variation Order to defer extending the LEZ to LGVs and minibuses to 2012. A Variation Order and public consultation will also be needed to include a standard for NO<sub>x</sub> emissions in the LEZ for HGVs, buses and coaches.

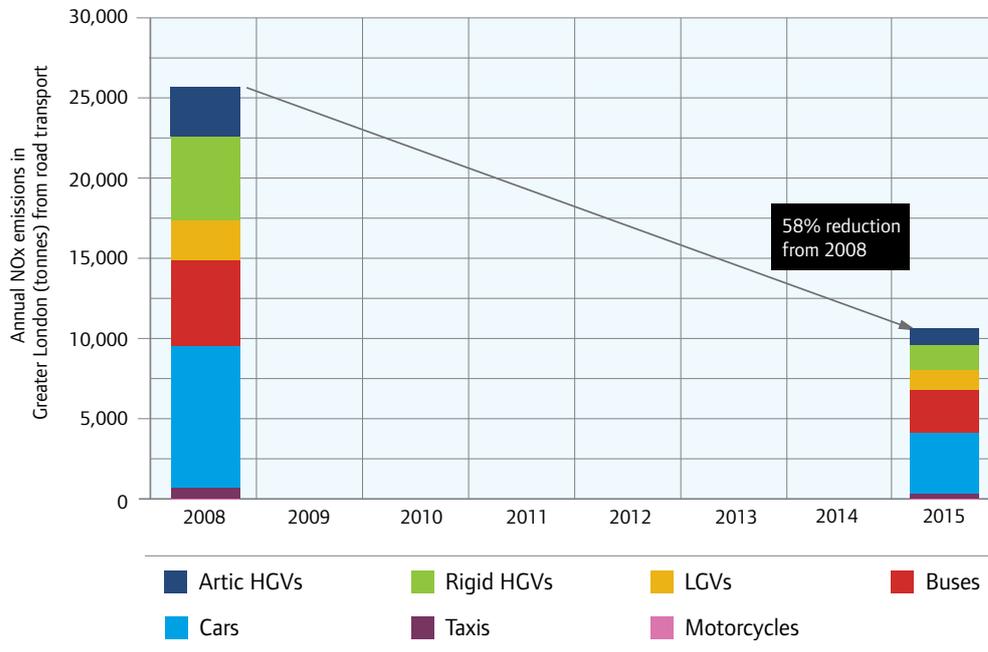
578 TfL would also need to consult widely on other proposals to introduce further changes to the current LEZ. To minimise costs to business, the Mayor would announce any further proposed alterations to the existing LEZ as early as possible, to maximise compliance time.

### Local low emission zones

579 Given the localised nature of some aspects of the air quality challenge, it may also be appropriate for London boroughs to explore establishing their own LEZs in response to local circumstances. Where appropriate and in conformity with the MTS and consistent with other relevant Mayoral strategies, the Mayor may consider supporting these through the LIP process and other measures. Such schemes may also deliver benefits in relation to reduced CO<sub>2</sub> emissions and noise.

580 To ensure London-wide inter-operability and to minimise compliance costs the Mayor would work with the boroughs to establish guidelines for introducing a local LEZ should there be interest in doing so.

**Figure 59:** London NO<sub>x</sub> emissions 2008 to 2015



**Proposal 95**

The Mayor, through TfL, will continue to operate the existing London Low Emission Zone. The Mayor will consider further tightening of the standards of the current LEZ, as well as the introduction of further emissions control schemes to encourage the use of cleaner vehicles in London:

- a) The current LEZ scheme will continue to operate to reduce emissions from the heaviest vehicles, and tighter standards will be introduced in 2012 as planned
- b) The Mayor will defer extending the LEZ to LGVs and minibuses (which was due to commence in 2010) to 2012
- c) In 2015, the Mayor will, subject to technical feasibility, introduce an emissions standard for NO<sub>x</sub> (Euro IV) into the LEZ for HGVs, buses and coaches
- d) If necessary, the Mayor will consider introducing minimum requirements for other vehicles or tighter standards in particular locations within London

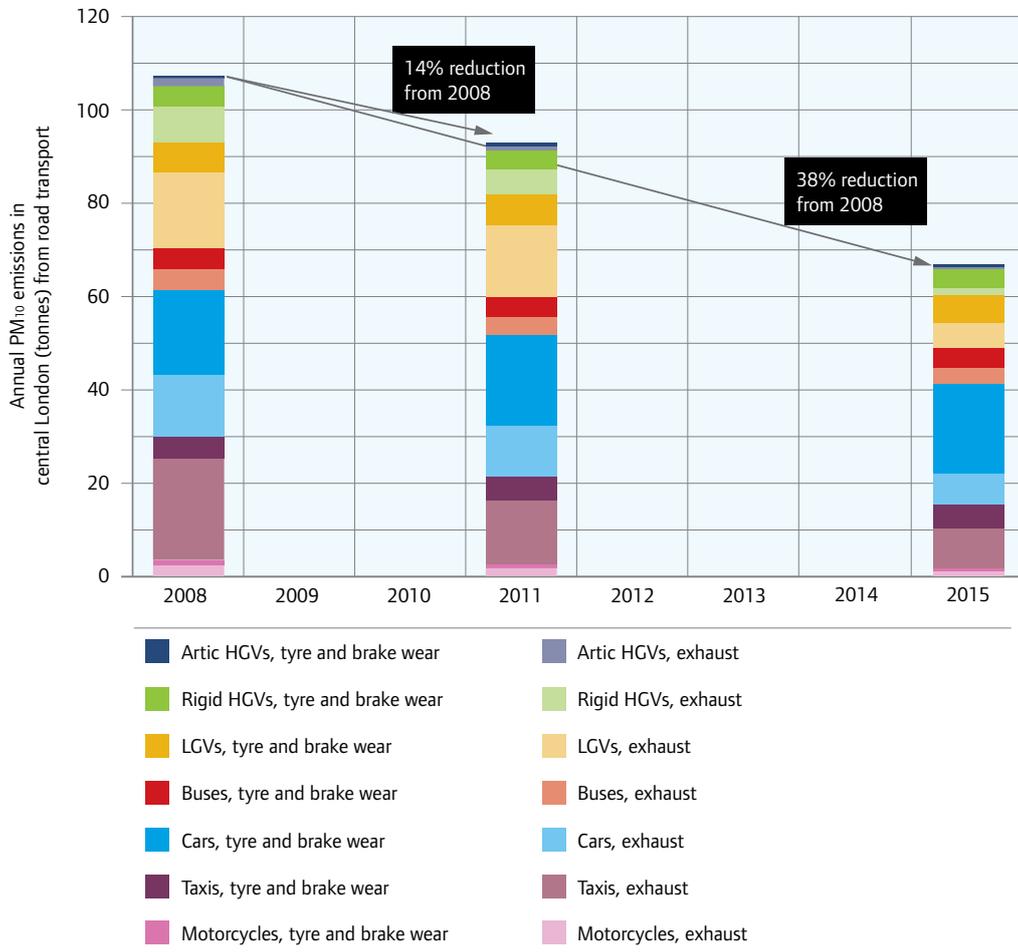
e) The Mayor will work with boroughs that propose to take local action to address air quality through local low emission zones or similar measures

581 Further steps will also be required to reduce emissions from other sources, such as commercial, industrial, construction and domestic sources. The Mayor's Air Quality Strategy considers air pollutant emissions from transport as part of the broader London context. More detailed proposals to address emissions and improve air quality will be included in this strategy.

**5.21.8 Contribution to improved air quality**

582 The Mayor's Transport and Air Quality Strategies will achieve significant reductions in emissions of air pollutants, especially from road transport. Overall, TfL estimates that, along with natural fleet turnover and existing measures, the proposed air quality measures in this and the Air Quality Strategy will deliver

**Figure 60:** Central London PM<sub>10</sub> emissions in 2008, 2011 and 2015



around a 14 per cent reduction in central London road transport PM<sub>10</sub> emissions in 2011, and a 58 per cent reduction in Greater London road transport NO<sub>x</sub> emissions by 2015 (Figures 59 and 60).

(and, where necessary, special measures) should help to ensure that these areas meet the EU limit values.

**NO<sub>2</sub>**

**Particulate matter**

583 The measures laid out in this strategy increase the confidence that London will meet the EU limit values for PM<sub>10</sub> in 2011.

584 While there remain a small number of areas in central London which have been identified as being at risk of exceeding the EU limit values, it is anticipated that targeted local measures

585 NO<sub>2</sub> is a national issue requiring further action from central Government. The Mayor's Air Quality Strategy includes policies for encouragement to be given to central Government and other organisations in developing a package of measure which together with the measures in this strategy will meet NO<sub>2</sub> limit values in London by 2015.



# Proposals to reduce transport's contribution to climate change and improve its resilience

## 5.22 Reducing carbon dioxide emissions

### 5.22.1 Introduction

<sup>586</sup> The Mayor proposes to structure his approach to reducing CO<sub>2</sub> emissions from ground-based transport around three core themes:

- Improved operational efficiency – to minimise unnecessary CO<sub>2</sub> emissions
- Supporting and enabling the development and use of low carbon vehicles, technology and energy – has significant potential to deliver CO<sub>2</sub> reductions. This will require close joint working with stakeholders and appropriate incentivisation
- Carbon efficient mode choice – massive investment is underway in London to improve the attractiveness of low carbon modes such as walking, cycling and public transport and to enable the movement of freight by water and rail

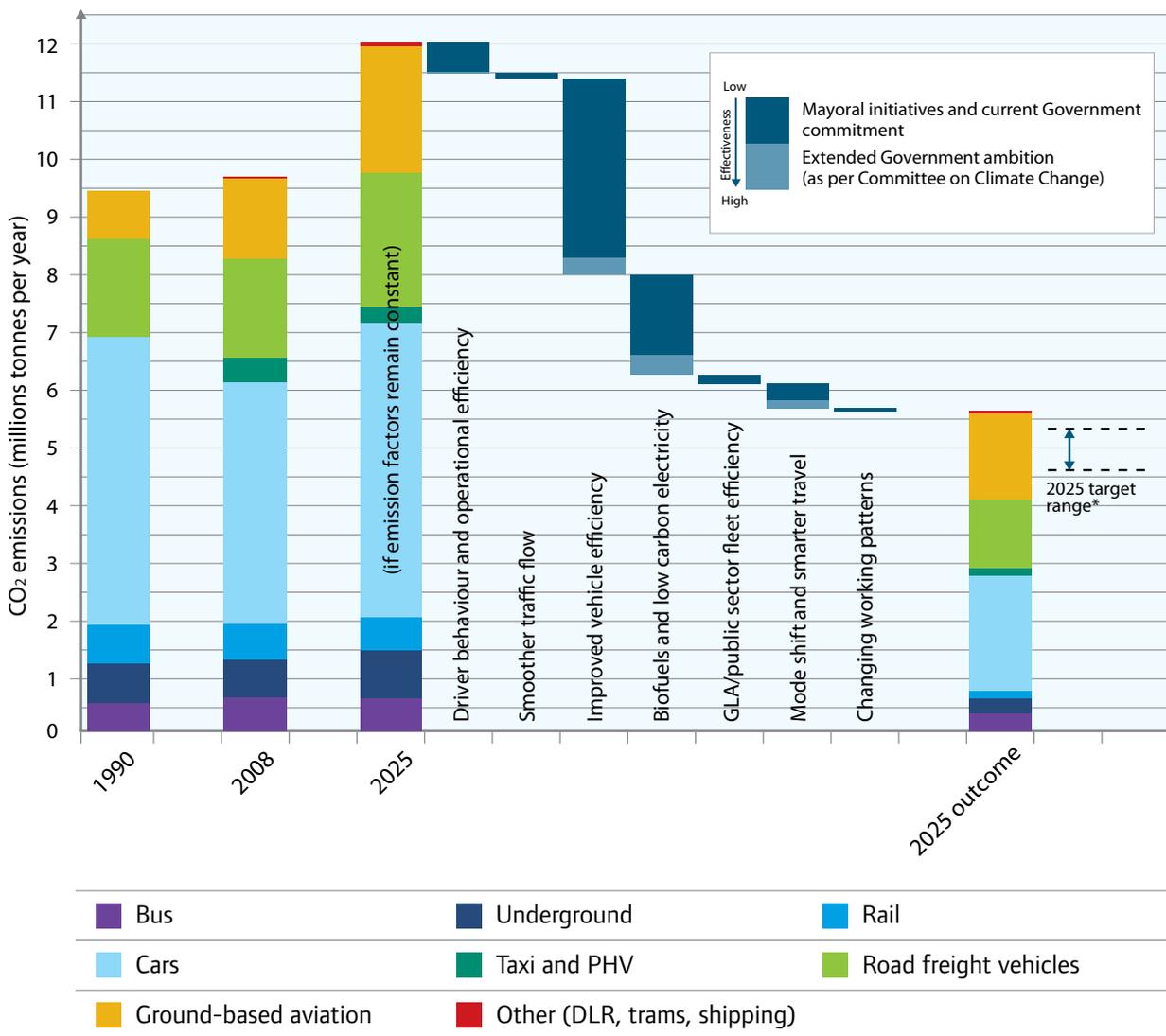
<sup>587</sup> Significant CO<sub>2</sub> savings are required from all three themes for transport to meet its required contribution to the Mayor's target of a 60 per

cent reduction in London's CO<sub>2</sub> by 2025, from a 1990 base. Meeting this target will require significant investment and effort from the Mayor and a number of stakeholders. However, the Mayor recognises that the long-term costs of inaction are far greater than the shorter-term costs of action.

<sup>588</sup> Figure 61 illustrates the potential range of contributions from identified policy areas in reducing transport-related CO<sub>2</sub> emissions. The Mayoral initiatives outlined in this document and the Mayor's CCMES together with the current level of Government ambition are anticipated to result in annual transport-related CO<sub>2</sub> emissions in London in 2025 of around 6.4m tonnes.

<sup>589</sup> If the Government were to adopt the more ambitious approach as called for by the Committee on Climate Change, it is anticipated that annual transport-related CO<sub>2</sub> emissions in London in 2025 would be around 5.6m tonnes. It is anticipated that this higher level of Government ambition, if it were applied across all CO<sub>2</sub> emissions sectors in London, would result in a 57 per cent reduction in London's CO<sub>2</sub> emissions by 2025, compared to a 1990 base.

**Figure 61:** Mid-range estimate of CO<sub>2</sub> reduction impacts of transport policy areas by 2025



\* The contribution required from the transport sector to meet the Mayor's CO<sub>2</sub> emissions target for 2025 is linked to the CO<sub>2</sub> emissions reductions from other sectors. It is anticipated that transport sector CO<sub>2</sub> emissions, in the range indicated on the chart, will be required to meet the Mayor's target of a 60 per cent reduction in London's CO<sub>2</sub> emissions by 2025 compared to 1990

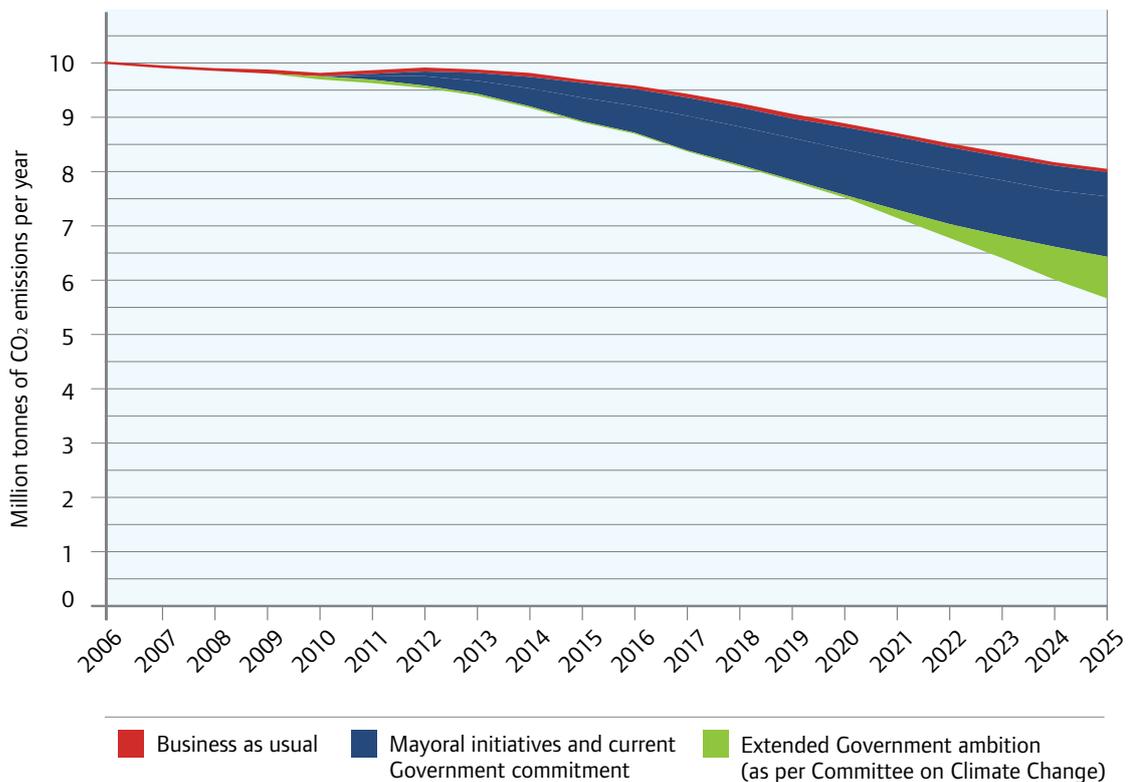
- 590 As illustrated in Figure 61 it is anticipated that transport sector CO<sub>2</sub> emissions in the range of 5.3 to 4.6m tonnes will be required in 2025 to meet the Mayor’s target. A range is given to reflect the level of uncertainty as to the distribution of CO<sub>2</sub> emission reductions across the CCMES emissions sectors of homes, workplaces and transport.
- 591 Figure 62 sets out projected CO<sub>2</sub> emissions reductions that could be achieved through Mayoral and Government transport programmes in London to 2025. The level of

further Government and/or Mayoral action required to meet CO<sub>2</sub> emissions targets will be kept under review as the effectiveness of policies to reduce CO<sub>2</sub> emissions are monitored over the period of the strategy.

### 5.22.2 Carbon efficient travel behaviour

- 592 Awareness of the environmental impact of travel choices, driving style and vehicle maintenance is growing. Levels of awareness and action must increase in order to minimise the transport carbon footprint within the constraints of available technology and infrastructure.

**Figure 62:** Projected transport sector CO<sub>2</sub> emissions to 2025



593 TfL has pioneered the use of smarter travel initiatives to achieve improved CO<sub>2</sub> travel efficiency, including the widespread successful uptake of school and workplace travel plans. School travel plans cover nearly all of London's schools resulting in the proportion of trips to school by car reducing by around six per cent. More than 10 per cent of London's workforce work in locations with travel plans, thereby achieving a 13 per cent reduction in the proportion of car journeys to work at these sites. Smarter travel provides the opportunity to further explore flexible working patterns and remote working to support measures to reduce the need to travel, especially during peak hours. TfL has also run a two-year smarter driving campaign which has been complemented by the nationwide 'Act on CO<sub>2</sub>' campaign, to communicate clear, practical methods to improve fuel efficiency.

#### Proposal 96

The Mayor, through TfL, and working with the London boroughs, transport operators and other stakeholders, will promote behavioural change and smarter travel measures aimed at encouraging more use of lower carbon modes, eco-driving practices, better vehicle maintenance and flexible working patterns to reduce CO<sub>2</sub> emissions.

594 Since 2000, the mode share of public transport and cycling has increased significantly. However, the potential exists to achieve more; the programme of committed investment in public transport, cycling and walking in London, and proposals for further schemes

contained within this strategy are anticipated to lead to a continued increase in the use of low carbon modes, with the joint mode share of public transport, cycling and walking expected to increase by six per cent in the period 2006 to 2031.

595 Figure 63 illustrates typical CO<sub>2</sub> emissions associated with the use of different modes of transport. To complement investment in London's transport system, an integrated approach to transport and land use planning will focus London's growth in locations with good public transport accessibility, walk and cycle accessibility and reduce the need to travel.

#### Proposal 97

The Mayor, through TfL, and working with the London boroughs, transport operators, and other stakeholders, will support, promote and improve sustainable, low CO<sub>2</sub>-emitting transport (including public transport, cycling, walking, and rail and water for freight), and reduce the need to travel through integration of transport and land use planning.

- <sup>596</sup> London is a national leader in the development of car clubs with a rapidly growing membership of around 100,000. The Mayor will support car club expansion and the introduction of ultra low carbon vehicles to their fleets.

#### Proposal 98

The Mayor, through TfL, and working with the London boroughs, car club operators, and other stakeholders, will support expansion of car clubs and encourage their use of ultra low carbon vehicles.

### 5.22.3 Reducing CO<sub>2</sub> emissions from freight delivery

- <sup>597</sup> Existing freight-related initiatives such as DSPs, CLPs, and the FORS as defined in the London Freight Plan encourage improved efficiency and provide a framework for incentivisation and regulation. The Mayor will continue to develop these tools over time to ensure continuing and increasing contributions to improved freight movement efficiency.

#### Proposal 99

The Mayor, through TfL, and working with the London boroughs, road freight operators and other stakeholders, will:

- a) Adopt planning conditions that specify Delivery Service Plans for major developments (by spring 2011)
- b) Aim for 50 per cent of HGVs and vans serving London to be members of FORS by 2016

- c) Encourage, and where appropriate specify, improved freight movement efficiency through, for example, greater consolidation, more off-peak freight movement and greater use of water and rail-based transport
- d) Support freight industry land requirements for locally focused consolidation and/or break-bulk facilities and access to waterways and railways

### 5.22.4 Improving driving techniques on public transport

- <sup>598</sup> It has been demonstrated that driving style can have a significant impact on energy consumption and therefore CO<sub>2</sub> emissions. The Mayor is keen to demonstrate the positive impact driving style can have on reducing CO<sub>2</sub> emissions associated with the public transport fleet.

#### Proposal 100

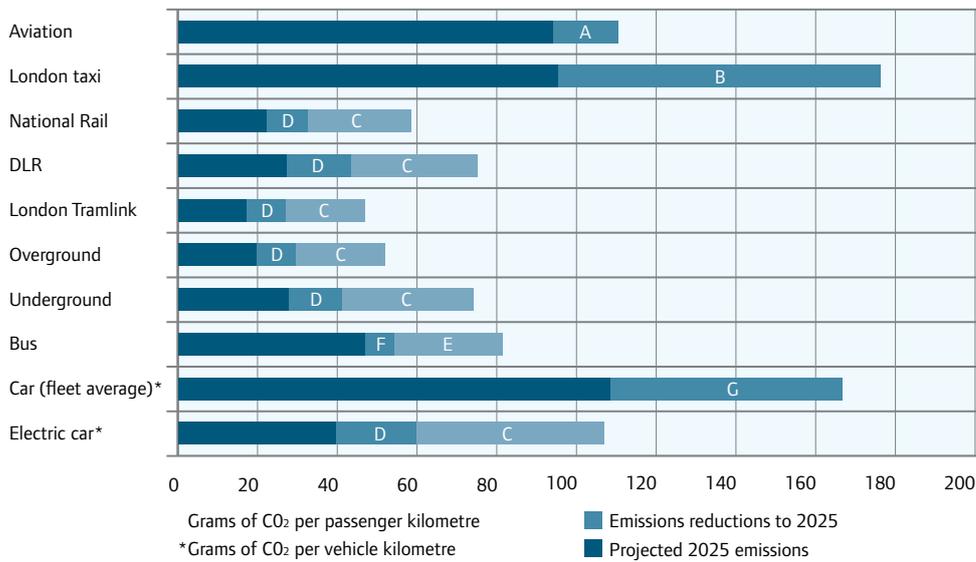
The Mayor, through TfL, will introduce automatic train control (a tool that can optimise energy efficiency through driving style) across the Tube network. Drivers of non-automatic railways, such as London Overground, will be given training on energy efficient driving style, as will London's bus drivers.

### 5.22.5 Reducing CO<sub>2</sub> emissions from aviation

599 Over 60 per cent growth in passenger numbers is anticipated at London's airports in the period to 2031. Therefore, efforts must be redoubled to tackle the environmental impacts of aviation if demand growth is to be met in a sustainable manner. The Mayor's powers to influence CO<sub>2</sub> emissions from aviation are limited, however, Government has a target to reduce aviation CO<sub>2</sub> emissions to below 2005 levels by 2050. Inclusion of aviation within the EU Emissions Trading Scheme provides a legal

framework through which to meet the target. The international connectivity that aviation provides is crucial to the competitiveness of London's economy in this era of globalisation. Therefore, strict limits on aviation growth in the London area are not tenable, nor would they be effective with demand shifting to competing aviation hubs. Meeting both the Government target for aviation CO<sub>2</sub> emissions and the Mayor's target for London CO<sub>2</sub> emissions will require either a breakthrough in aviation carbon efficiency or significantly lower than forecast growth. The Mayor supports the expansion of competitive rail-based alternatives to aviation,

**Figure 63:** CO<sub>2</sub> emissions by mode: 2008/09 emissions and 2025 projections



- Carbon reduction initiatives**
- A: Technological and operational improvements to 2025
  - B: Low carbon taxis
  - C: Low carbon electricity supply (300g CO<sub>2</sub> per kWh)
  - D: Extended Government ambition low carbon electricity (200g CO<sub>2</sub> per kWh)
  - E: Diesel-electric hybrids
  - F: 2025 further CO<sub>2</sub> reduction potential (eg biofuels, electric power, hydrogen, etc)
  - G: EU 2020 average new car CO<sub>2</sub> emissions target met

## Case study

### Electric road vehicles

Electric power has been identified as a particularly promising way to reduce emissions of CO<sub>2</sub>, air pollutants and noise from road vehicles and reduce dependence on fossil fuels.

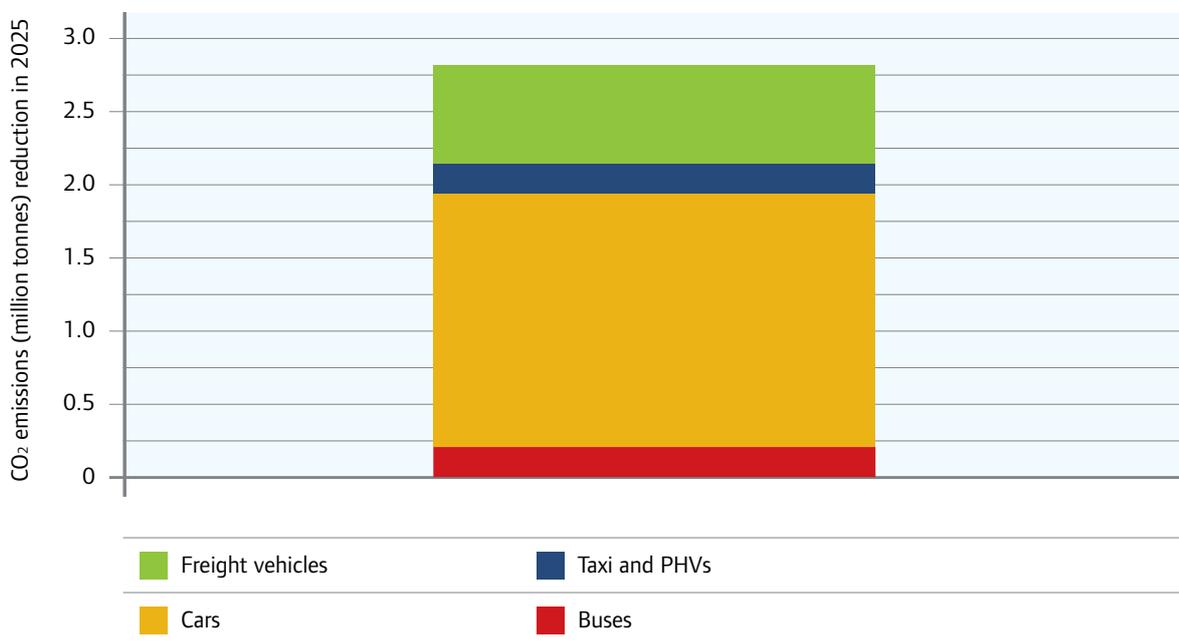
The inherent advantage of an electric motor is that typically around 90 per cent energy conversion efficiency is achieved, as opposed to around 20 per cent with internal combustion engines. CO<sub>2</sub> emissions associated with EVs are ultimately determined by electricity generation. Currently EVs account for around 40 per cent less CO<sub>2</sub> per kilometre than the average London car. As electricity generation becomes

more efficient, the carbon efficiency of EVs will improve further.

Plug-in hybrid, extended range electric and fully electric vehicles that offer the performance of conventional vehicles will be available on the mass market in the coming years. Plug-in hybrid and extended range EVs will generally have a range sufficient for a typical household's routine daily use, with the ability to use hydrocarbon-power on longer journeys. The uptake of EVs in London is a Mayoral priority, not only for environmental reasons, but also for the associated economic and job creation opportunities.



**Figure 64:** Annual road transport CO<sub>2</sub> emissions reductions by 2025, compared to 2007, due to improved vehicle efficiency



such as high-speed rail (for more details on high-speed rail, see the rail section 5.2).

- 600 The Mayor's target for CO<sub>2</sub> emission reductions includes emissions from ground-based aviation at Heathrow and London City airports (including take-off and landing cycles to an altitude of 1,000 metres).

### Proposal 101

The Mayor, through TfL, or otherwise, will work with the DfT and other stakeholders to promote research, investment and regulation to achieve improved aviation carbon efficiency.

### 5.22.6 Smoothing traffic flow

- 601 Stop-start traffic conditions and congestion leads to increased CO<sub>2</sub> emissions. Improved management of London's road network (including rephasing of traffic signals and introduction of a state-of-the-art traffic control centre) and driver information will enable a smoother flow of traffic and ultimately reduce CO<sub>2</sub> emissions given a constant volume of road traffic (further detail of smoothing traffic flow is given in section 5.6, Managing the road network).

### Proposal 102

The Mayor, through TfL, and working with the London boroughs, Highways Agency, and other stakeholders, will implement a package of measures (including signal timing reviews and the coordination of traffic signals) to reduce road traffic emissions by smoothing the flow of traffic and optimising the efficiency of London's road network.

## 5.22.7 Development and use of low carbon vehicles, energy and design principles

- <sup>602</sup> Substantial reductions in transport-related CO<sub>2</sub> emissions are achievable through the use of low carbon vehicle technologies and fuels, particularly for road and rail-based transport. Technological hurdles to the decarbonisation of aviation and water-based transport remain more challenging. Strong incentivisation must be in place to catalyse the mass market uptake of low carbon vehicles and discourage use of higher CO<sub>2</sub>-emitting vehicles. Implementation of distribution infrastructure networks for alternative fuel sources, such as electric charging points, biofuels and hydrogen refuelling facilities, will play a crucial enabling role. The MTS recognises other low carbon technologies may be forthcoming.
- <sup>603</sup> Figure 64 illustrates the anticipated annual CO<sub>2</sub> emission reductions in London in 2025 as a result of improved vehicle efficiency, compared to 2007 vehicle efficiencies.

- <sup>604</sup> While much can be done at a local level to accelerate the uptake of low carbon technology (for example, parking and Congestion Charging incentives and provision of support infrastructure such as electric charging points), national and international incentives in the areas of industry support and vehicle purchase and scrappage will be crucial to realising the full potential rate of change and scale of impact.

### Proposal 103

The Mayor, through TfL, and by working with the London boroughs, will encourage a switch from conventional to low CO<sub>2</sub>-emitting road vehicles and low carbon fuel sources where feasible. The Mayor will lobby Government and other stakeholders to follow suit in order to establish a package of integrated incentives across national, regional and local government to ensure low carbon road vehicles are price competitive with conventional technology.

- <sup>605</sup> Road vehicles currently account for around 72 per cent of ground-based transport CO<sub>2</sub> emissions in London. Reducing emissions from road vehicles will be achieved through a number of means, for example, improved internal combustion engine efficiency, hybridisation, biofuels, hydrogen and electric power<sup>1</sup>. In the long run, the combination of electric power and decarbonisation of electricity generation has the potential to go a long way to the decarbonisation of car use. This would meet environmental needs, while maintaining the societal and economic benefits

<sup>1</sup> The Mayor launched 'An Electric Vehicle Delivery Plan for London' in May 2009

realised through the advent of affordable private motorised travel. Regulation and incentivisation will play key roles in determining the rate of change.

606 Given the international nature of the climate change challenge, the large automobile and aircraft manufacturing companies and regulations and agreements at an international level have the potential to be particularly effective. EU regulations will enforce average emissions from new cars in Europe of 130g CO<sub>2</sub>/km from 2015 (compared to around 150g CO<sub>2</sub>/km today), with a target of 95g CO<sub>2</sub>/km by 2020. A similar EU directive is being negotiated for vans. The Mayor supports further development of the Copenhagen Accord to deliver a binding international agreement to tackle emissions from aviation and shipping.

607 The Mayor supports the use of sustainable biofuels. The European Renewable Energy and Fuel Quality Directives require that 10 per cent of transport energy comes from renewable sources by 2020. It is intended that the national Renewable Transport Fuel Obligation be updated to reflect the EU target.

#### Proposal 104

The Mayor, through TfL, or otherwise, will continue to examine the feasibility of increasing the use of sustainable biofuels in vehicle fleets controlled or regulated by Mayoral bodies, and will encourage the boroughs and other vehicle fleet operators to do likewise.

608 The Mayor aims to secure a London EV fleet of 100,000 vehicles as soon as possible, including GLA and functional body vehicles. To support the uptake of electric-powered road vehicles the Mayor is committed to supporting the delivery of a network of electric recharging points in London.

#### Proposal 105

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will enable and support the development and mass market uptake of low carbon road vehicles (including EVs) through, for example, the delivery of infrastructure required for the distribution of alternative transport fuel sources, including EV recharging points.

609 The Mayor recognises that the provision of charging points will play a crucial enabling role in the conversion to electric powered road vehicles and fully supports initiatives to streamline the planning process to enable implementation of EV charging points. However, he also recognises that EV charging infrastructure must be integrated sympathetically with the urban realm and on building exteriors. In particular, opportunities to integrate EV charging infrastructure with other street furniture should be sought to minimise street clutter in support of the 'better streets' initiative.

610 London's Electric Vehicle Infrastructure Strategy<sup>1</sup> provides further detail on plans for EV recharging infrastructure in London. The Mayor

<sup>1</sup> Launched by the Mayor for consultation in December 2009

is aware that mass-market introduction of EVs is dependent on joint working across a number of stakeholders. The Mayor will therefore continue to develop the London Electric Vehicle Centre of Excellence and Electric Vehicle Partnership as well as being an active member of the nationwide Low Carbon Vehicle Partnership.

- 611 The majority of London's rail-based public transport networks are electrified. The Mayor will lobby for further investment to complete electrification of London's rail network, including the Gospel Oak to Barking line. Regenerative braking (which typically provides around 15 per cent CO<sub>2</sub> savings) is a feature on a number of recently introduced rail fleets and is now standard on all new electric-powered rail rolling stock. Rolling stock on the Central,

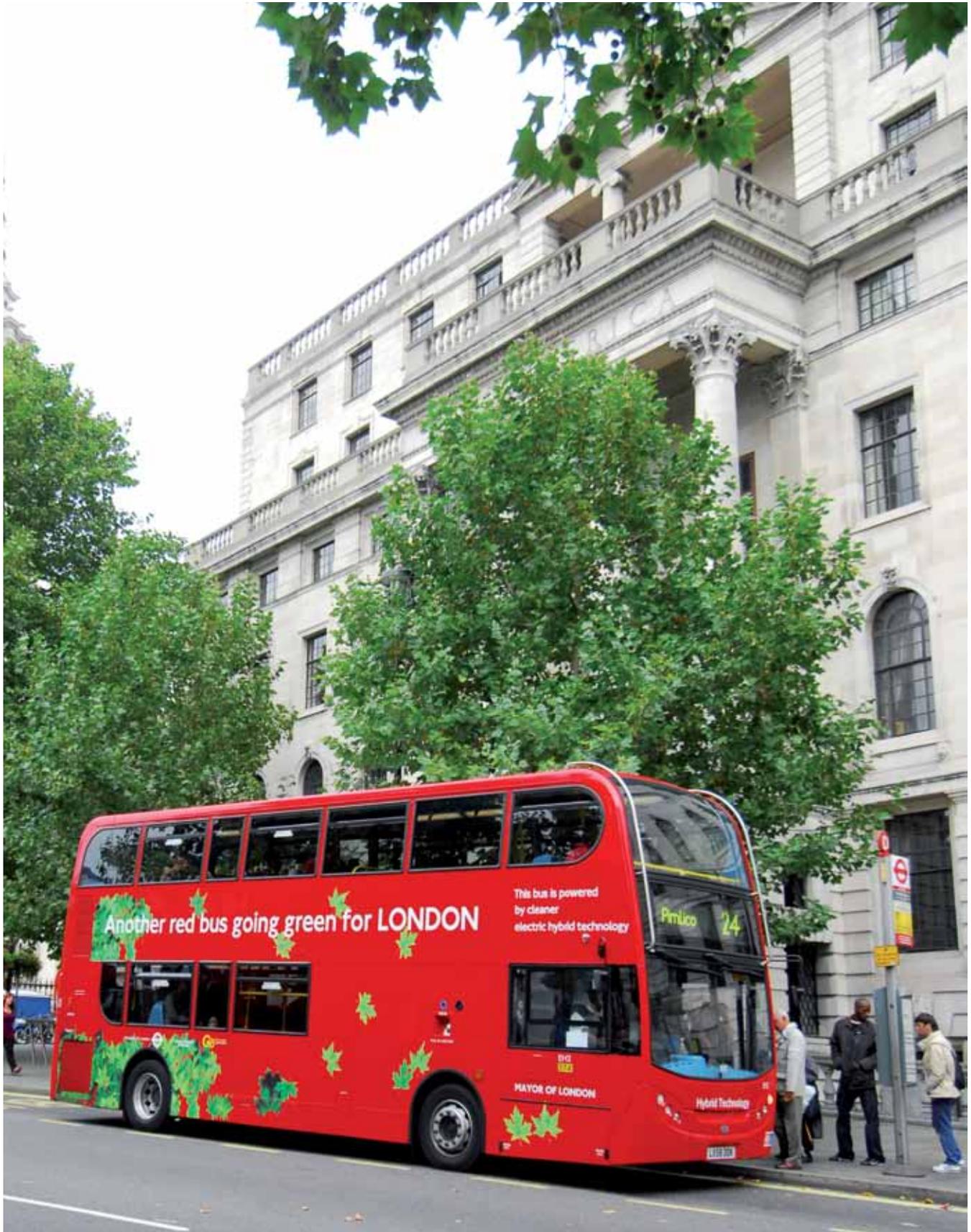
Jubilee and Northern lines, the DLR and some of the more modern National Rail fleet in London are capable of transferring electricity produced while braking to the power supply network for other trains to use.

### Proposal 106

The Mayor, through TfL, and working with Network Rail, and the DfT, will endeavour to:

- a) Provide low loss electricity supply infrastructure on London's rail networks
- b) Implement regenerative braking where feasible on London's rail networks
- c) Develop, trial and seek to implement measures that minimise the loss through electricity distribution on the Underground





### 5.22.8 Energy supply

<sup>612</sup> Electricity is anticipated to supply a growing proportion of transport energy requirement. Therefore, the CO<sub>2</sub> efficiency of transport and electricity generation will become ever more closely linked. The Mayor's support for decentralised energy production in London will lead to CO<sub>2</sub> savings and improve security of supply as will Government ambitions for decarbonisation of the National Grid supply. Uptake of electric powered road vehicles will increase demand for electricity. However, it is anticipated that the majority of the additional demand could be met without substantial additional generating capacity if incentives to ensure the vast majority of recharging occurs at night are provided.

#### Proposal 107

The Mayor, through TfL, and working with the DfT, energy companies, and other stakeholders, will deliver additional low/zero carbon electricity-generating capacity and investigate the potential for micro-generation at sites on the transport system.

### 5.22.9 Mayoral innovation and leadership

<sup>613</sup> The strategy builds on a track record of Mayoral innovation and leadership in addressing the challenge to achieve carbon efficiency. In 2007/08, TfL established a three-year £25m Climate Change Fund to support schemes to reduce CO<sub>2</sub> emissions and trial low carbon technologies.

<sup>614</sup> The Mayor intends to continue to lead by example to demonstrate what is achievable through low carbon best practice. A trial of light emitting diode (LED) traffic signals that reduce power consumption by around 60 per cent has been successful and funding is available to install LED signals at around 300 junctions across London. The Mayor supports the further trialling and roll-out of LED low energy lighting technology at signals, street lights, stations and other locations across London.

#### Proposal 108

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will promote CO<sub>2</sub> standards for vehicles and infrastructure controlled, procured or regulated by the Mayor, GLA Group and/or other public sector bodies (for example, public transport vehicles, taxis, street and station lighting and infrastructure embodied carbon) to reduce emissions from existing and new vehicles and infrastructure, including the following specific measures:

- a) The Mayor, through his functional bodies, will increase the proportion of his vehicle fleet powered by electricity
- b) All new buses entering fleets operated on behalf of the Mayor from 2011/12 will be lower carbon
- c) Work with vehicle manufacturers and the taxi trade to develop a new low carbon and low air pollutant version of the London taxi

- d) A trial of at least five hydrogen powered buses from 2010
- e) Trialling of low energy station lighting and automatic meter reading
- f) LED traffic signals preferred to conventional technology when replacing life-expired signal sets and further development of LED lighting leading to a preference for LED technology when replacing life-expired lighting, if proved to be feasible
- g) Major infrastructure schemes will conduct a carbon footprint assessment
- h) Where relevant, encourage the GLA group, boroughs, other public sector bodies and their suppliers to procure freight services from FORS members or freight operators able to demonstrate equivalent competencies

<sup>615</sup> The Mayor recognises that in many cases improving energy efficiency not only brings environmental benefits but can save money. TfL will participate in the Carbon Reduction Commitment, covering the use of energy for non-motive purposes (for example, lighting and offices) which provides a financial incentive to secure greater CO<sub>2</sub> reductions than peer organisations. TfL engagement with the

Mayor's Building Energy Efficiency Programme is anticipated to continue to reduce energy consumption in office buildings and save TfL money. The Mayor is also keen to create stronger links between efficiency requirements and procurement processes, a combination that has already demonstrated an ability to reduce environmental impacts and save money.

<sup>616</sup> It is anticipated that the previously outlined measures will be insufficient to achieve the Mayor's target for reductions in London's CO<sub>2</sub> emissions by 2025. Accordingly, further action from Government, the Mayor and/or London boroughs will be required. The Mayor's CCMES contains further details.

### Proposal 109

The Mayor, through TfL, and working with the London boroughs, DfT, Highways Agency, and other stakeholders, will keep under review the option of road user charging and/or regulatory demand management measures to influence a shift to more CO<sub>2</sub>-efficient private and commercial road vehicles, and to lower carbon travel options such as walking, cycling and public transport.

## 5.23 Adapting to climate change

### 5.23.1 Introduction

<sup>617</sup> There is substantive scientific evidence that our climate is changing. Despite efforts to mitigate emissions of greenhouse gases, deviations from long-term climatic trends experienced over past years are projected to intensify. Changes in London's climate as a result of increasing concentrations of greenhouse gases (most notably CO<sub>2</sub>) in the earth's atmosphere are anticipated to be milder, wetter winters and hotter, drier summers. An increased frequency of 'extreme' weather conditions such as heatwaves, droughts, tidal surges, storms and heavy rainfall is also predicted.

<sup>618</sup> The result would bring an increased risk of flooding, storm damage, droughts and uncomfortably hot weather, together with secondary consequences such as increased incidence of ground instability/movement and periods of poor air quality in the summer. Furthermore, sea levels are forecast to rise, adding to the risk of flooding. Climate change is anticipated to have health impacts on Londoners, ranging from heat-related illnesses to injuries, stress and anxiety caused by extreme weather events. In addition, heatwaves can exacerbate the health impacts of air pollution.

<sup>619</sup> The Mayor's Climate Change Adaptation Strategy sets out the priorities for climate change related risk assessment, including for transport infrastructure and services.

<sup>620</sup> The London transport system comprises infrastructure that has been built over a number of centuries to varying standards and specifications. Long-lived infrastructure such as embankments, cuttings and bridges will be vulnerable to climate change as a result of increased incidence of intense rainfall and greater inter-seasonal temperature and soil moisture variation. Additionally, the London Regional Flood Risk Appraisal finds that around a quarter of Underground (including DLR) stations, 15 per cent of rail stations, 30 per cent of bus depots and London City airport are in locations identified as being at risk from tidal or fluvial flooding. A programme of risk assessment must be completed to gain a better understanding of the vulnerability of the transport system to the threats posed by climate change.

#### Proposal 110

The Mayor, through TfL, and by working with the London boroughs, Network Rail, Highways Agency, airport operators and other stakeholders, will determine the vulnerability of transport assets to the impacts of climate change and maintain existing infrastructure (including remedial works where effective and affordable) to improve resilience to climate change.

<sup>621</sup> Effective and affordable solutions must be sought to reduce potential risk to passengers from the threats posed by climate change, and improve the operational resilience of the transport system. In some instances alteration of maintenance regimes may achieve improved resilience to the threats of climate change. For

example, poorly maintained storm drains have been identified as the source of some past Tube flooding incidences.

- 622 Measures to adapt to future climate change will make London's transport system more resilient to extreme weather conditions that currently occur, often with significant impacts. For example, the rainstorm of 7 August 2002 forced five main line London rail termini to shut for a number of hours over the rush hour.

### Proposal 111

The Mayor, through TfL, and working with the London boroughs, Network Rail, and other stakeholders, will prepare adaptation strategies to improve safety and network resilience to threats posed by climate change, and ensure that new transport infrastructure is appropriately resilient. The adaptation strategy should include:

- a) Climate change impacts risk assessment of infrastructure and operations to identify key risks and mitigation opportunities
- b) The prioritisation of identified risks and proposals for appropriate management and/or mitigation action plans, including emergency planning and investment plans
- c) Guidelines for major procurement contracts (including design, construction and maintenance) to demonstrate a climate risk assessment for the lifetime of the investment

- 623 To ensure long-term value for money is achieved through transport investment

programmes, new transport infrastructure must also be designed and built with climate change in mind. The existing system will be adapted where possible in a cost effective manner.

### Proposal 112

The Mayor, through TfL, and working with the London boroughs, Network Rail and other transport infrastructure owners, will ensure the transport system is developed with climate change in mind, by:

- a) Designing, locating and constructing new infrastructure to withstand climatic conditions anticipated over its design life
- b) Introducing energy efficient air-conditioned rolling stock where feasible, for example, on London Overground services and sub-surface Tube lines
- c) Continuing to investigate the feasibility of innovative methods of cooling the deep tunnelled sections of the Tube network
- d) Ensuring that all new buses entering the London fleet will feature specific climate change adaptation measures

- 624 Increasing the number of trees and vegetation in London (urban greening) will contribute climate change adaptation and mitigation by providing shade and absorbing rain water. This will also enhance the built environment by improving the urban realm and increasing biodiversity.

**Proposal 113**

The Mayor, through TfL, and working with London boroughs, Network Rail and other transport infrastructure owners, will plant an additional 10,000 street trees by 2012, with the ambition of an additional two million trees in London's parks, gardens and green spaces by 2025.

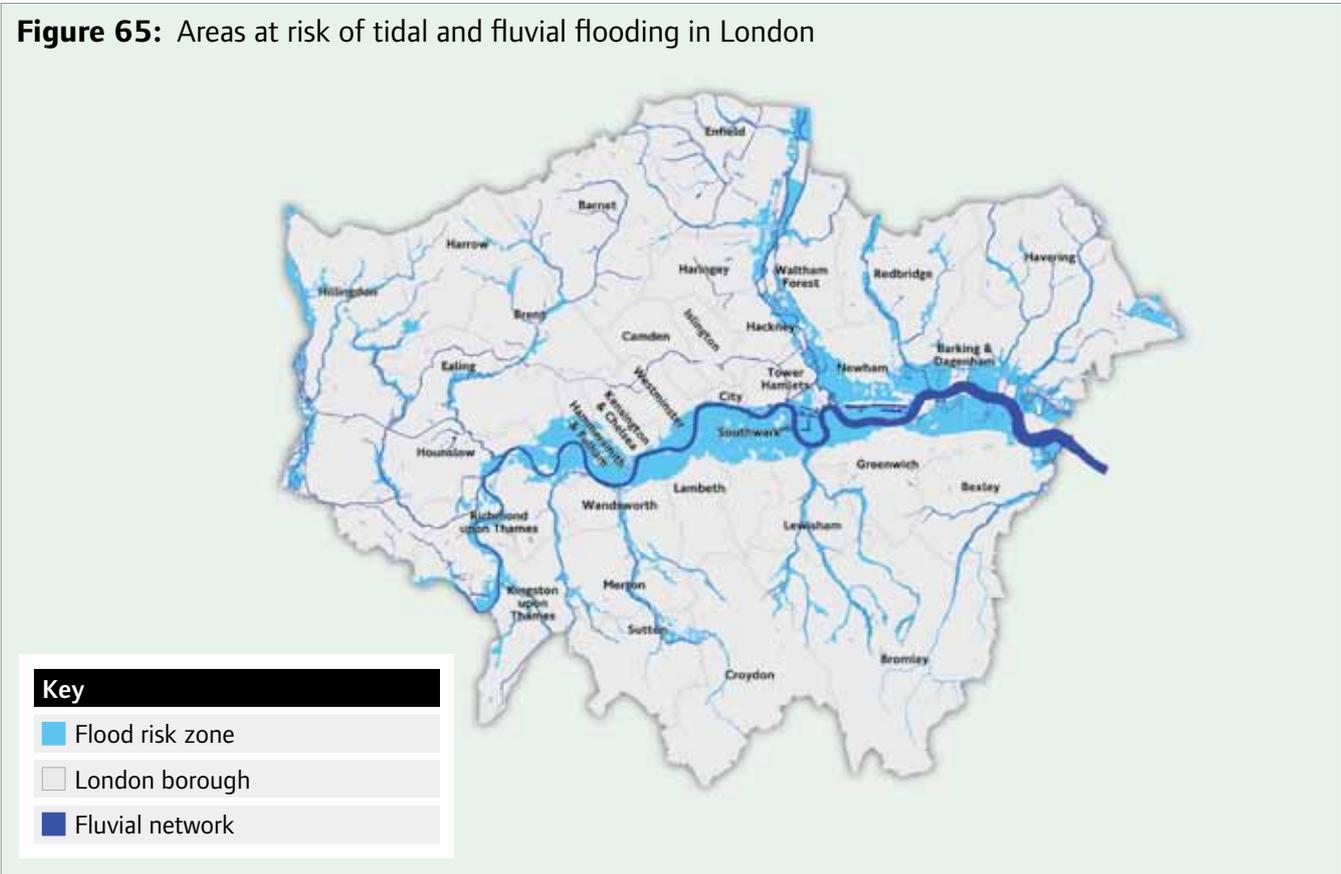
625 Despite best efforts to assess, manage and mitigate risks, it will be impractical and unaffordable to eliminate all risks posed by climate change to London's transport system. However, as the occurrence of severe weather

events increase in future years, contingency planning for these conditions will become ever more important in maintaining a safe and reliable transport system. Figure 65 shows areas of London at tidal and fluvial flood risk.

**Proposal 114**

The Mayor, through TfL, and working with the London boroughs, Network Rail, and other stakeholders, will develop and test plans and procedures to minimise risk to person and property, manage disruption and ensure rapid transport system recovery from the impact of climate change related events.

**Figure 65:** Areas at risk of tidal and fluvial flooding in London





# Proposals to manage the demand for travel

## 5.24 Better journey planning and smarter travel for people and goods

### 5.24.1 Public transport and road user information

<sup>626</sup> Good quality information will improve passenger flow, with associated wellbeing benefits of convenience and ease which can improve the journey experience, especially if disruptions occur. Current satisfaction for road traffic information is less than 60 per cent, so there is clearly more to do. For public transport, customer satisfaction on information is rising. There is the opportunity to build on TfL's extensive work in this area, such as its award-winning website, Journey Planner and iBus, by allowing wider access to service information anywhere in London using mobile phone and internet technology, resulting in better journey planning. This benefits regular users, tourists and other visitors to London who may be unfamiliar with the Capital's complex transport system.

#### Proposal 115

The Mayor, through TfL, and working with the London boroughs, DfT, Network Rail, train operating companies, and other stakeholders, will enhance the provision of information to improve customers' knowledge and understanding of service availability, delays and other information to improve customer satisfaction, and the way Londoners use public transport and make travel decisions, by:

- a) Improving the provision of real time and other journey planning information, including upgrading the TfL web-based journey planner, allowing further improvements to its real time performance, accuracy and personalisation
- b) Providing customers with a range of paper-based information (Tube, cycle and bus 'spider' maps, timetables, fares and service changes)
- c) Raising public awareness and knowledge of existing public transport provision, particularly, orbital public transport services

- d) Further development of journey planning, including web-based information, for local trips to town centres
- e) Developing town centre journey planning tools consistent with other information resources proposed in the strategy

### 5.24.2 Smarter travel initiatives

<sup>627</sup> Smarter travel aims to reduce congestion, improve health and reduce transport's contribution to climate change by helping people to make the most effective use of London's transport network and encouraging greater use of public transport, cycling and walking. This involves a range of initiatives such as: raising awareness of available travel options through targeted promotions; supporting sustainable travel through small scale infrastructure projects such as cycle racks; building an understanding of factors motivating travel behaviour; and engaging directly with schools, workplaces and local communities. In addition, smarter travel provides the opportunity to explore flexible working patterns and support measures that limit the need to travel.

<sup>628</sup> The objectives of smarter travel initiatives are to:

- Deliver more sustainable patterns of vehicle ownership and use
- Change people's travel patterns to avoid congested times and places
- Deliver a mode shift to public transport, cycling or walking instead of car use

- Deliver a mode shift to walking and cycling instead of public transport use
- Promote healthy travel options

<sup>629</sup> The main smarter travel activities being undertaken by TfL, the boroughs and others are:

- School travel planning: More than 90 per cent of London schools now have a travel plan in place, with an average 6.5 per cent reduction in the number of car journeys to schools that have undertaken post-implementation monitoring. The Mayor's school cycle parking initiative provides for needs identified in the school travel plans and has achieved a 43 per cent increase in cycling in the 22 per cent of London schools that have received modern cycle parking facilities through the scheme
- Workplace travel planning: More than 400 organisations collectively employing in excess of 450,000 staff now have TfL-supported travel plans in place. An average 13 per cent reduction in the number of car journeys for trips to work has been recorded from those that have undertaken post-implementation monitoring
- Car clubs: More than 1,600 car club vehicles are used by 100,000 people in London, with vehicles including plug-in hybrids and the latest low emission diesels. Each car club vehicle typically results in eight privately owned vehicles being sold, and members reducing their annual car mileage by more than 25 per cent. A further 380 vehicles will be added to London's car club fleet in 2010/11 which will include the trial of EVs

## Case study

### Transport and schools – New City Primary School

New City Primary School runs its own cycling club for students in Years 4, 5 and 6. To encourage cycling to school in the winter, the school introduced an early morning cycle club in the playground. The children now run the club every day of the week (including some evenings) all year round. Membership rose to 150 pupils and many more children now cycle to school. The school has two areas for bike storage on site and provides cycle training to pupils, parents and staff. The school also offers cycling as part of the PE lesson activity for all year groups. Bike maintenance workshops take place regularly, as well as cycle instructor training for interested staff and parents.

As a result, cycling levels among staff have doubled. In addition, 84 per cent of children now walk to school, 12 per cent cycle and in 2009, none reported being driven regularly to school – an inspiring outcome for the school travel plan.



- Travel awareness: This focuses on changing behaviour by promoting 'better ways to travel' for residents across London. A personal travel plan programme, designed to help individuals get the best from the travel network and to make better choices is being made available to all boroughs
- Integrated Towns Programme: Smarter Travel Richmond (STR), which was launched in March 2009 will continue through to the end of 2011. The programme showcases the use of integrated smarter travel techniques alongside infrastructure

improvements, such as new cycle routes and pedestrian and public realm improvements. The overall target for the STR programme is to achieve an increase of five per cent in the combined modal share for walking, cycling and public transport in the borough. The Richmond programme follows Smarter Travel Sutton, which achieved a six per cent reduction in the mode share of the car (driver or passenger) and the delivery of school travel planning to 100 per cent of schools at the end of its programme (2006 to 2009)

- Public transport crowding relief: Recent projects, such as the Wimbledon schools walking initiative, have demonstrated that smarter travel measures can successfully help tackle core issues such as crowding on buses during term time
- Keeping London moving and working during the 2012 Games: Smarter travel delivery measures are being developed in partnership with the ODA and will contribute to the legacy of more walking and cycling in London
- Integrated delivery: Programmes such as the Cycle Superhighways will include complementary smarter travel initiatives along the corridors to raise awareness and use, and help break down barriers to cycling by working with communities, schools and workplaces along the routes

<sup>630</sup> As smarter travel offers a cost-effective way of encouraging greater use of public transport, cycling and walking, with associated benefits that tackle congestion, reduce CO<sub>2</sub> and improve health, these initiatives will continue and be widened to include new areas of engagement. For example, piloting travel planning for higher education and further education institutions.

<sup>631</sup> In addition, the Mayor also proposes that more localised smarter travel interventions should be targeted to reduce or manage traffic flows in particularly sensitive locations, for example, along key road links or at bottlenecks on the network to control traffic volumes and improve reliability.

#### Proposal 116

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will use smarter travel initiatives across London to facilitate more efficient use of the transport system, achieve mode shift to cycling, walking and public transport and encourage the take-up of healthier travel options.

### 5.24.3 Smarter transport of freight and services

<sup>632</sup> The London Freight Plan identifies four key projects to deliver freight in London more efficiently and sustainably. Given freight's role as a major road network user, improving freight operations will help reduce conflicts with other modes of transport, pedestrians and cyclists.

<sup>633</sup> FORS helps organisations who join the scheme to increase operational efficiency, reduce CO<sub>2</sub> emissions, lower the risk of potential collisions, reduce costs and contribute to lower congestion. The scheme also provides driver and management training programmes and, therefore, promotes safer and more fuel-efficient operations through better driver behaviour.

- 634 DSPs are designed to increase the operational efficiency of buildings by providing a framework to better manage the transport impacts of supply chains including the timing and location of delivery activity.
- 635 CLPs have similar overall objectives to DSPs, but are focused on the design and construction phases of premises, supporting and improving the efficiency and sustainability of construction supply chains. They are seen as key to encouraging modal shift for large-scale developments.
- 636 Freight Quality Partnerships (FQP) provide a mechanism for TfL, boroughs, freight operators and other stakeholders to liaise with each other and work together to conduct research and develop solutions for sub-regional freight issues. Hauliers and other businesses in the supply chain are able to raise issues they face with organisations responsible for highway and transport planning to help them work more efficiently. Local authorities can gain a greater understanding of these issues and are able to encourage more environmentally and socially-responsible practices from operators, through such partnerships.

### Proposal 117

The Mayor, through TfL, and working with the London boroughs, and other stakeholders in the public and private sectors, will improve the efficiency and effectiveness of freight operations through the promotion of ‘delivery and servicing plans’, ‘construction logistics plans’, the Freight Operator Recognition Scheme, Freight Quality Partnerships and other efficiency measures across London.

- 637 The London freight information portal will help London’s public authorities (the GLA and boroughs, for example) and freight operators exchange information about:
- Improving operational efficiency of freight and servicing in London
  - Encouraging better driver behaviour, the use of alternative fuels and the uptake of low carbon vehicles
  - Reducing freight operators’ administrative costs
  - Enhancing freight journey planning

### Proposal 118

The Mayor, through TfL, and working with the London boroughs, freight industry, and other stakeholders, will develop the London freight information portal to exchange information and share knowledge to ultimately improve the performance of freight operators, boroughs and TfL.

## Spotlight

### Freight in London

Freight transport uses a number of modes, from international and national freight by air, rail, sea, pipeline and road, through to local distribution and servicing, predominantly undertaken by road vehicles. Total freight lifted in London in 2007 was 139m tonnes, with a split by mode that amounted to 88 per cent by road, six per cent by water, five per cent by rail, and 1.2 per cent by air (2005 figures). Fifty six million tonnes of that total freight tonnage were moved wholly within London. Heathrow handles 56 per cent of all UK airfreight and generates around two million road-related freight trips each year.

The movement of waste is another important part of London's freight transport. Freight requires road space, warehousing facilities, rail freight yards, depots and terminals, river wharves and kerb space for deliveries. In this way, freight must also be closely integrated with land use planning to ensure it has adequate

space for facilities. On London's streets, freight not only contributes to congestion, but also significantly suffers the consequences of it. As a result, freight transport impacts on all the goals contained in this strategy.

Freight makes up about 17 per cent of all road traffic. Forecasting suggests that this traffic will grow by 25 per cent between now and 2031 as London's economy and population grow, increasing congestion and servicing costs. Road freight currently accounts for 23 per cent of London's CO<sub>2</sub> emissions from transport. Without measures to encourage more sustainable distribution, the growth in freight will lead to more CO<sub>2</sub> emissions and more noise.

To improve freight and servicing for London, the roll-out of measures outlined in the London Freight Plan is essential, and includes the FORS, DSPs, CLPs and freight information portal.



The impacts of freight growth may be further mitigated by measures to facilitate mode shift or allow deliveries and servicing by road to be undertaken in more sustainable ways. For example, expanding the use of break-bulk facilities and freight consolidation centres as well as making use of more fuel efficient vehicles, including expanding the use of EVs will be important.

Providing additional rail freight terminals to serve London, including opportunities to take advantage of the potential for high-speed rail freight, will also need to be further explored. The continued expansion of port facilities such as the new London Gateway port in Essex (with 60 per cent in container growth forecast between 2004 and 2016) will further increase freight transport to/from and via London. However, there remains a need to find alternative routes for rail freight to/from such ports (currently 10 per cent of

National Rail freight moves via London, yet only three per cent has London as its destination, and only one per cent has London as its origin), to avoid conflicts with passenger rail services in London.

There is also potential to make further use of the Blue Ribbon Network for some freight movements which may require new or upgraded infrastructure, as seen at the Three Mills Lock in east London, built to accommodate barges carrying construction material to the Olympic Park.

In Outer London, improving freight and servicing, for major industrial and business parks and in town centres is especially important. For example, servicing retail outlets and town centres is often a particularly challenging issue given the space and loading/unloading constraints, causing supply chain risks for retailers and freight operators.



- 638 These proposals are complemented by proposals for rail and water freight facilities which are set out in later sections of this strategy. Additional investment will enable an increasing share of freight movement to be borne by these modes.
- 639 For freight which cannot be transferred from road to rail or water, there may be additional opportunities to consider more sustainable movement by road, using low or zero emission vehicles.

### Proposal 119

The Mayor, through TfL, working with the London boroughs, freight operators and other stakeholders, will support the introduction of consolidation centres and break-bulk facilities where appropriate, especially at Strategic Industrial Locations, to allow distributed goods to be transferred from lorries using the trunk road network to more environmentally friendly vehicles for servicing urban centres.

- 640 For the densest urban areas, local delivery and collection points with good cycle and pedestrian accessibility also have potential to limit the growth in freight movement by road.
- 641 As these proposals are developed and rolled-out the full extent of their likely impact will become apparent. Using these approach options for increased incentivisation or regulation may need to be considered.

## 5.25 Fares and ticketing

### 5.25.1 Fares levels

- 642 Fare income is the life blood of any transport operator. Fares have to be set at levels which allow TfL to sustain the operational delivery of public transport while maintaining affordability to the maximum possible extent. Focus by operators on achieving value for money in their operations is essential if this is to be achieved.
- 643 Fares policy involves striking a balance between the fare levels charged for public transport, the amount of subsidy provided for eligible groups of users, and the quantity and quality of public transport provided by operators. Under the GLA Act 1999, fares setting is the responsibility of the Mayor.

### Proposal 120

The Mayor will ensure that fares provide an appropriate and necessary level of financial contribution towards the cost of providing public transport services to ensure that public transport continues to play a central role in London's transport system and overall economic development.

### 5.25.2 Concessionary fares

- 644 TfL currently offers a number of fare concessions to those least able to pay. The bulk of the cost of providing free travel for those above 60 and disabled people is borne by the boroughs. All other concessions are funded internally by TfL. This is a significant cost: for example, people in receipt of free or reduced fares on buses make up almost 40 per cent of all bus passengers.

- 645 Given the constraints on external funding available to TfL, the likely impact of the current economic recession on revenue from fares and the need to maintain capital investment, it is essential that the scale and scope of concessions offered is both affordable and sustainable. At the same time they should be appropriately targeted to maximise the social benefits that they enable.

#### Proposal 121

The Mayor will keep the range of concessions for which he is responsible under review to ensure that they are focused on where they will be most effective at helping those in most need of them. Concessions for schoolchildren are also conditional on good behaviour. If removed for poor behaviour, concessions can be earned back through programmes of community activity and good behaviour.

### 5.25.3 Fares collection

- 646 Historically, it has been overly complicated and time-consuming for customers to identify the right ticket for their public transport needs and to pay for it. This has been inefficient for users and operators of public transport: users have to invest their valuable time in figuring out and navigating the range of tickets available, and operators have to bear the cost of running complex ticketing systems. Simplification of London's fare collection system is therefore desirable from both perspectives.
- 647 TfL's Oyster smartcard has been a great success in this respect by reducing the need to queue for tickets through the use of the 'pay as you go' product and through the introduction of online sales options. Now, more than 80 per cent of journeys on TfL services are made using Oyster smartcards.
- 648 Oyster has also enabled further integration of fare collection between different modes of public transport, building on the success of the range of Travelcard tickets offered by TfL and National Rail. Integration encompasses the use of common ticket types and the standardisation of fares for journeys that can be completed on more than one mode of transport. Integration of fare payment across modes speeds up public transport journeys where more than one mode is required by eliminating the need for intermediate ticket purchases, and so encourages greater use of public transport. Oyster has also led to reduced opportunities for fare evasion.
- 649 Much progress has been made on integration within London, notably including the extension of Oyster pay as you go acceptance to the National Rail network from January 2010.

#### Proposal 122

The Mayor, through TfL, will seek to conclude the creation of a fully integrated fare collection system for London that covers both TfL and National Rail services with a common set of travel products simplified to the maximum extent possible, in cooperation with the Association of Train Operating Companies and the DfT.

<sup>650</sup> Fare collection systems are expensive. Operators of public transport in cities typically bear the full cost of running the ticketing system and this can exceed 10 per cent of the revenue collected. Fortunately, new contactless-capable devices are being introduced by the financial services industry (and may soon be introduced by the mobile telecommunications and consumer electronics industries) that could provide opportunities to reduce these costs by using contactless credit and debit cards, mobile phones or other devices to pay directly on entry and exit. These technologies could be applied across all of London's transport modes, including river services, at National Rail stations, on trains, and, potentially, in taxis too.

### Proposal 123

The Mayor, through TfL, and working with the London boroughs, train operating companies, other transport operators and stakeholders, will explore ways to reduce the cost of revenue collection and to make fare payment quicker and more convenient for passengers through the use of new technology and other initiatives.

## 5.26 Parking and loading

### 5.26.1 The role of parking and loading

<sup>651</sup> The Mayor recognises the essential role of parking and provision for loading in supporting economic development and to allow journeys where there is no viable alternative. This is particularly the case in Outer London where car use is higher. However, parking regulation is also an effective method in encouraging the use of public transport, walking and cycling which in turn can mitigate the negative impacts of road traffic and car dependency. Loading regulation can be an effective way of influencing the time of delivery and its effect on congestion.

### 5.26.2 Parking and loading regulations and enforcement

<sup>652</sup> Parking provision standards at developments are detailed in the London Plan.

<sup>653</sup> Over a number of years, TfL and the boroughs have improved levels of compliance with parking regulations. However, there is growing concern from drivers and stakeholders in London that enforcement can be unfair and unreasonable and that regulations across the Capital are inconsistent and confusing. On average, councils receive some form of challenge on nearly 20 per cent of Penalty Charge Notices issued. Whether unfairness is perceived or actual, these complaints may be compounded by the complex array of parking rules in place. More consistent regulations and enforcement practises, combined

with more advance information regarding local parking restrictions, should result in lower levels of unintended parking contraventions and fewer stressed drivers.

- 654 Taxis are also dependent on the ability to pull over to collect or deposit passengers. This has associated impacts on road network capacity and smoothing traffic flow.
- 655 To improve drivers' journey experience on the road network, TfL has developed a Driver Charter. Its four central themes are:
- Common sense approach towards enforcement, to help drivers avoid receiving penalties
  - Simplifying loading bay regulations
  - Simplifying the penalty payment and representation processes
  - Apologising and automatically cancelling the penalty if any mistake is made

#### Proposal 124

The Mayor, through TfL, and working with the London boroughs, London Councils, and other stakeholders, will seek to ensure fair and consistent enforcement of parking and loading regulations across London, together with more consistent regulations, clearer signage, and more advance information regarding parking availability. Pan-London parking provision and regulations information will be published on the internet in an easy-to-access format.

### 5.26.3 Motorcycle and scooter parking

- 656 The Mayor recognises that provision and regulations for motorcycle and scooter parking is best addressed at a local level to meet local needs and objectives.

### 5.26.4 Parking charges

- 657 Parking charges enable demand for parking to be better matched with parking space supply.
- 658 Parking controls have been identified as one of the key measures that can be implemented at a local level to encourage the purchase and use of road vehicles with low CO<sub>2</sub> and air pollutant emissions. The Mayor therefore wishes to develop and promote the concept that parking charges vary not only by location and duration of stay, but also by the environmental impact of the vehicle.

#### Proposal 125

The Mayor, through TfL, and working with the London boroughs, car park operators, and other stakeholders, will encourage implementation of pricing differentials based on vehicle emissions, including banded resident parking permits and other on and off-street parking charges, including incentives for EVs.

### 5.26.5 Controlled parking zones

- 659 Controlled parking zones (CPZs) are intended to manage competing pressures for limited parking supply in areas of high parking demand. The Mayor will offer continued support to the introduction of CPZs where

boroughs consider they would be beneficial. The Mayor would also support boroughs to explore the possibility of integrating CPZ enforcement with other community enhancement activities.

### 5.26.6 Commercial vehicle loading and waiting

- <sup>660</sup> Road freight dominates the collection and delivery of goods and waste and is essential to keep London functioning. Industries such as manufacturing, construction and retail are particularly dependent on the physical movement of goods.
- <sup>661</sup> Waiting and loading arrangements for freight are important factors in ensuring fair allocation of limited road space, enabling efficient freight operations and smoothing traffic flow. It is in the interest of all parties to minimise the potential negative environmental and congestion impacts of freight distribution. With a constrained supply and high demand for on-street loading/waiting facilities, new developments should assess required commercial vehicle parking/waiting facilities and ensure adequate provision is made off-street.

#### Proposal 126

The Mayor, through TfL, the LDA, and working with the London boroughs and other stakeholders, will seek to ensure that new developments generating significant volumes of freight activity provide adequate off-street lorry parking and waiting facilities.

### 5.26.7 Park and ride

- <sup>662</sup> Park and ride is widely promoted in many regional towns and cities as an alternative to city centre parking, primarily to reduce congestion. Many of London's rail and Tube stations, especially in Outer London, have station car parks, and so 'park and ride' at stations is widespread in London. The Mayor is supportive of further park and ride schemes, including those serving Outer London town centres, where they bring net benefits to the road network as set out in the TfL Park and Ride Assessment Framework (see glossary).

#### Proposal 127

The Mayor, through TfL, the LDA, and working with the London boroughs and other stakeholders, will support those park and ride schemes in Outer London that lead to an overall reduction in congestion, journey times and road vehicle kilometres.

## 5.27 Road user charging for economic and environmental aims

### 5.27.1 Introduction

<sup>663</sup> Road user charging can be effective in altering travel patterns and can be tailored to support sustainable transport objectives. Yet it is clearly a contentious policy as the rejection of proposed schemes in Edinburgh and Manchester show. The response to the Mayor's informal consultation on the Western Extension and the response to the consultation on the draft of this strategy makes this clear. Therefore any potential schemes must be carefully designed to fit local conditions if they are to be effective and regarded as reasonable. London has already implemented two sizeable road user charges in the form of the central London Congestion Charging scheme (which is focused on reducing the impact of congestion on the economy; as set out in section 5.27.2) and the London LEZ (which seeks to discourage the most individually polluting vehicles from travelling in the Capital to improve air quality; see section 5.21).

### 5.27.2 Background to Congestion Charging in central London

<sup>664</sup> In central London, with diverse and competing demands on the road network, effective management of scarce road capacity is a key priority. To assist with this, the central London Congestion Charging scheme was introduced in February 2003, delivering significant congestion reduction benefits. The Western

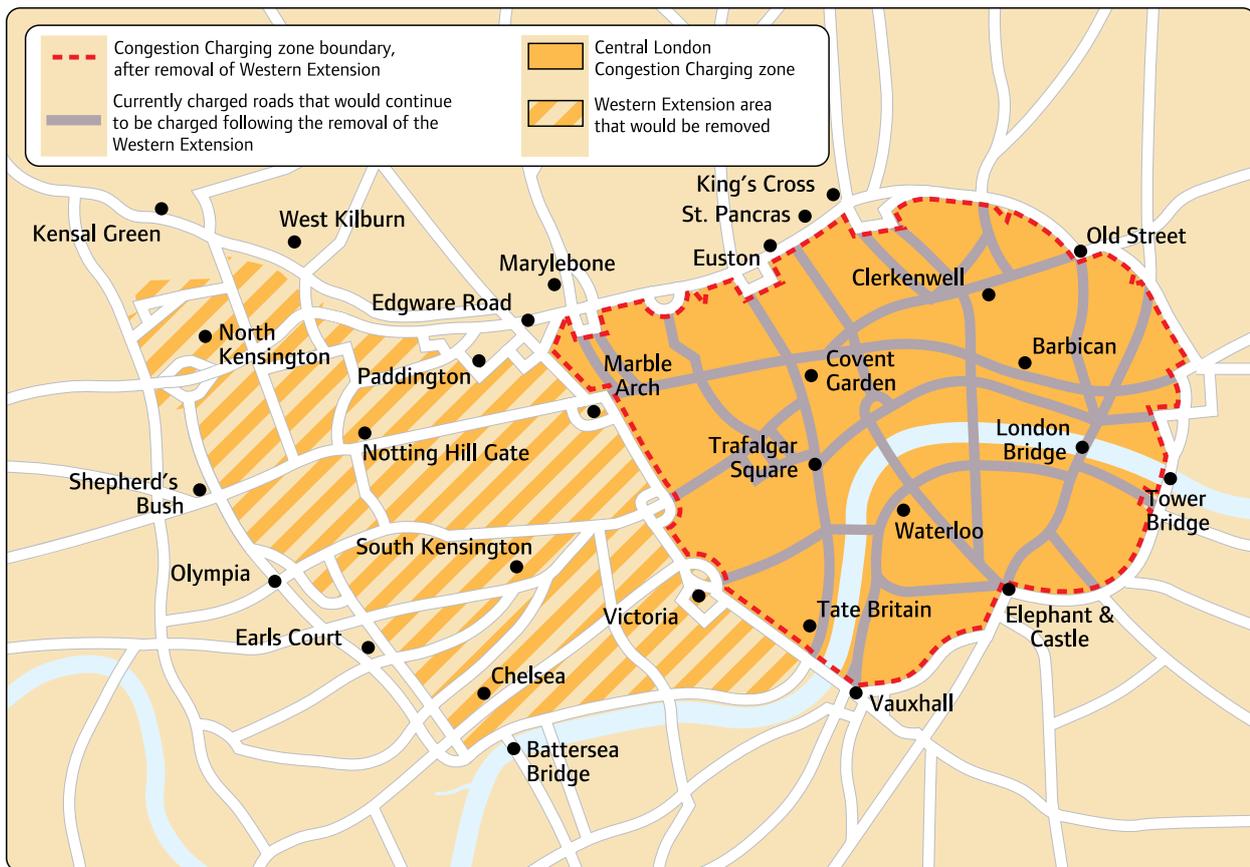
Extension of the scheme was introduced in February 2007.

<sup>665</sup> The Congestion Charging scheme has substantially reduced traffic volumes, and achieved relative reductions in congestion, though actual congestion intensities have returned to nearer pre-charging levels as a consequence of road space being reduced by street works and re-allocated to assist pedestrians, cyclists and buses. The lower levels of weekday traffic have also meant some reductions in road collisions and vehicular emissions of CO<sub>2</sub> and atmospheric pollutants, though the predominance of other factors means that there has been no measurable impact on local air quality. By reducing the road space required for road vehicles, the scheme has also facilitated other measures, such as public realm enhancements. It has also generated substantial net revenues which have been reinvested in transport in London.

### 5.27.3 Concerns over the impacts of Congestion Charging in the Western Extension

<sup>666</sup> Concerns have regularly been raised about the impact of the Western Extension on the local economy. Business owners and employers have described weaker sales and reduced profitability in the year following the introduction of charging in the Western Extension. By comparison, no such falls were reported elsewhere in comparator non-charging locations<sup>1</sup>. Emerging analysis also suggests that the charge may have contributed to a

<sup>1</sup> Central London Congestion Charging Impacts Monitoring: Sixth Annual Report, July 2008, TfL

**Figure 66:** Extent of the Western Extension to the Congestion Charging zone

small decline in the rate of formation of small enterprises, while similar analysis in the original central London zone showed no discernible effect on the enterprise population in the area<sup>1</sup>.

<sup>667</sup> Traffic and congestion patterns in the Western Extension are somewhat different from those in the original central zone. For example, there is a higher proportion of vehicles driven by local residents, average speeds are higher and the intensity of congestion is somewhat lower. Meanwhile, there is slightly lower provision

of public transport than in the original zone – albeit still very good – which makes alternative journeys a little more awkward for those, both residents of the zone and non-residents, who would prefer to switch to alternative modes to avoid the charge.

<sup>668</sup> The effects of the Western Extension have been lower than the original zone, with a decrease in traffic entering the Western Extension of around 10 to 15 per cent compared with a reduction of around 15 to 20 per cent in traffic entering the

<sup>1</sup> The Impact of the Congestion Charge on the Dynamics of the Enterprise Population, 2008, Beta Model Ltd

original zone. In round terms, the daily charge has resulted in a 10-minute saving on a round trip into and out of the original central London zone. The same charge delivers savings of around five minutes on a round trip into and out of the Western Extension – half the benefit for the same charge.

#### 5.27.4 The future of the Western Extension of the central London Congestion Charging zone

- <sup>669</sup> In 2008 the Mayor held an informal consultation on the future of the Western Extension. This set out options of removing the zone, keeping it as it is, or changing it, for example, by charging only at peak times. Overwhelmingly, respondents to this informal consultation favoured the removal of the Western Extension. The public consultation on the draft of this MTS confirmed the strong public support to remove the Western Extension, though stakeholder views were more divided.
- <sup>670</sup> Those responding to these consultations who argued in favour of removing the Western Extension highlighted a range of concerns. Stakeholders, businesses and members of the public raised concerns about the impact of the charging on the local economy.
- <sup>671</sup> Concerns have also been raised over social impacts from charging, such as community severance at the northern boundary of the Western Extension.
- <sup>672</sup> In light of the concerns raised in consultation and in other forums, and because of the relatively lower benefits of the Western Extension, the Mayor proposes that TfL should make a Variation Order to remove the Western Extension and to focus Congestion Charging in the original central London zone where the benefits of the scheme and local conditions make a charge throughout the day more economically justifiable.
- <sup>673</sup> Those currently paying the charge to access the Western Extension would gain by not paying the charge, although there would be a reduction in income for TfL. An alternative package of measures would be used in pursuit of the outcomes that the Western Extension had been intended to achieve and to mitigate the impact of its withdrawal.
- <sup>674</sup> The return of the currently deterred traffic to the Western Extension area would tend to increase congestion there. The measures that the Mayor is proposing that should act to mitigate increases, include:
- The accelerated introduction of computer optimised traffic light timings in the area to reduce delays and improve management of traffic flows
  - Improved management of streetworks through the LondonWorks permit scheme and the use of steel plating to cover excavations when work is not in progress
  - Reviews of traffic signal locations and timings

- Increased CCTV coverage of roads in the Western Extension area to allow remote observation by the London Traffic Control Centre and facilitate intervention when incidents occur
  - Improving information to help people make informed journey plans and make the most efficient use of the road network
  - Ongoing improvement to the TLRN, and to the local road network in the Western Extension area through Local Implementation Plans
  - Other measures in the Mayor's smoothing traffic flow programme, and measures to improve freight efficiency, such as FORS
- <sup>675</sup> Action will be taken to encourage the use of sustainable modes such as the Mayor's Cycle Hire Scheme and Cycle Superhighways, travel planning for schools and businesses, and funding car club bays in the Western Extension area to allow for expansion of these schemes which reduce car ownership and use.
- <sup>676</sup> Possible increases in air quality pollutant emissions arising from additional traffic (which are very small in the context of London as whole) would be mitigated by a number of other measures set out in this strategy and the Mayor's Air Quality Strategy, in particular, extensions to the LEZ. Related increases in emissions of CO<sub>2</sub> would be tackled on a London-wide basis.

<sup>677</sup> While it is unlikely that these measures would fully offset the impacts of returning traffic on congestion, complete mitigation would require road capacity to be allocated away from other worthwhile schemes such as improvements that have been made to the urban realm, priority for sustainable modes, and space that is available for the Mayor's Cycle Hire Scheme.

<sup>678</sup> However, the removal of the Western Extension would be likely to reduce by a few per cent traffic and congestion in the original central London zone because some traffic which currently passes through the original zone on the way to, or from, the Western Extension would revert to driving around it to avoid paying a charge.

### 5.27.5 Removal of the Western Extension and continued operation of the remaining central London Congestion Charging zone

<sup>679</sup> The GLA Act provides that the Western Extension of the central London Congestion Charging zone may only be revoked if it appears desirable or expedient for the purpose of directly, or indirectly, facilitating the achievement of any policies or proposals set out in the MTS. The revocation must be contained in an order.

<sup>680</sup> In accordance with proposal 128, TfL will consult the public and stakeholders on a variation order for the revocation of the Western Extension of the central London Congestion Charging zone, providing an opportunity for interested parties to make

representations on the proposed change including its conformity with the MTS.

- 681 In deciding whether to confirm the order the Mayor will have regard to the requirements of the GLA Act and any representations and objections received in response to consultation.
- 682 Regardless of the proposed removal of the Western Extension zone, the Mayor will continue to operate the Congestion Charging scheme in the remaining central London zone. He will consider opportunities to improve the scheme as they arise, for instance, through the development of new technologies, feedback from scheme users or stakeholders, or the emergence of new examples of best practise, to ensure it continues to provide the best possible means of achieving the desired outcomes of the MTS.

#### Proposal 128

The Mayor, through TfL, subject to consultation, will remove the Western Extension of the central London Congestion Charging zone after putting in place such measures in mitigation of negative impacts as are both desirable and practicable.

#### Proposal 129

The Mayor, through TfL, will operate and monitor Congestion Charging in the original Central London Congestion Charging zone. The Mayor will keep the scheme under review, making variations to ensure the continued effectiveness of the policy reflects best practice, improves the operation of the scheme, or helps it to deliver the desired outcomes of the MTS.

### 5.27.6 Wider application of road user charging to manage demand

- 683 The TfL Business Plan for 2009/10–2017/18 does not include any extension to the remaining congestion charging arrangements or the introduction of any new area based congestion charging as a Mayoral initiative. As set out in Figure 42 (in section 5.6, Managing the road network), some form of demand management in areas beyond the central London Congestion Charging zone may be required in the longer term if congestion becomes an increasing problem or if other objectives (for example, environmental aims or the need for additional investment in transport) cannot otherwise be met. The application of road user charging may be explored in the longer term in other circumstances where it can be appropriately tailored to local conditions and suitably implemented.

- 684 Charging in local areas would only be considered with the Mayor working in partnership with local authorities to evaluate the potential for local schemes to support the delivery of the desired outcomes set out in this strategy. Charges or tolls to support specific infrastructure improvements, such as river crossings, might also be examined.
- 685 Investment in public transport, better management of the road network, smarter travel initiatives and support for a shift to walking and cycling, as illustrated in Figure 42, will help to mitigate the congestion impacts of forecast population and economic growth. This approach will ensure more reliable journey times on the road network than would otherwise be the case. Along with measures to promote cleaner vehicles, this will also help to reduce emissions of both CO<sub>2</sub> and air pollutants.
- 686 Beyond this, in the longer term, additional levers such as road user charging may be considered, if needed, to help achieve the Mayor's desired outcomes for London. The Mayor is currently considering further phases of the Low Emission Zone. In the future, potential funding options for the package of river crossings may also be considered. Decisions on the mix of demand management measures that might be deployed across London, the relative priority accorded to such interventions and their potential timing, will depend on the effectiveness of the policy levers in achieving the goals and outcomes of the strategy, the final shape of the London Plan and other considerations. Any proposals in the longer term for road user charging would, by

law, be subject to full public and stakeholder consultation, allowing the Mayor to consider public attitudes alongside other salient factors before making a decision.

### Proposal 130

The Mayor, through TfL, and working with the London boroughs and other stakeholders, if other measures are deemed insufficient to meet the strategy's goals, may consider managing the demand for travel through pricing incentives (such as parking charges or road user charging schemes). This would depend upon there being a reasonable balance between the objectives of any scheme and its costs and other impacts. Any scheme would need to take account of local conditions, as well as the impact on surrounding regions, and to be fair and flexible relating charges to the external costs of travel with sensitivity to time of day, and with scope for discounts or exemptions for specific user groups. The Mayor will also consider imposing charges or tolls to support specific infrastructure improvements, such as river crossings.

# Chapter six – Expected outcomes of the transport strategy

## 6.1 Analytical approach

<sup>687</sup> In assessing the challenges facing London's transport system, the strategy considers the current situation in the Capital and also looks forward to the London of 2031. There has been a considerable amount of analysis underpinning the new MTS, which includes:

- A detailed assessment of past and current patterns and trends in travel and the performance of the transport system set out by the Travel in London reports, published by TfL in April 2009 and March 2010
- A projection of outcomes in 2031 on the basis of a committed, funded transport investment programme in the TfL Business Plan (up to the end of financial year 2017/18) and GLA projections of employment and population. After 2018, only the completion of Underground line upgrades – and the continuation of existing services – is assumed in this projection. This is called the reference case
- Sensitivity analysis. All projections have some uncertainty, so development of the strategy has not simply considered one projection of the future. Sensitivity analysis tests have therefore been run, which vary key assumptions in the reference case, such as with different levels or patterns of population and employment growth
- Scenarios. There have been a number of scenarios tested, for example, different transport investment scenarios and the impact of other transport policies, including cycling. One scenario is the reference case; the others are compared either to the reference case or the base year (2006)

- The joint Economic Evidence Base, produced by GLA Economics, to underpin the London Plan, MTS and EDS
- The Integrated Impact Assessment (IIA)

<sup>688</sup> The reference case, sensitivities and scenarios are essentially aimed at estimating what would happen in the future under different circumstances – and the consequences of different investments, policies or other assumptions. The Travel in London report, which analyses what has happened to travel and transport in the Capital in the past, has also informed the forward-looking analysis carried out for the MTS.

<sup>689</sup> Most of the scenarios compare the outcomes for 2031 with current levels and the reference case, which includes already committed schemes.

<sup>690</sup> As well as transport scenarios, the MTS analysis also looked at scenarios involving changes to land use. This reflected the integration of land use and transport planning: the production of the MTS, London Plan and the EDS has gone well beyond the minimum requirement of the MTS having regard to the London Plan and other Mayoral strategies. Considerable effort has gone into making sure they were produced together and aligned. The scenarios tested looked at varying both land use and transport.

<sup>691</sup> Employment and population projections have been supplied by the GLA and model inputs have been informed by discussions with the authority, including the London Plan team, Data Management and Analysis Group (DMAG) for population projections, and GLA Economics

in order to achieve a common approach. The range of sensitivities is aimed at producing a picture of the scale of uncertainty based likewise on common information.

<sup>692</sup> Projections of ground-based, transport-related CO<sub>2</sub> emissions in the MTS are derived from the same analytical tool as transport sector CO<sub>2</sub> projections in the Mayor's CCMES.

## 6.2 Anticipated outputs and outcomes

<sup>693</sup> The outputs and outcomes of implementing the full transport strategy can be compared to:

- London as it is now
- London as it would be in 2031 with no further investment at all (beyond 2010)
- London as it would be in 2031 with the committed TfL Business Plan and HLOS only (the MTS reference case)

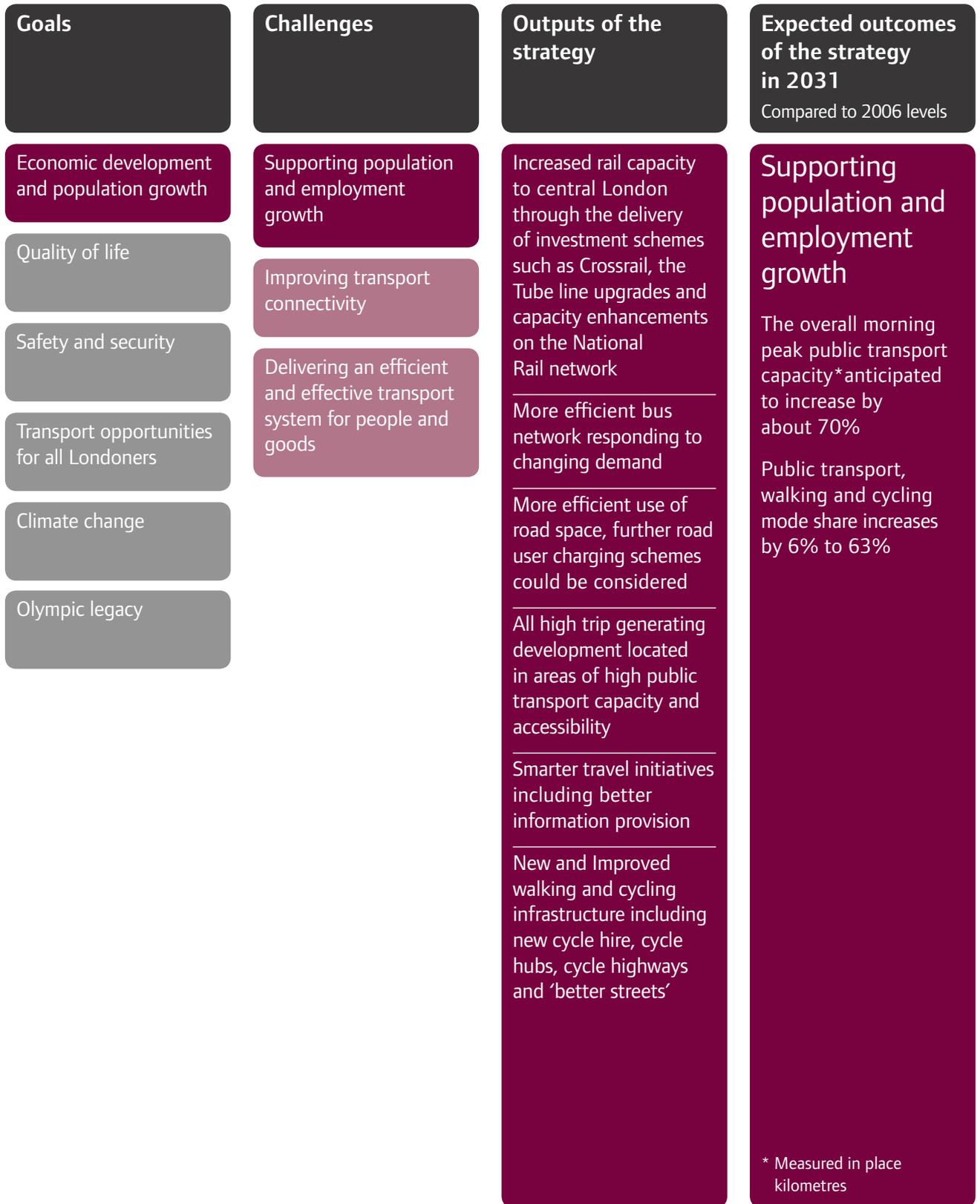
<sup>694</sup> The outcomes for London with no further investment beyond 2010 would be truly dire: crowding on the Tube and National Rail would get significantly worse, road congestion would escalate, asset condition would deteriorate making journeys far less reliable and increasing journey times, and transport's impact on the environment would increase. London's economy would be unable to grow and its viability would be threatened. Government has recognised this and has committed, through the 10-year TfL funding settlement and the HLOS process, to one of the largest

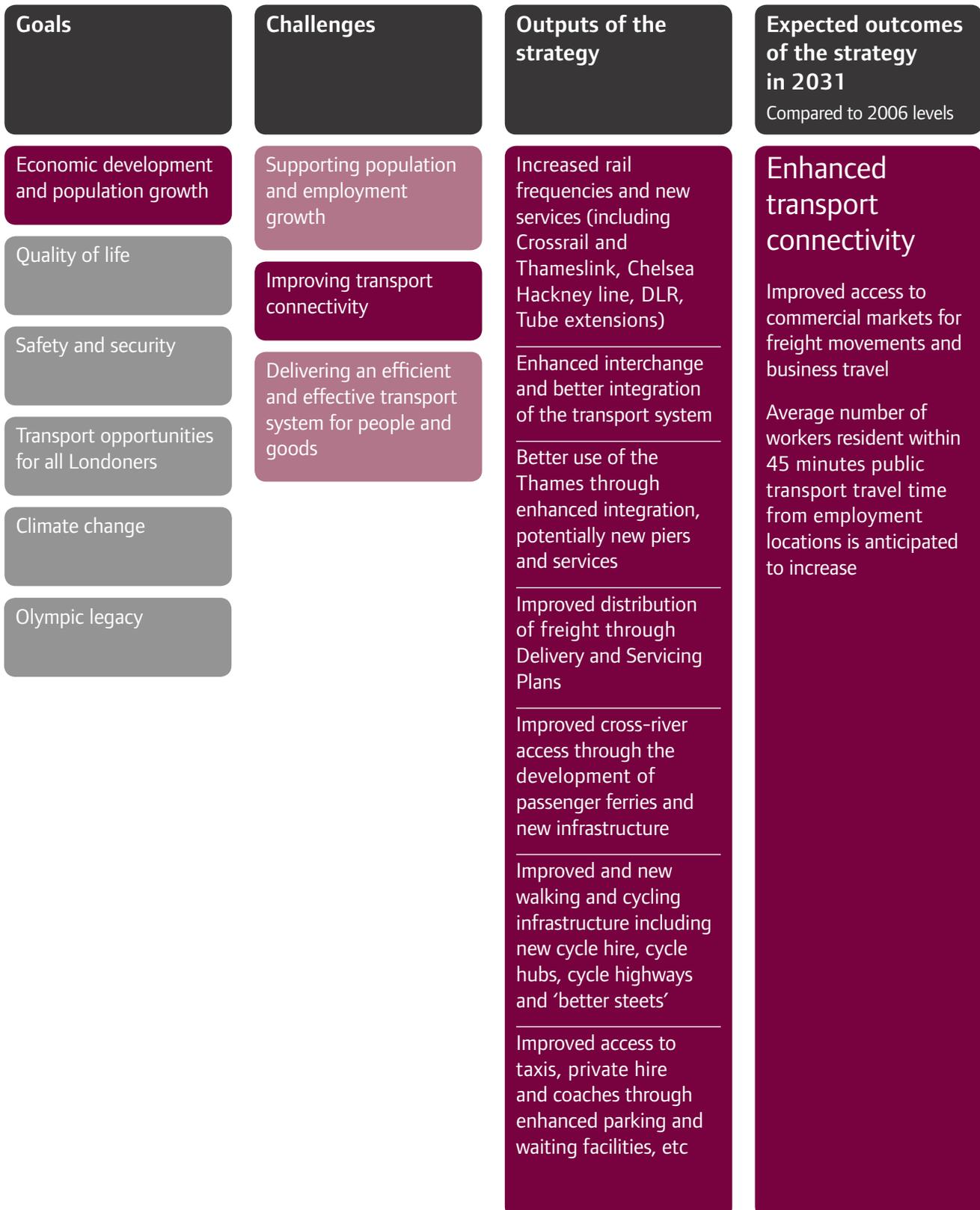
programmes of infrastructure investment the Capital has ever seen. This programme of investment has started and will run to 2020.

<sup>695</sup> Analysis for the MTS has therefore focused on the outcomes of this committed investment programme and identifying what more is needed to support London's growth beyond that period and to meet the Mayor's desired outcomes. Analysis shows that significant benefits are delivered by the currently funded investment and that they will contribute to address the challenges identified in chapter four. However, because of the greater demand placed on the transport system by continuing economic and population growth, these investments will not be sufficient to meet London's needs and the Mayor's desired outcomes for 2031.

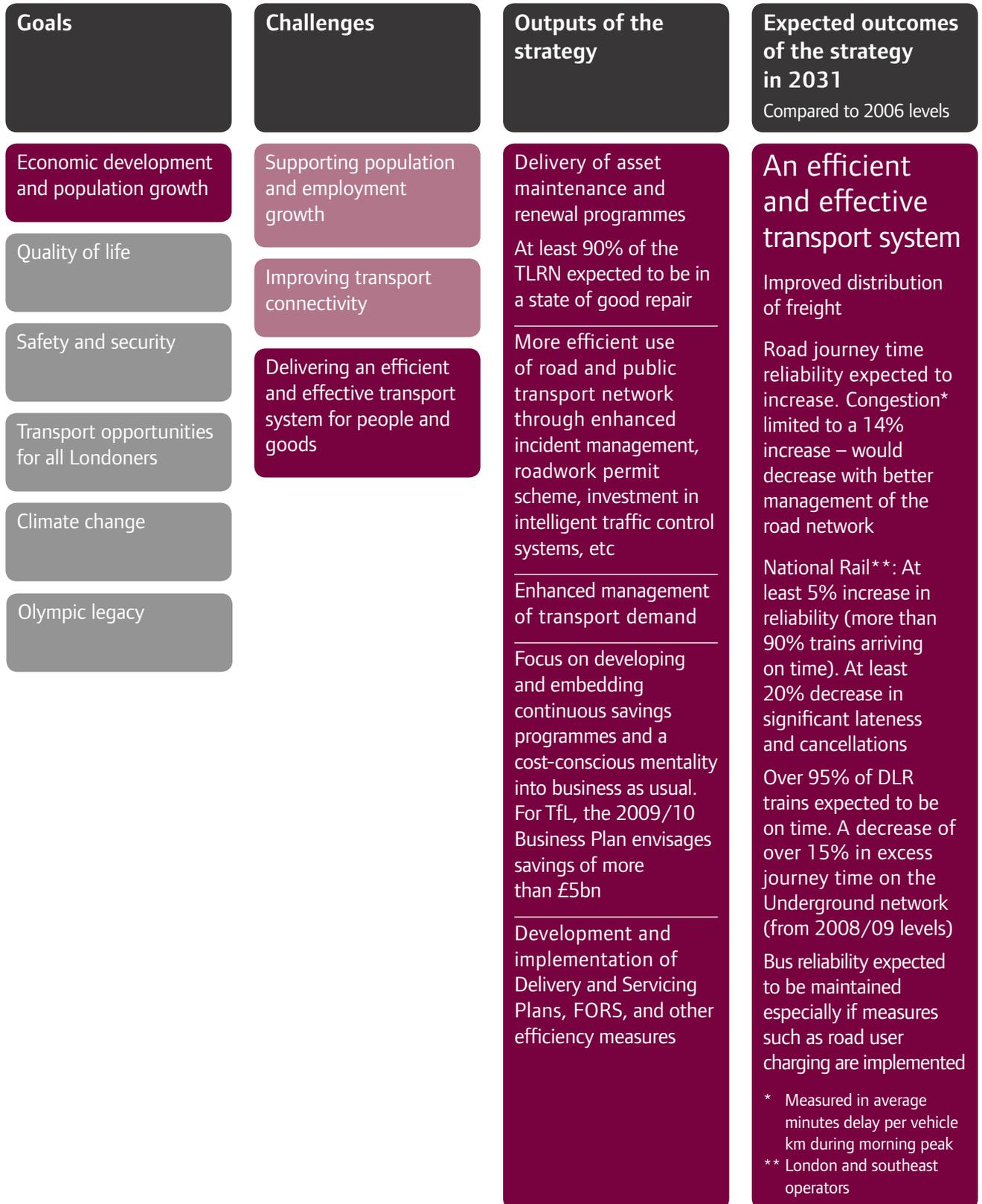
<sup>696</sup> The rest of this section therefore focuses on the anticipated benefits of the whole transport strategy compared to 2006 levels unless stated otherwise. Figures 67 to 85 summarise the anticipated outcomes of the MTS for each of the challenge areas identified in chapter four. They include the effects of the measures in the implementation plan in chapter seven – the impacts are therefore different from those in chapters three and four which are based on the reference case.

**Figure 67:** How the strategy would support population and employment growth

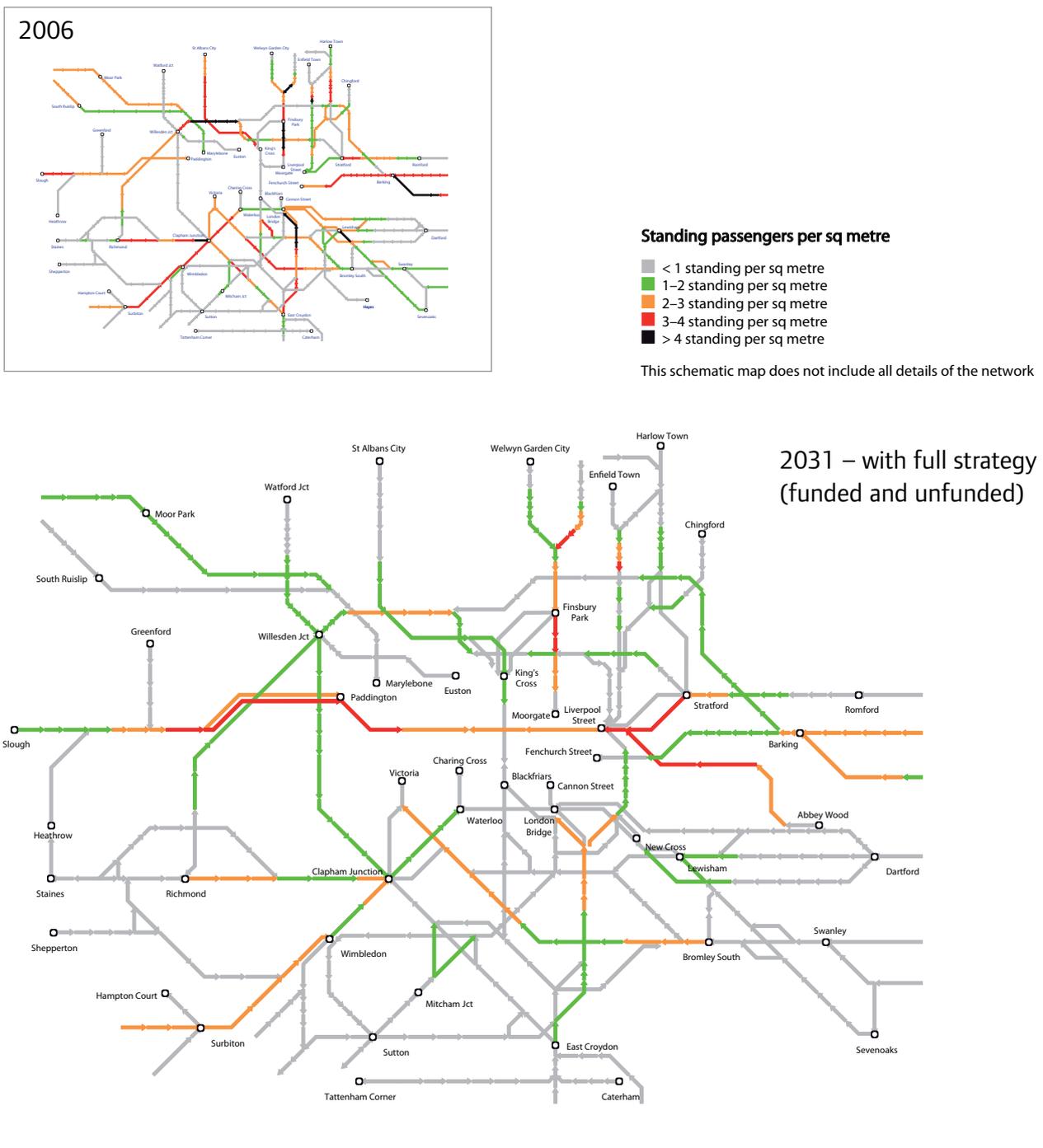


**Figure 68:** How the strategy would enhance transport connectivity

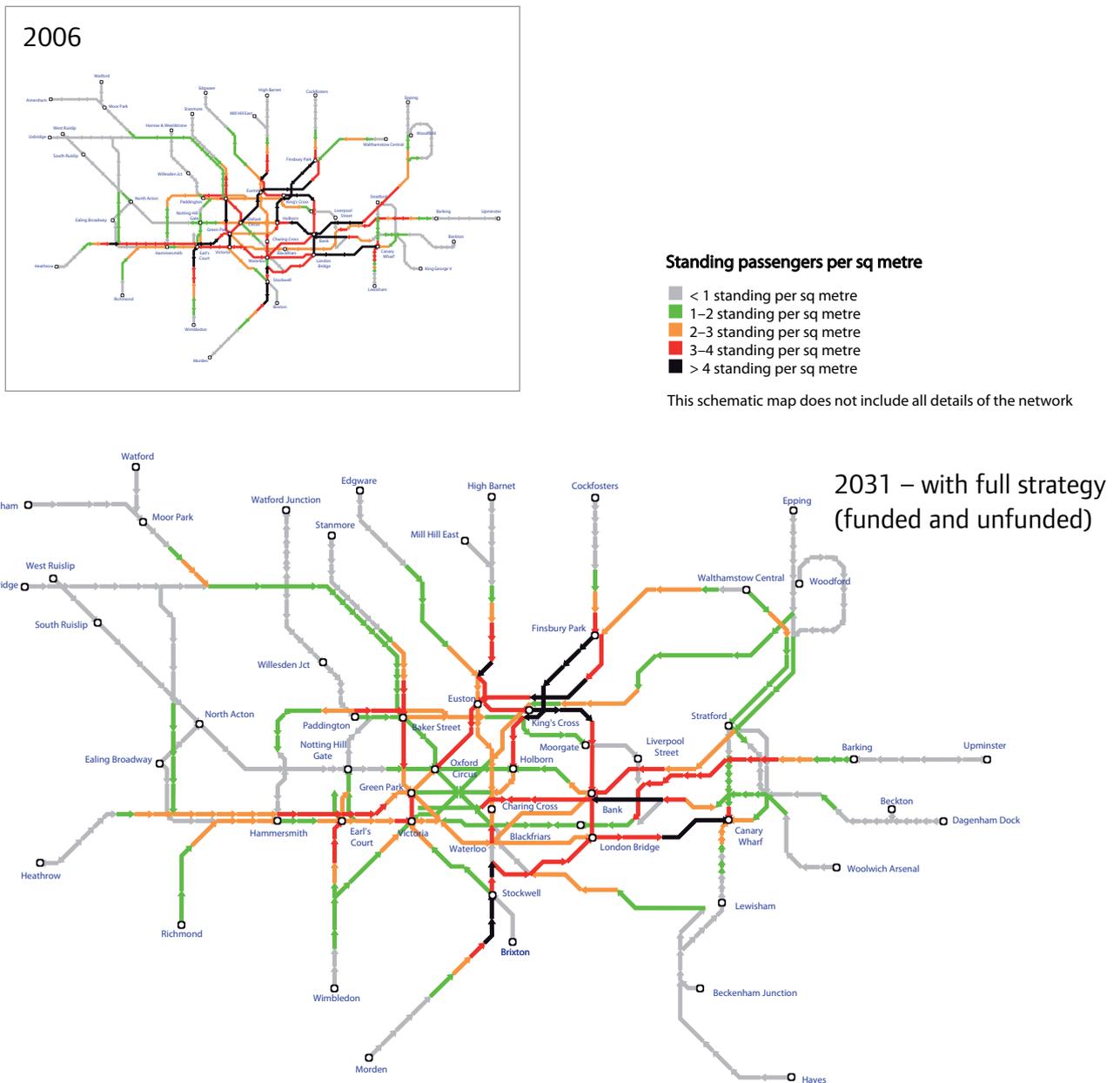
**Figure 69:** How the strategy will deliver an efficient and effective transport system for people and goods

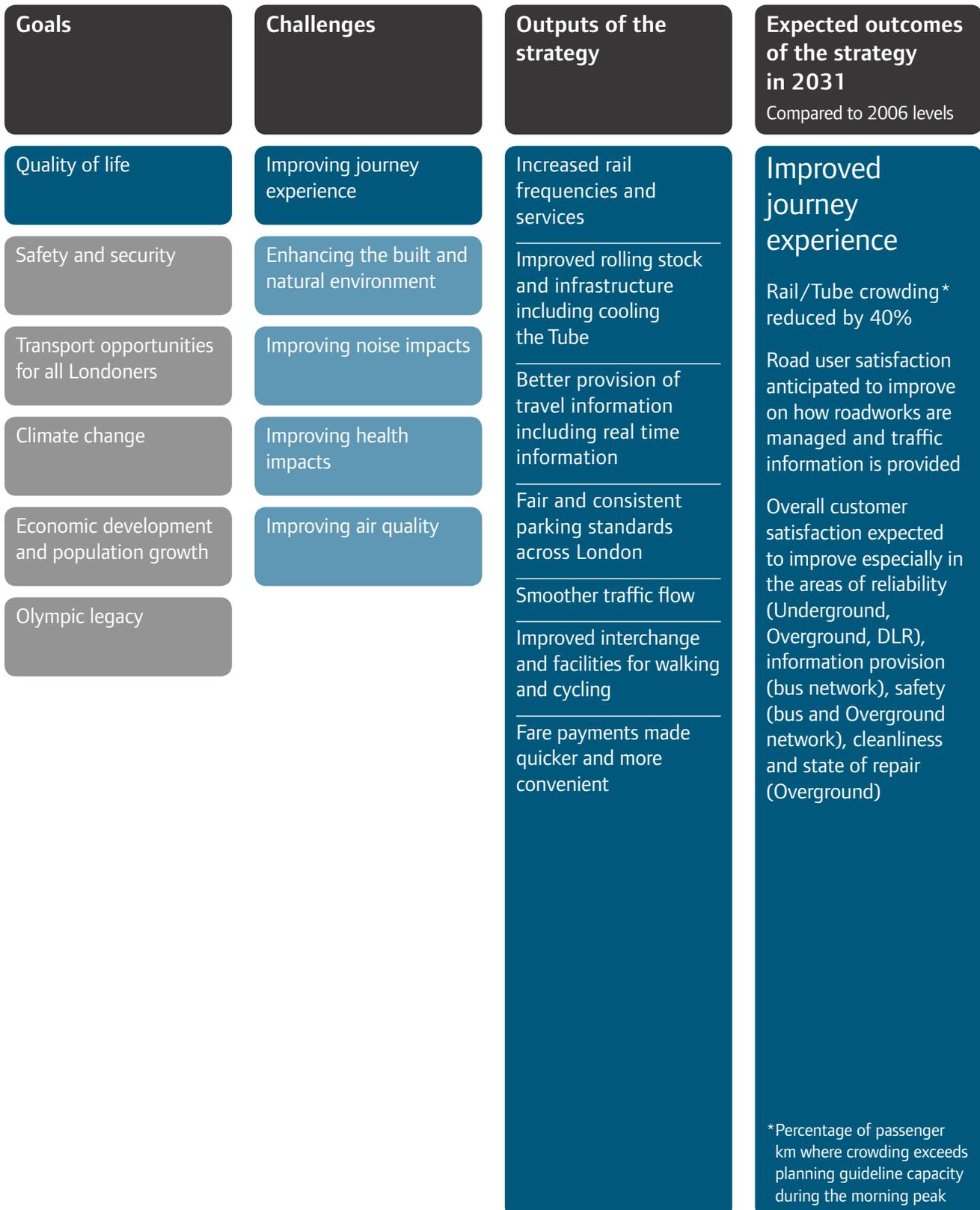


**Figure 70:** Anticipated change in crowding levels on the National Rail network by 2031 with the strategy

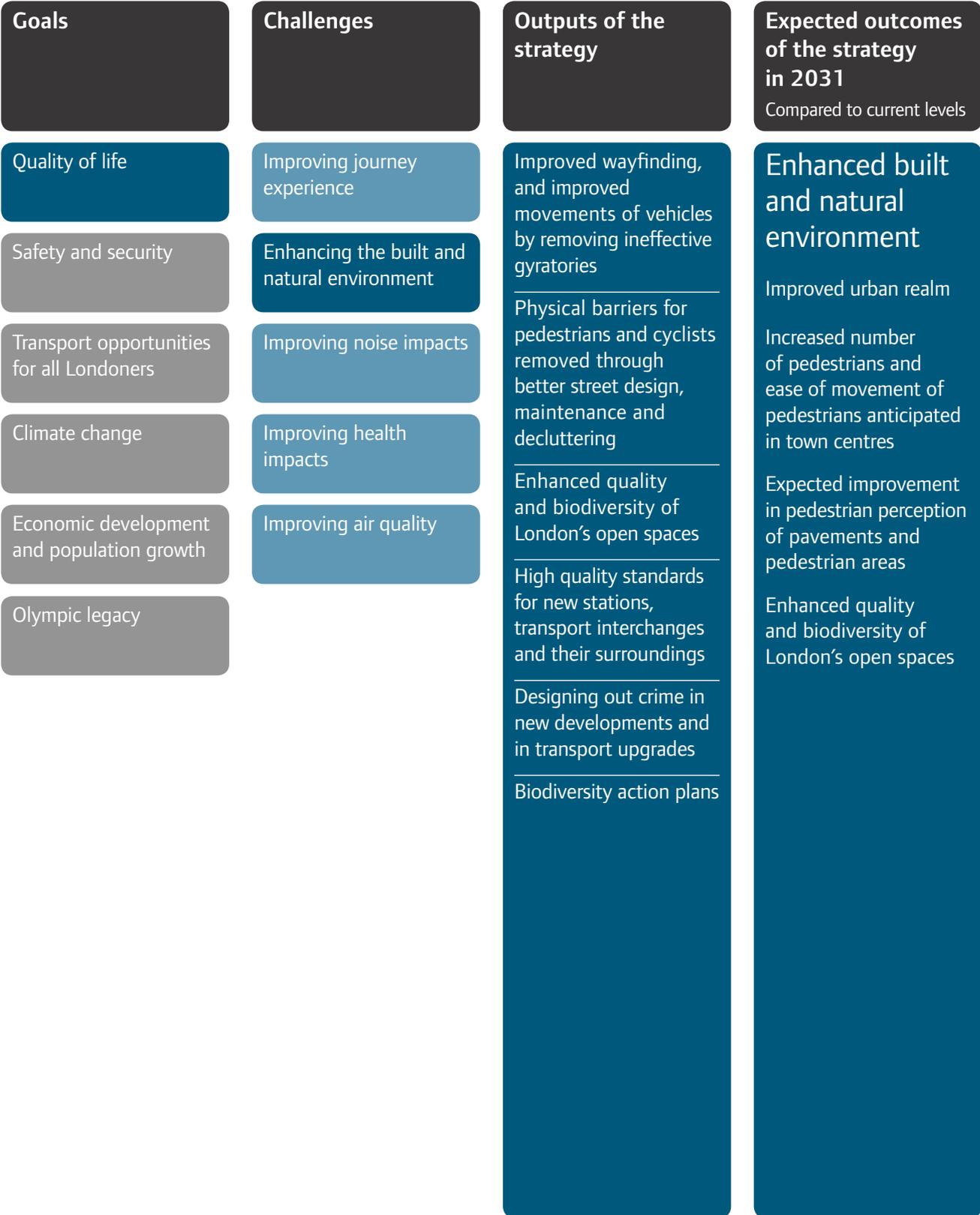


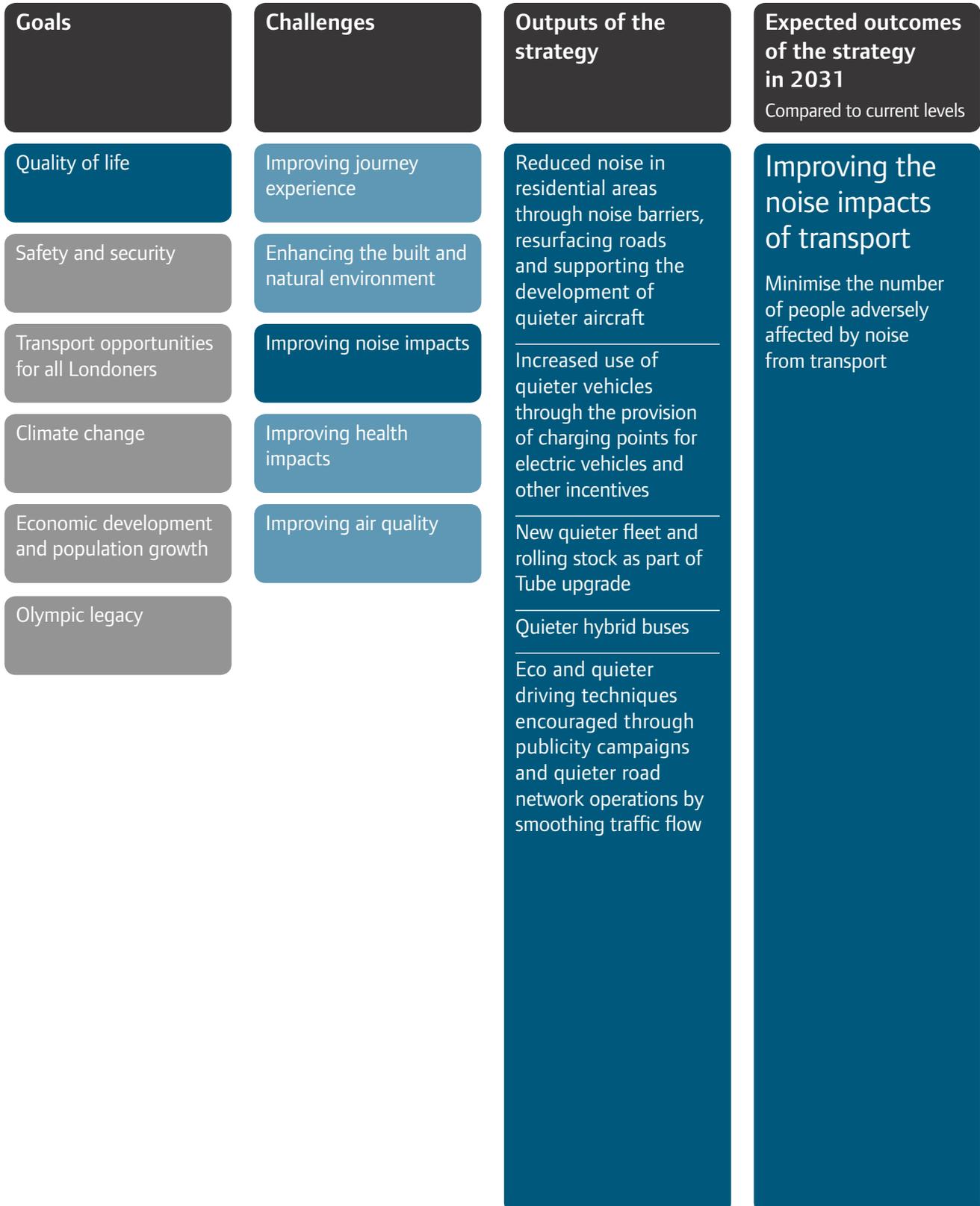
**Figure 71:** Anticipated change in crowding levels on the Tube and DLR network by 2031 with the strategy



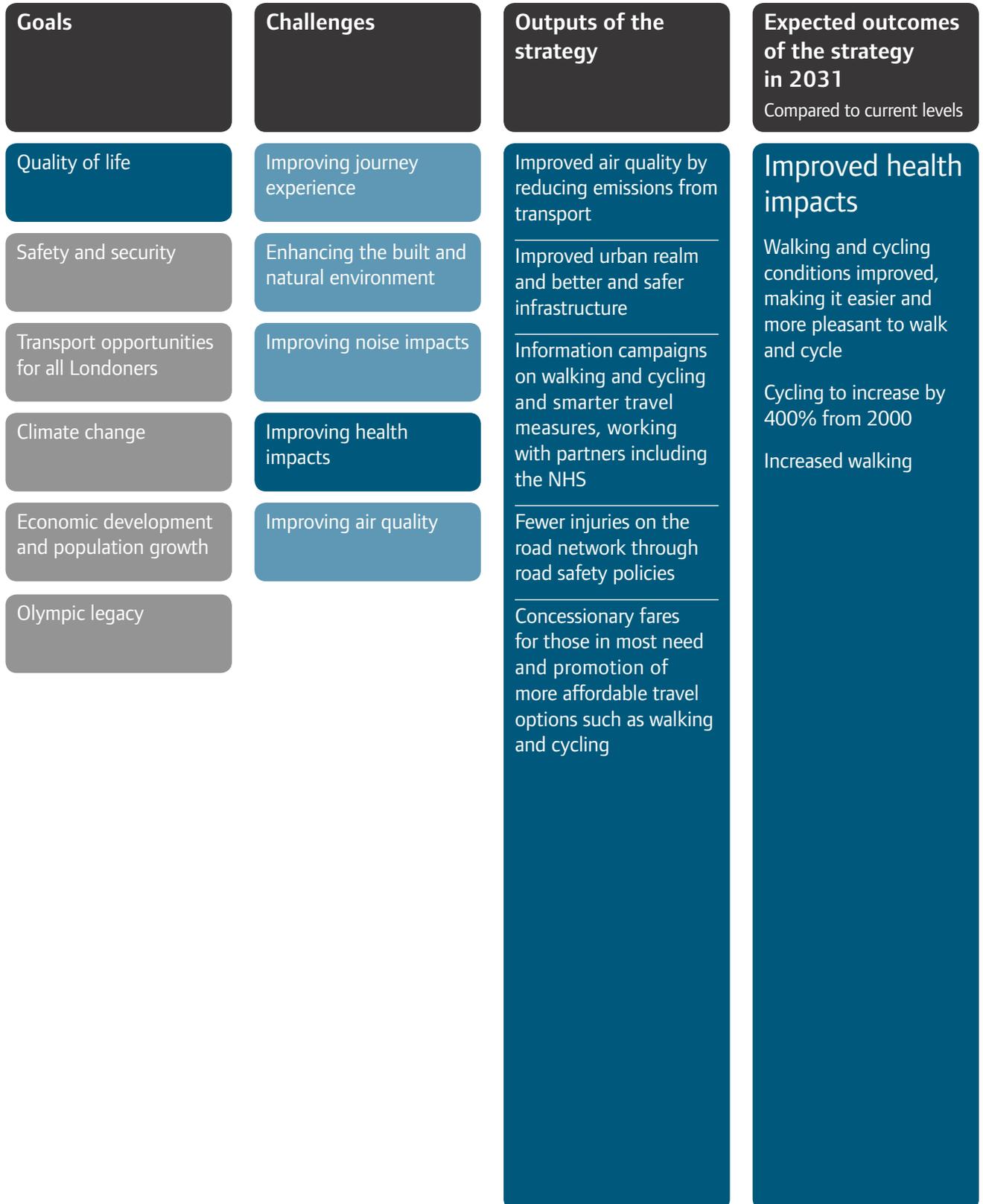
**Figure 72:** How the strategy will improve journey experience

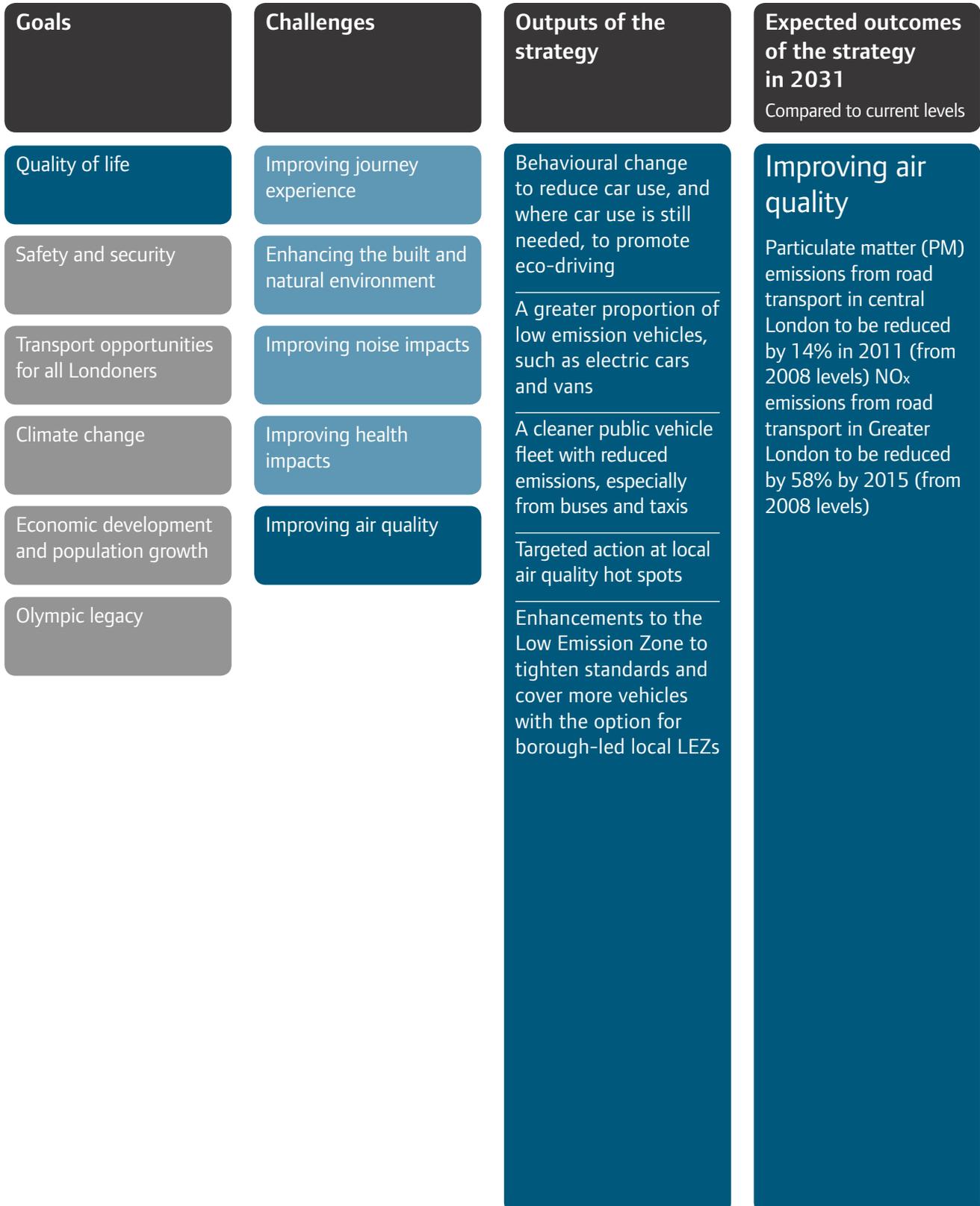
**Figure 73:** How the strategy will enhance the built and natural environment



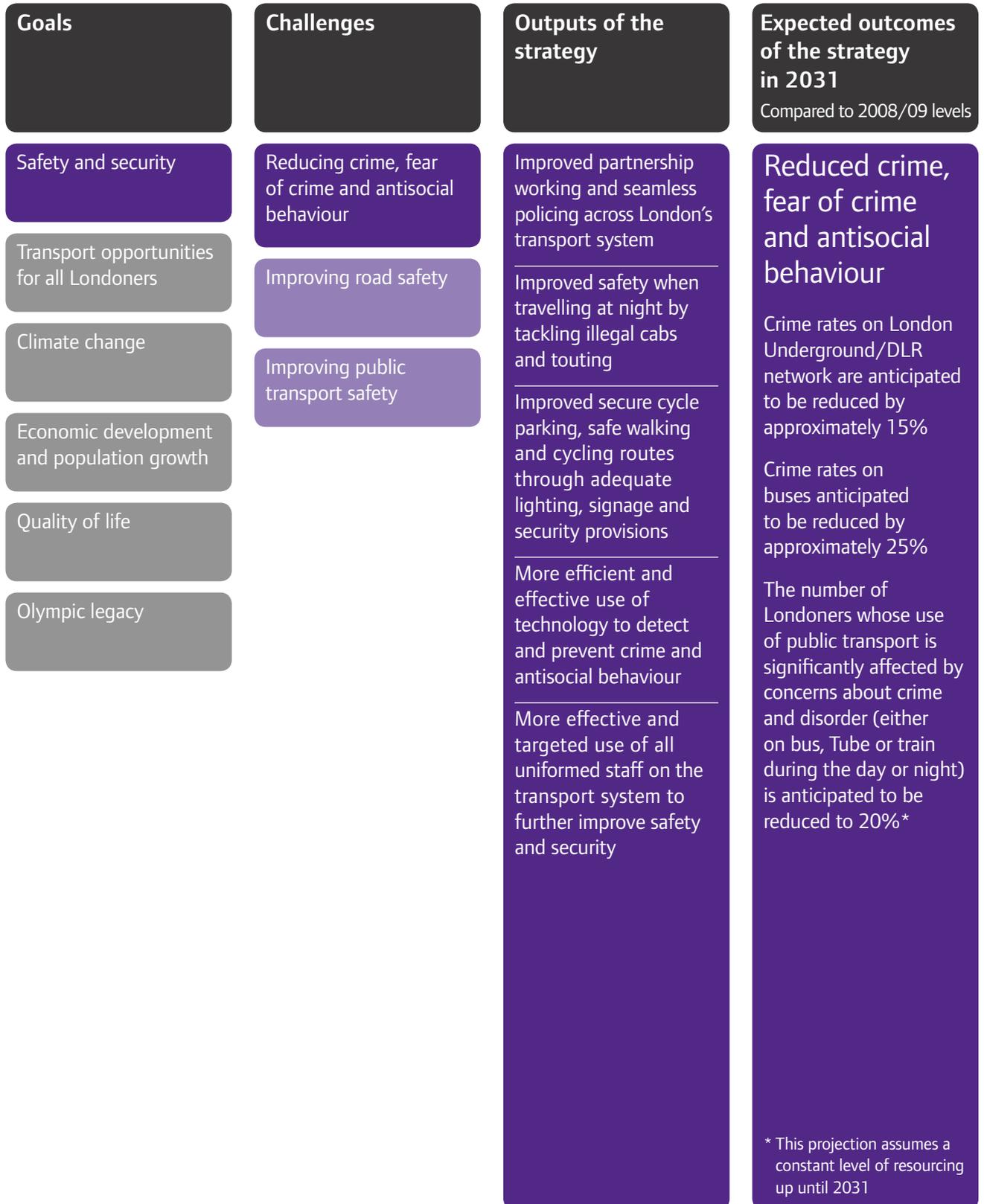
**Figure 74:** How the strategy will improve noise impacts

**Figure 75:** How the strategy will improve health impacts



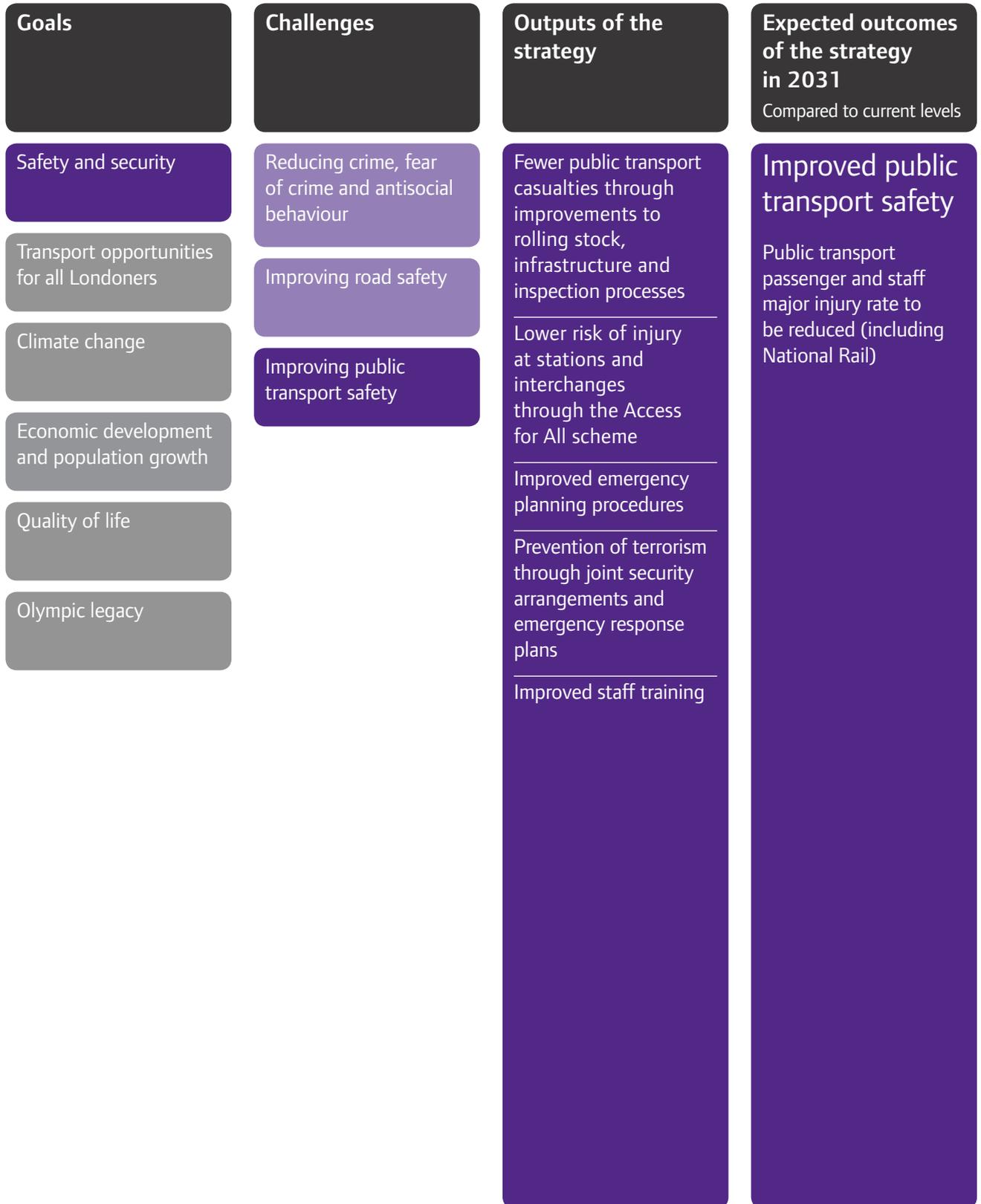
**Figure 76:** How the strategy will improve air quality

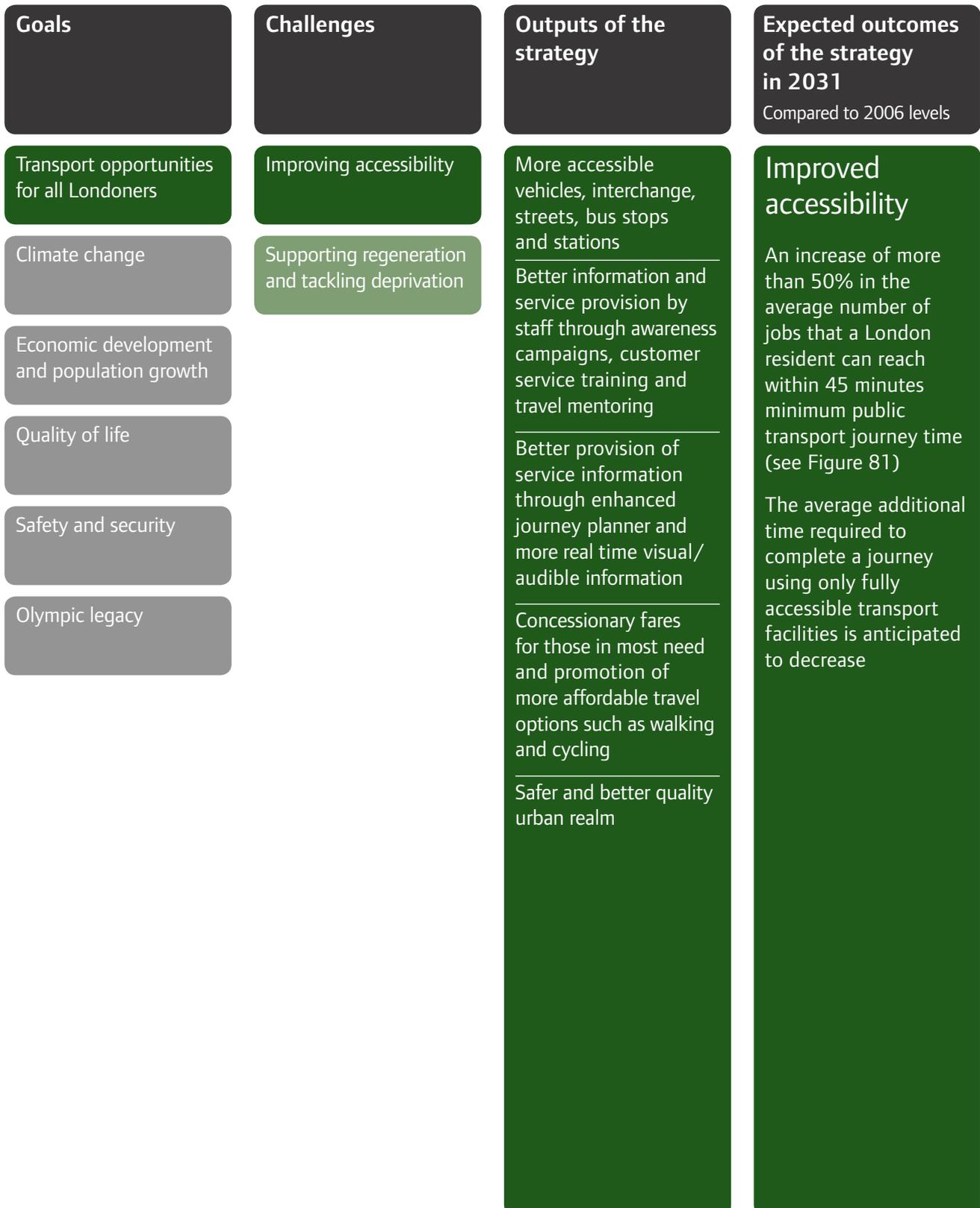
**Figure 77:** How the strategy will reduce crime, fear of crime and antisocial behaviour



**Figure 78:** How the strategy will improve road safety

**Figure 79:** How the strategy will improve public transport safety



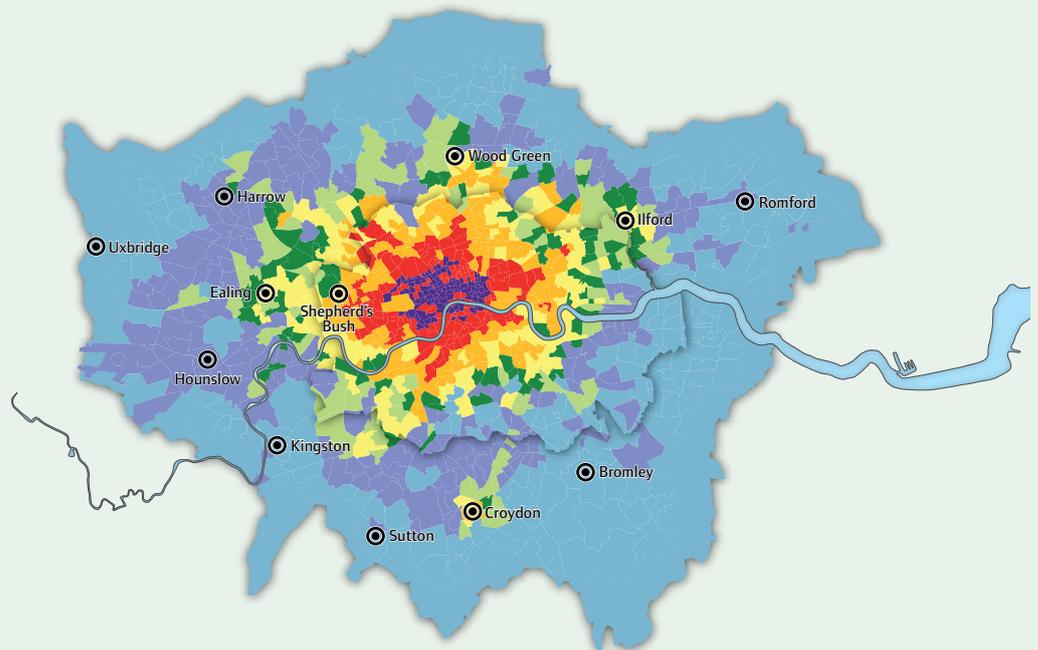
**Figure 80:** How the strategy will improve accessibility

**Figure 81:** Anticipated difference in access to jobs between 2006 and 2031

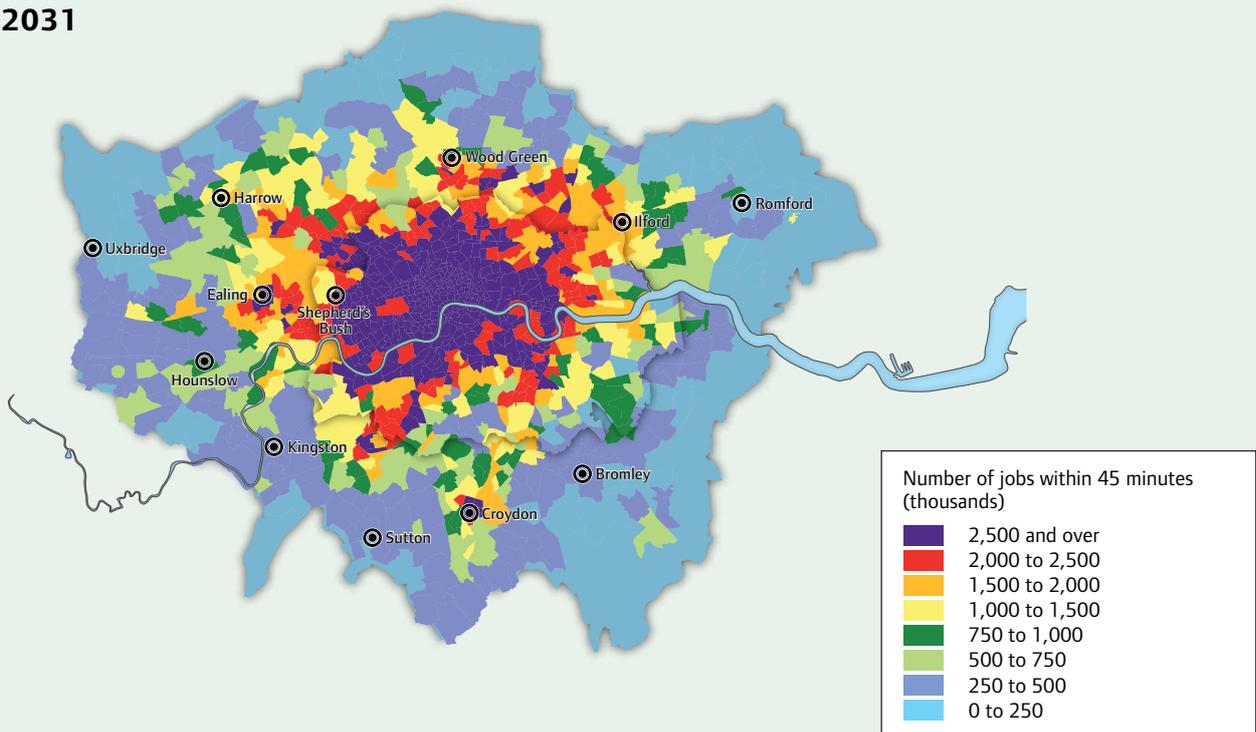
The strategy will support London’s economic development by increasing the number of jobs accessible by transport within 45 minutes. This

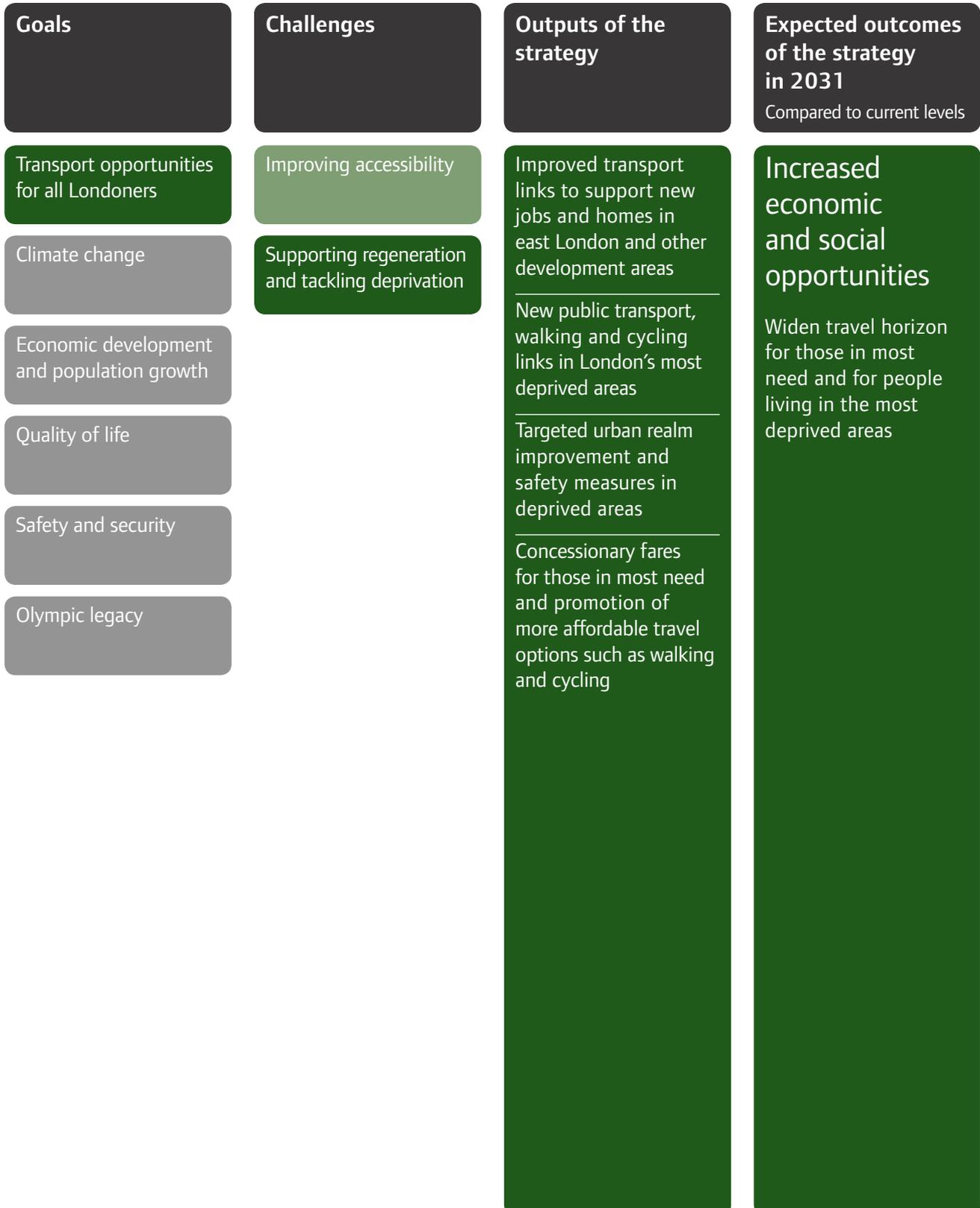
will increase the pool of potential employees available to London’s businesses and improve the employment opportunities available to Londoners

**2006**

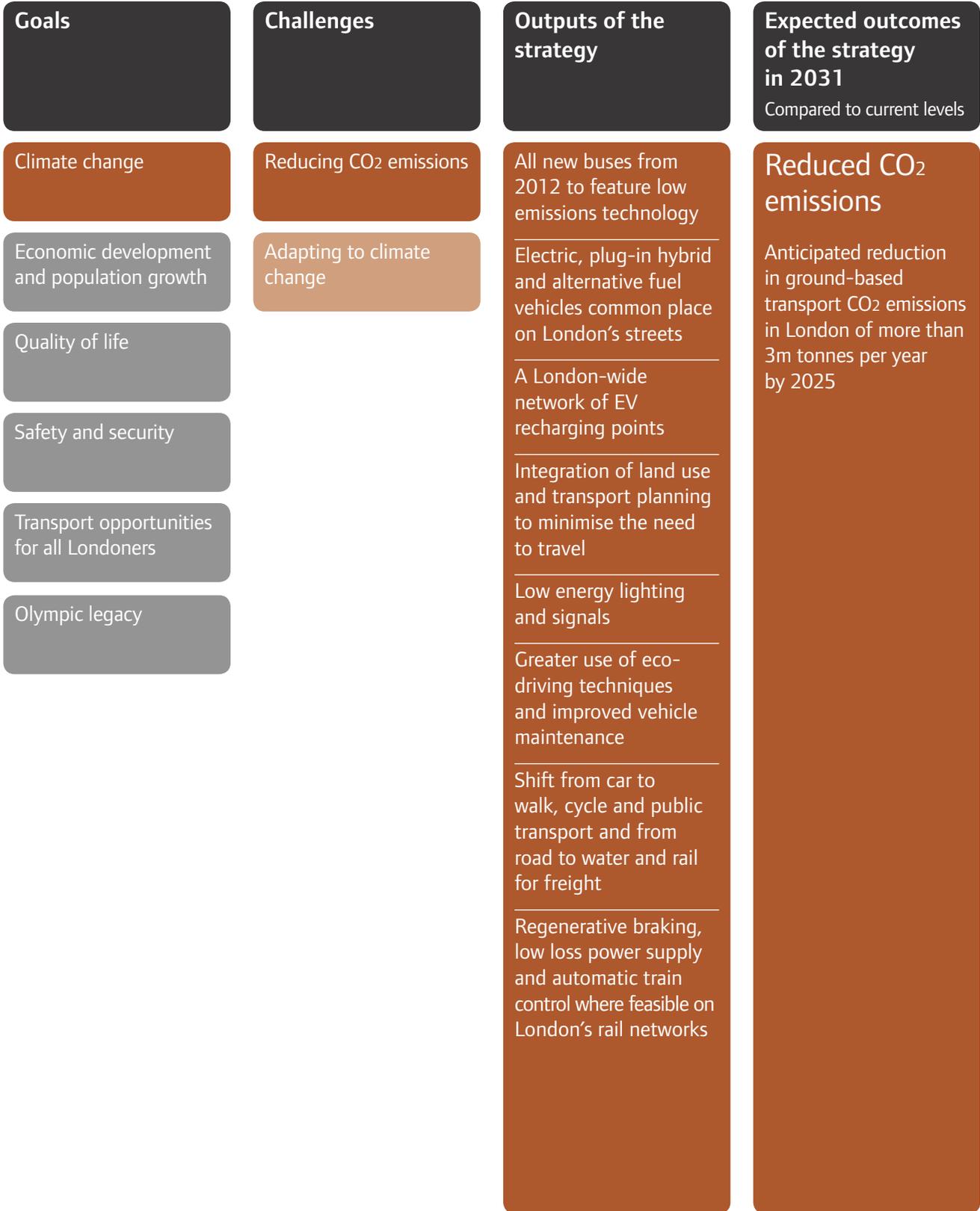


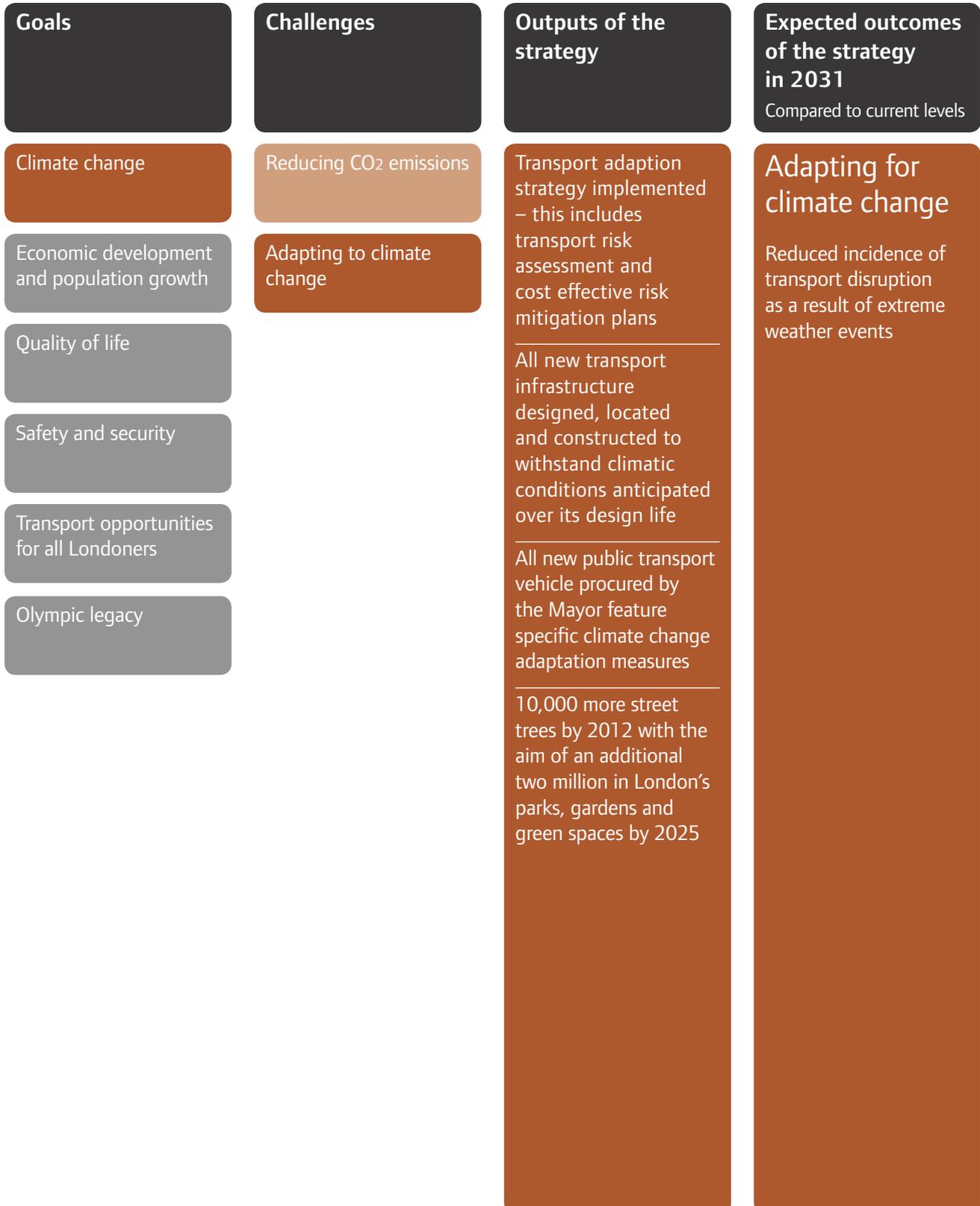
**2031**



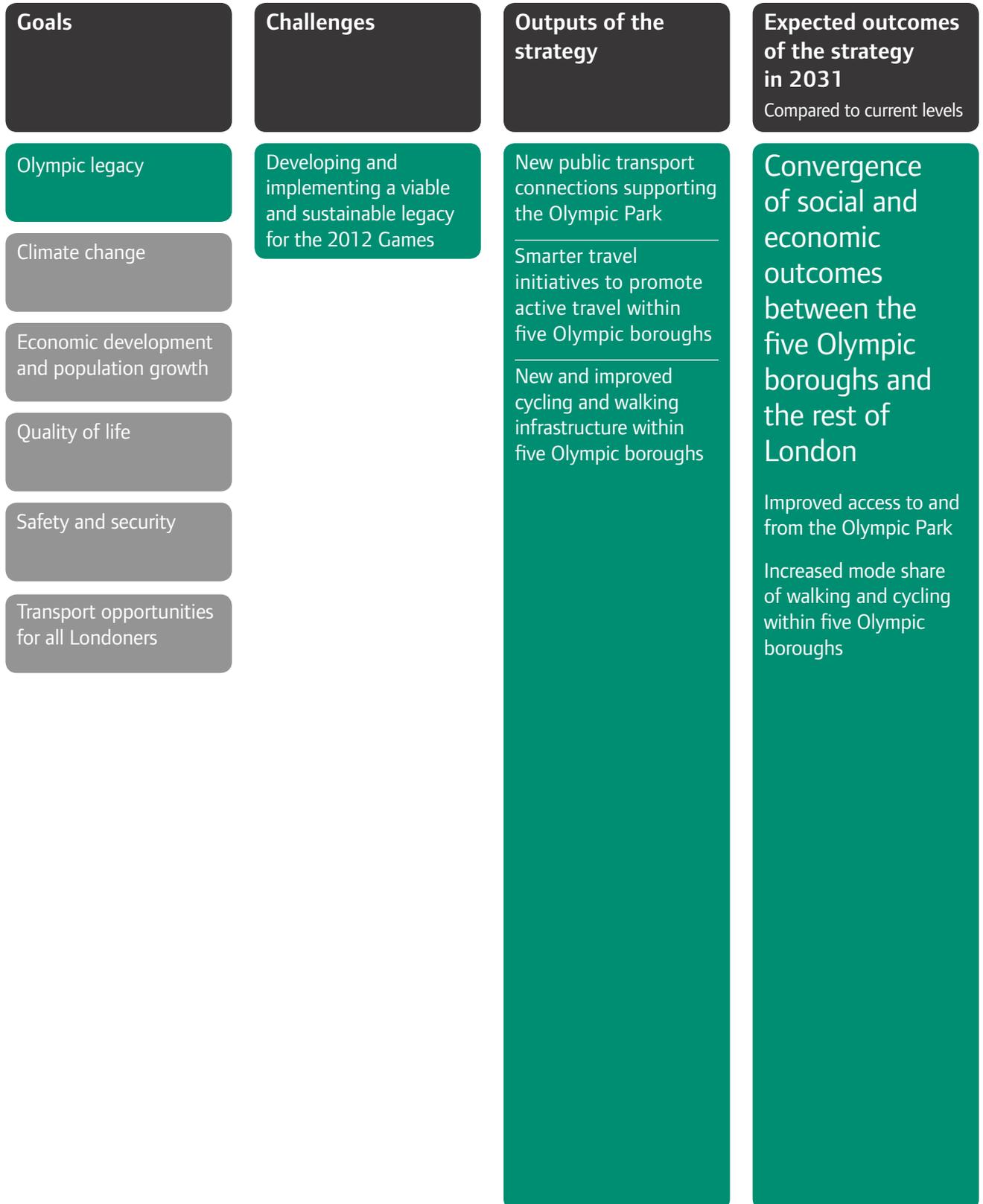
**Figure 82:** How the strategy will support regeneration and tackle deprivation

**Figure 83:** How the strategy will reduce ground-based transport CO<sub>2</sub> emissions



**Figure 84:** How the strategy will support adaptation to climate change

**Figure 85:** How the strategy will support the Olympic legacy



# Mayor's Transport Strategy – Part three

## Delivery



# Chapter seven – Implementation plan

## 7.1 Short, medium and long-term plan

<sup>697</sup> Implementation of the schemes identified in the MTS can be grouped into three time periods:

- Short term: The period up to and including 2012
- Medium term: From 2013 up to and including 2020
- Long term: From 2021 up to and including 2031

<sup>698</sup> Figure 86 below sets out the phasing for the implementation of an indicative list of schemes for the implementation of the strategy<sup>1</sup>. It describes the scheme itself, the phasing and whether funding has already been

or is yet to be secured. Some schemes are labelled as unfunded as they require further funding to be made available before they could be taken forward, or because they fall outside the timeframe of TfL's current Business Plan.

<sup>699</sup> The implementation plan reflects the current delivery priorities. The plan will be regularly reviewed through the TfL Business Plan, the GLA Corporate Plan and the DfT's Network Rail and Highways Agency investment programmes to ensure ongoing alignment with priorities. Longer-term unfunded schemes are at varying stages of development. Scheme development will be regularly reviewed to ensure alignment with policy priorities, value for money, deliverability and to take account of opportunities for funding that may become available.

**Figure 86:** Transport Strategy Implementation Plan (indicative list)

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
<b>Rail</b>						
High Speed 1	International services stopping at Stratford	L				1
High Speed 1	Enhanced domestic services	L				4
High Speed 1	Direct services to a wider range of European destinations (making use of new European infrastructure)	L				4
High Speed 2	London to the west Midlands and beyond	H				4
Improved rail freight terminals to serve London	New and/or expanded rail freight terminals to serve London	L				2

<sup>1</sup> TfL schemes will be reviewed by the TfL Board as part of the business planning process

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Improved rail freight routes	Rail link from Barking to Gospel Oak line to West Coast Main Line	M				3
Improved rail freight routes	Further capacity enhancement for the Felixstowe to Nuneaton route	M				3
Crossrail 1	Core scheme: Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east	H				5
Crossrail 1	Westerly extension(s) and/or increased frequency west of Paddington	M				6
Crossrail 1	Easterly extension	M				6
Chelsea Hackney line (Crossrail 2)	Enhanced southwest – northeast London capacity and connectivity	H				9
London Overground	Programme of expansion and enhancement of services, including new orbital services through Inner London and new, longer trains by 2012	M				14
London Overground	Further train lengthening	L				8 and 14
London Overground	Diversion of Watford Junction services to Stratford (instead of Euston) to release capacity for High Speed 2 at Euston	M				4
London Overground	Barking to Gospel Oak line – electrification and train lengthening	L				8 and 92
West Anglia	Twelve-car capability to Stansted and Cambridge. Additional capacity also on inner services (HLOS CP4)	L				7
West Anglia	Lea Valley four-tracking and improved access to Stratford	H				8
Thameside south Essex	Twelve-car capability on all routes (HLOS CP4)	M				7
Thameside south Essex	Further capacity increases	M				8
Chiltern	Enhanced inner suburban service (HLOS CP4)	L				7
South central London	Ten-car capability on inner suburban (HLOS CP4)	M				7
South central London	Twelve-car capability and additional fast services (HLOS CP4)	L				7
South central London	Further capacity increases	M				8

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Southeast London	Train lengthening on services to Cannon Street/Charing Cross (HLOS CP4)	M				7
Southeast London	Further capacity increases	M				8
Southwest London	Ten-car capability on inner suburban and Windsor lines (HLOS CP4)	M				7
Southwest London	Further capacity increases	M				8
Great Western	Train lengthening (HLOS CP4)	L				7
Great Western	Electrification	H				92
Great Northern	Train lengthening (HLOS CP4)	L				7
Great Northern	Further capacity increases	L				8
Great Eastern	Additional and longer outer services (HLOS CP4)	L				7
Great Eastern	Additional inner services (HLOS CP4)	L				7
Great Eastern	Further capacity increases	L				8
West Coast	Train lengthening and frequency improvements (HLOS CP4)	L				7
West Coast	Further capacity increases	L				8
Thameslink	Phase 1: 12-car capability on most of mainline and 16 trains per hour through core	H				7
Thameslink	Phase 2: 24 trains per hour through core, expanded network	H				8
Thameslink	Make greater use of 12-car capability coverage	M				7
Rail termini enhancement	Passenger congestion relief/onward movement capacity enhancement works. Schemes under development	M				11
Strategic interchanges	Programme of schemes under development	M				46
Improved rail	For example, enhanced bus services and interchange at selected Crossrail and/or Thameslink stations	L				45
Airtrack	Link south west London railway network to Heathrow (part-funded)	M				50
<b>Tube</b>						
Jubilee line	Jubilee line upgrade to provide additional capacity and improve journey times	M				17

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Northern line	Phase 1: Northern line upgrade to provide additional capacity and improve journey times by the end of 2012	M				17
Northern line	Phase 2: Northern line Upgrade 2 to deliver a further 20 per cent increase in capacity through the simplification and recasting of service patterns	M				17
Northern line	Developer-led extension: Kennington to Battersea to support the regeneration of the Vauxhall/Nine Elms/Battersea area	M				22
Victoria line	Victoria line upgrade including new rolling stock and signalling to provide additional capacity and improve journey times	M				17
Piccadilly line	Piccadilly line upgrade to provide additional capacity and improve journey times	M				17
Sub-Surface Railway (SSR)	Circle, District, Hammersmith & City and Metropolitan lines upgrade (including new air-conditioned rolling stock and new signalling) to provide additional capacity and improve journey times	H				17
Croxley rail link	Metropolitan line link to Watford Junction	M				22
Bakerloo line	Bakerloo line upgrade: Including new energy efficient and high capacity rolling stock and signalling	M				17
Bakerloo line	Potential Bakerloo line southern extension	H				22
Station refurbishment/modernisation programme	Continuing programme of refurbishment/modernisation of stations	H				18
Cooling the Tube programme	Enabling operation of services post line upgrades and improved passenger comfort	M				20
Core asset renewal	Programme of core asset renewal to lock-in benefits from the upgrades and maintain assets in a state of good repair	H				17
Tube station congestion relief schemes	Congestion relief schemes at Victoria, Tottenham Court Road, Bond Street, Bank (part-funded) and Paddington (Hammersmith & City line)	H				19

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Further Tube station congestion relief schemes	Targeted station capacity expansion programme	H				19
Energy-saving initiatives	Initially, a programme of trials to include low energy lighting, smart electricity metering at stations and low loss conductor rails	L				106
Regenerative braking and automatic train control	To be implemented as an integral part of the Tube upgrade programme	M				106
<b>DLR</b>						
Network-wide capacity upgrade to three-car services	Infrastructure enhancement to enable a 50 per cent increase in capacity	M				15
Extension: Stratford International to Canning Town	Extension to be completed in summer 2010	M				15
Further DLR network enhancements	Potential extensions and/or capacity increases	M				15
<b>Tramlink</b>						
Tramlink further enhancements	Potential extensions and/or capacity increases	L/M				16
<b>Buses and bus transit</b>						
East London Transit	Phase 1b (Barking to Dagenham Dock via Barking Riverside), services starting in 2013	L				23
Bus network development	Regular review of bus network, including reviews of the strategic priorities underlying the process approximately every five years, to cater for population and employment growth, maintain ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes	M				23
Development of a New Bus for London	Pilot to create a new iconic bus for London	L				25
Phasing out of 'bendy' buses	Anticipated by the end of 2011	L				25

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Low emission buses	Intention that all new buses entering London's fleet post 2012 be low emission (initially diesel hybrid)	M				92
Enhanced real time service information	Delivery of Countdown 2; enhanced real time information at stops, on internet and mobiles	L				24
Bus priority	Implementation of bus priority measures to maintain service reliability	M				24
<b>Cycling</b>						
Central London Cycle Hire scheme	Around 6,000 bikes for hire in central London, scheme opening in 2010	M				54
London Cycle Hire scheme enhancement	Expansion of area covered and/or additional bikes in London Cycle Hire scheme	L				54
Additional cycle parking	Around 66,000 additional cycle parking spaces in London	L				54
Cycle Superhighways	Two initial trial radial routes to central London, followed by further routes	L				54
Cycling initiatives	Biking borough initiatives	L/M				52
<b>Walking and urban realm enhancements</b>						
Enhanced urban realm and pedestrian environment	London-wide 'better streets' initiatives to improve pedestrian connectivity and urban realm	M				60
Access to stations and surroundings	Targeted programme of works to improve accessibility and personal security on walk and cycle routes to stations and bus stops	M				60
Walking information and campaigns	Walking campaigns, including the '2011 year of walking', that will focus on walking routes, wayfinding, events and activities	L				62
Improved wayfinding	Targeted introduction of on-street wayfinding specifically designed for pedestrians, for example, Legible London	L				61
Increased tree and vegetation coverage	Additional 10,000 street trees by 2012 (funded), with a target of an additional two million trees in London's parks, gardens and green spaces by 2025	L				113

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
<b>Roads</b>						
Improved road management to smooth the flow of traffic	Measures to smooth traffic flows, manage congestion and improve journey time reliability for all people and freight movements, and maximise the efficiency of the road system from a business and individual perspective	M				30
Permit scheme for roadworks	Introduction and development of a permit scheme and lane rental system aimed at utility companies undertaking roadworks	L				32
Bounds Green (A406)	Safety and environmental improvements	L				35
Henlys Corner junction works	Safety improvements, consents yet to be obtained	L				35
Removal of Tottenham Hale gyratory	Existing one-way system to be converted to two-way, improved pedestrian crossing and cycling facilities	L				35
Blackwall Tunnel (northbound)	Refurbishment of tunnel	L				34
Further gyratory, one-way system and bottleneck improvement works	Works to improve facilities and conditions for pedestrians and cyclists, and to smooth traffic flow	M				35
Achievement of state of good repair of road infrastructure	Ongoing programme of maintenance	M				34
Support development of intelligent speed adaptation	Continue trials of intelligent speed adaptation technologies	L				72
Average speed camera technology	Encourage further implementation of average speed camera technology	L				73
Car club support	Support expansion of car clubs	L				91
LEZ	Further LEZ enhancements and vehicle coverage	L				95
Provision of infrastructure to support low emission road vehicles	Introduction of electric vehicle recharging points by 2015 (funded) and support distribution networks for other alternative fuels such as hydrogen and biofuels (unfunded)	L				105

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Light emitting diode (LED) traffic signals	LED traffic signals at 300 junctions across London (funded) and ongoing programme to replace life-expired conventional signals with LED signals (unfunded)	L				108
Continue to work with DfT on road pricing feasibility programme	Review the option of road user charging and/or regulatory demand management measures to influence a shift to more CO2-efficient road vehicles and lower carbon travel options, such as walking, cycling and public transport	L				109
Promote emission-based parking charges	Boroughs and car park operators to be encouraged to expand coverage of parking charges to vary by duration of stay and vehicle emissions	L				125
Congestion Charge Western Extension	Remove the Western Extension of the central London Congestion Charge (subject to consultation on a variation order )	L				128
Core central London Congestion Charging zone	Ongoing reviews to enable variations to ensure the continued effectiveness reflect best practice, improve operation, or help deliver desired outcomes of the strategy	L				129
<b>London river services and river crossings</b>						
Encourage improved passenger Thames services	Consistent service standards, examine opportunities for enhanced pier facilities (including at North Greenwich and Isle of Dogs) and development of the River Concordat	L				37
New vehicle ferry between Gallions Reach and Thamesmead	To be implemented in advance of a potential fixed link	L				39
Promote the use of Thames and other waterways for freight movement	Enable freight access to waterways	L				38
New walk/cycle Thames crossings	Including schemes in central London and walk/cycle links to access Isle of Dogs from east and west	M				39

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
New and enhanced road vehicle river crossing(s) in east London (package of measures)	Programme of works under development to improve cross-Thames links in east London	M				39
<b>Other</b>						
Integrated fares and ticketing	Integrated fares collection system and ticketing across all London public transport services, including Oyster zonal fares on all suburban rail services and Oyster on river services	M				122
Enhanced travel planning tools	Ongoing programme of enhancements to information availability, including TfL Journey Planner	L				115
Richmond 2009 to 2012 Smarter Travel Programme	Complete the three-year programme of smarter travel initiatives in Richmond	L				116
Targeted smarter travel initiatives	Smarter travel initiatives to reduce the environmental impact of travel, make more efficient use of limited transport capacity and/or encourage active travel such as walking and cycling	L				116
Increased use of travel plans	Increased use and power of travel plans for workplaces, schools and individuals	L				116
Continued development and roll-out of TfL Freight Plan initiatives	Town centre and area-based DSPs, CLPs and promotion of collaborative approaches such as consolidation centres and/or break-bulk	L				117
Promotion of freight best practice	Development and incentivisation of membership of the FORS and develop functionality of the freight information portal	L				117
Integrated transport policing	Establish joint transport policing intelligence unit and reporting systems to enable integrated working between the agencies policing London's transport system	L				74

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010–2012*	2013–2020†	Post 2020	
Tackling antisocial behaviour	Programme of initiatives to tackle antisocial behaviour, including preventative and enforcement measures	L				75
Enhanced CCTV capability and Help points	Including introduction of two-way audio-visual communication at Help points and further expansion of CCTV coverage and enhanced 'smart' monitoring capability	L				74
Transport system climate change adaptation	Risk assess the transport system and prioritise actions to improve resilience and safety to the impacts of climate change	L				110

**Costs:** L: £0 – £100m M: £100m – £1bn H: More than £1bn

 Funded

 Unfunded

**DfT:** Department for Transport

**TfL:** Transport for London

**NR:** Network Rail/DfT

**HLOS CP4:** High Level Output Statement for control period 4 – the Government's railway investment programme for the period 2009 to 2014

**TOC:** Train operating company

**TWA:** Transport and Works Act

**BAA:** British Airports Authority

\*2012 for TfL schemes and 2014 for Network Rail schemes (as per HLOS CP4)

† 2013 for TfL schemes and 2015 for Network Rail schemes (post HLOS CP4)

## 7.2 Accessibility Implementation Plan

<sup>700</sup> This section, together with section 5.9 (A more accessible transport system), constitutes the Mayor's proposals for the provision of transport which is accessible to people with mobility impairments as required by the GLA Act 1999.

<sup>701</sup> Figure 87 represents the phasing for the implementation of the accessibility element of the strategy, as detailed in section 5.9. Figure 87 also includes proposals that will deliver accessibility benefits from other chapters in the MTS.

**Figure 87:** Accessibility Implementation Plan (indicative list)

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010 - 2012*	2013- 2020†	Post 2020	
<b>Rail</b>						
Crossrail	All stations through central London and the majority of stations in Outer London to offer step-free access	H				5
National Rail step-free access station programme	DfT's Access for All, augmented by Crossrail and other committed investment, will increase the number of step-free rail stations in London to 160 (46 per cent) by 2017, from 101 in 2010	M				40
Common service standards on London's railways	Including staff presence at stations over the entire traffic day who can provide assistance if required	L				13 and 43
Chelsea Hackney line (Crossrail 2)	All new infrastructure will be fully accessible	H				9
<b>Tube</b>						
New Tube and rail rolling stock	New rolling stock will be compliant with rail vehicle accessibility regulation (RVAR)	M				17
Continuing roll-out of step-free access schemes on the Underground	Continuing programme of station step-free access schemes	M				18 and 19
Tube platform to train level access	Platform humps rolled-out across the Tube system as new rolling stock is introduced to provide level access from platform to train	L				40

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010 - 2012*	2013- 2020†	Post 2020	
Tube station upgrade programme	To include some of the following features at upgraded stations: <ul style="list-style-type: none"> <li>- Audible and visual information at all platforms and ticket halls</li> <li>- Improved handrail colour contrast and design</li> <li>- Improved visual contrast at leading edge of each riser and tread on steps</li> <li>- Removing, modifying or highlighting obstructions</li> <li>- Induction loops at Help and Information points</li> <li>- Listening points at some larger stations</li> <li>- Improved lighting and public address systems</li> <li>- Improved signs and wayfinding</li> <li>- Tactile warning surfaces on every platform and staircase</li> <li>- Increased amounts of seating</li> <li>- Accessible unisex toilets at all step-free stations where toilets already exist</li> </ul>	L				18
Tube wide-aisle ticket gates	Explore opportunities for further implementation of wide-aisle ticket gates	L				40
Tube travel information	Accessible Tube map showing step-free and mostly step-free routes	L				21
<b>DLR</b>						
DLR fully accessible extension	Canning Town to Stratford International	M				15
<b>Buses and bus transit</b>						
Bus network development	Regular review of bus network, including reviews of the strategic priorities underlying the process approximately every five years, to cater for population and employment growth, maintain ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes	M				23
Bus stop accessibility	Improved accessibility of bus stops, for example, through removal of street clutter	L				83
Development of a New Bus for London	New Bus will include enhanced accessibility design features	L				25

Scheme	Description	Scheme cost	Anticipated completion			Proposal
			2010 - 2012*	2013- 2020†	Post 2020	
<b>Walking and urban realm enhancements</b>						
Accessible crossings programme and urban realm improvements	Improve the physical accessibility of the streetscape, particularly in town centres and on routes to stations and bus stops, taking account of the whole journey approach	L				83
<b>Staffing measures</b>						
Staff availability	To ensure staff are available to provide assistance, information and reassurance throughout service hours	L				43
Staff training	To ensure the needs of disabled passengers are understood by all frontline staff	L				43
<b>Other accessibility specific measures</b>						
Attitudes of staff and Londoners	Stakeholder, staff and public initiatives to improve staff and public attitudes and raise awareness of peoples accessibility needs	L				42
Travel information	Improve the availability, quality, quantity and timeliness of accessibility-related travel information	L				41
Enhanced Dial-a-Ride service	New Dial-a-Ride fleet and review of operations	L				44
TfL's Disability Equality Scheme (DES)	A statutory document, updated every three years, which sets out in further detail what TfL is going to do to ensure that the services it offers are accessible to disabled people	L				-
Further extensions to the public transport system	All extensions to the public transport system will meet the requirements of the Disability Discrimination Act	H				-
Blue Badge discounts	Discounts on Congestion Charging schemes	L				129

**Costs:** L: £0 - £100m M: £100m - £1bn H: More than £1bn

 Funded

 Unfunded

**DfT:** Department for Transport

**TfL:** Transport for London

**HLOS CP4:** High Level Output Statement for control period 4 – the Government's railway investment programme for the period 2009 to 2014

\*2012 for TfL schemes and 2014 for Network Rail schemes (as per HLOS CP4)

† 2013 for TfL schemes and 2015 for Network Rail schemes (post HLOS CP4)



## 7.3 Delivery processes

### 7.3.1 Overall approach to delivery

- <sup>702</sup> Detailed delivery planning and budgeting for TfL-delivered services and schemes will be developed in TfL's Business Plan. Schemes delivered by TfL will encompass sustainability principles governing design, procurement, construction and operation. TfL will adhere to any statutory procedures and consents such as Planning Policy Statement 5: Planning for the Historic Environment, Strategic Environmental Assessment and Environmental Impact Assessment and also to best practice assessment for equalities, health, etc. This is particularly the case with respect to protection of the integrity of Natura 2000 sites within, and in close proximity to, the Greater London boundary, with updated or amended S159 funding guidance issued periodically thereafter.
- <sup>703</sup> A significant element of the MTS will be delivered by the London boroughs, with each borough setting out its contribution in its LIP. Guidance on LIPs is being published simultaneously with this strategy.
- <sup>704</sup> National Rail, the Highways Agency and other delivery agencies also play a key role in delivering transport solutions in London, and the revised strategy sets the framework for TfL to work in partnership with all relevant agencies.
- <sup>705</sup> The overall delivery of this strategy depends on action and support from a variety of agencies, including national Government (via funding

settlements and overall policy guidance), London boroughs, the Met and emergency services, the LDA and other areas of the public sector such as NHS London, Primary Care Trusts, local education authorities and private business, as shown in Figure 88. The need for joint action with the boroughs is recognised by the London City Charter, launched in July 2009 by the Mayor and London Councils.

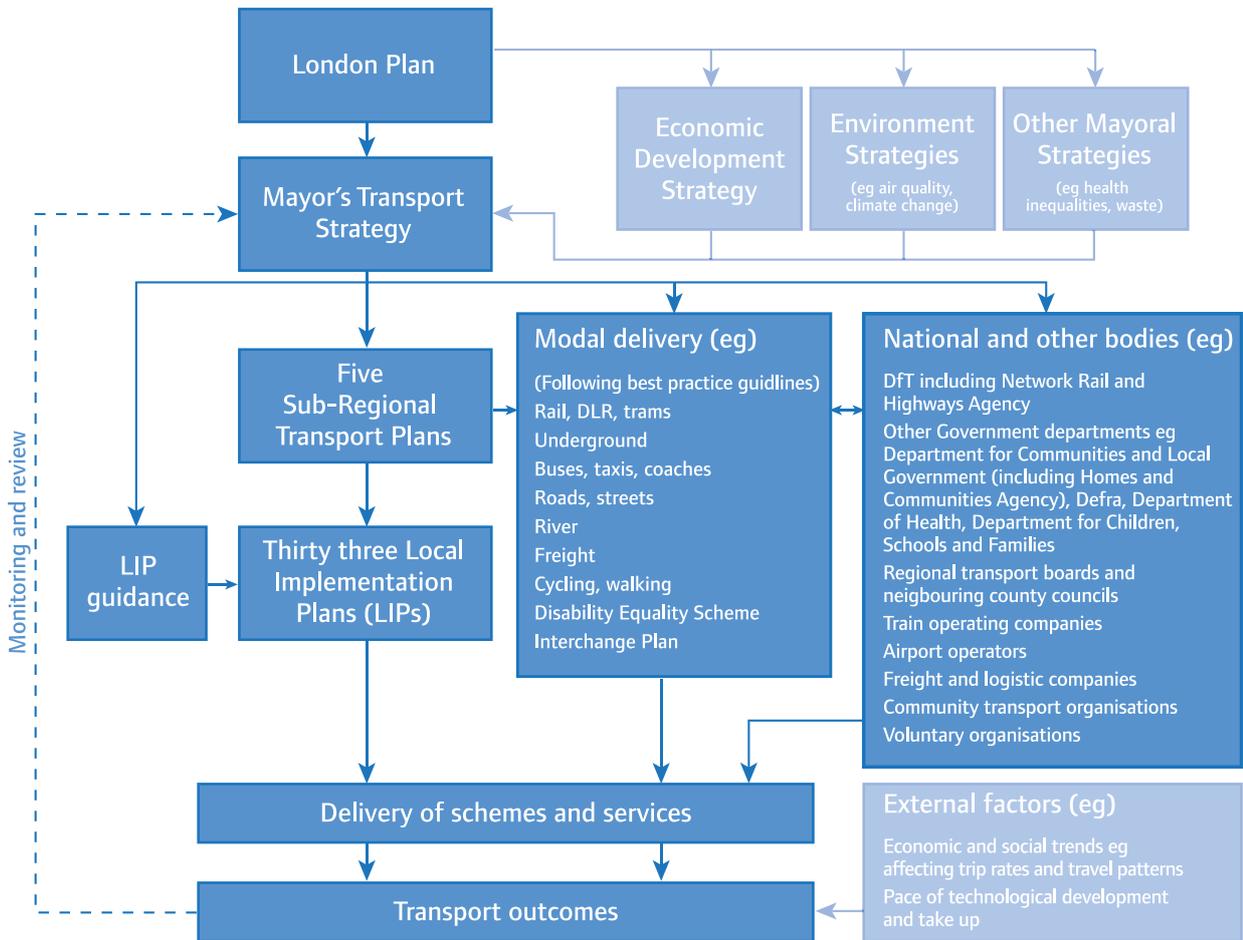
#### Policy 27

The Mayor and all parties involved in the delivery of this transport strategy will follow the spirit of the London City Charter and the principles (originally set out in 'Way to Go!') which underpin the strategy. These are: to provide value for money, work in partnership, ensure appropriate integration and phasing of programmes, a fair allocation of available resources across modes and delivery agents, London's regions and boroughs, and a fair funding regime for taxpayers and fare and chargepayers.

- <sup>706</sup> The Accessibility Implementation Plan which is required under the GLA Act is also supported by TfL's DES<sup>1</sup>, which is a statutory document setting out in detail what TfL will do to ensure that the services it provides are accessible to disabled people. TfL is required to produce a DES every three years, and it contains an outcome-based action plan, which sets out what will be achieved during that timescale.

<sup>1</sup> GLA Act 1999, section 142

**Figure 88:** Delivery process



### 7.3.2 Sub-regional strategy development

<sup>707</sup> TfL is working closely with the boroughs and London regional partnerships to develop more detailed sub-regional transport plans – referred to as London sub-regional transport plans. These address the specific challenges facing each region and the options for addressing them based on analysis of current and future demand, travel patterns, etc. TfL will also take steps to ensure the involvement of county and unitary strategic transport authorities immediately outside the Greater London area. These plans will provide more detail about the priorities for the regions, and how the policies and proposals set out in the MTS may apply. They will provide a framework for local and modal delivery through the development of borough LIPs and TfL implementation plans, the development of specific schemes or broader business planning processes.

<sup>708</sup> In parallel with the development of the London sub-regional transport plans, TfL will update its Interchange Plan. This plan will complement the MTS, London Plan and EDS and help TfL and the boroughs to prioritise how available resources should be put into the development and implementation of particular interchange proposals. It will build on the analysis at a regional level, identifying strategically and regionally important interchanges and provide a common benchmark for quality across all categories of interchange. It will provide a framework to enable consideration of arising opportunities to leverage funding as well as consideration of area and system-wide

initiatives, including facilities for walking and cycling, adjacent to the interchanges.

#### Policy 28

The Mayor, through TfL, and in consultation with the London boroughs and other stakeholders, will develop a London sub-regional transport plan for each of the five sub-regions of London.

### 7.3.3 Local Implementation Plans

<sup>709</sup> At the borough level the implementation of the MTS is delivered by the LIP, prepared by each London borough council (including the City). The MTS and non-statutory London sub-regional transport plans will provide the overarching framework for their development. The new LIPs must be prepared as soon as reasonably practicable after this new MTS is published in 2010, and when approved by the Mayor, will supersede any previous version.

<sup>710</sup> The GLA Act states that a LIP must contain each particular borough's proposals for the implementation in its area of the policies and proposals contained in the MTS. The LIP must also contain a timetable for implementing the borough's proposals, and a date by which all those proposals in the plan will be implemented. It is important that LIPs also link-up with other documents and mechanisms, for example, Local Area Agreements, Local Development Frameworks and Local Strategic Partnerships, to ensure delivery of wider community and economic development priorities.

- 711 It is for each borough to seek the financial resources it requires to implement its LIP proposals. For these, and for any other borough transport proposals that are conducive to the provision of safe, integrated, efficient and economic transport facilities, or services, to, from, or within Greater London, a borough may apply for such financial assistance as may from time to time be available from TfL. This assistance is provided by TfL under section 159 of the GLA Act 1999. Assistance may be made by way of grant, loan or payment, and be given subject to such conditions as TfL considers appropriate. The Second London LIPs Guidance (referred to below) sets out further information on funding.
- 712 In preparing its new LIP, the borough must consult the Metropolitan Police Commissioner (or City of London Police Commissioner in the case of the City's LIP), TfL and such organisations representative of disabled people as the borough considers appropriate. The borough must also consult other London boroughs whose area is, in the opinion of the borough preparing the LIP, likely to be affected by the plan, and any other person that the Mayor has directed should be consulted.
- 713 Each new LIP must be submitted to the Mayor for his approval and the GLA Act 1999 sets out the criteria that must be met before Mayoral approval can be given. Section 146 states that the Mayor shall not approve a LIP unless he considers:
- That the LIP is consistent with the MTS
  - That the proposals it contains are adequate for the purposes of the implementation of the MTS in its area
  - That the timetable for implementing those proposals, and the date by which those proposals are to be implemented, are adequate for those purposes
- 714 The Mayor may issue statutory guidance as to the implementation of the MTS to which boroughs must have regard. He also has reserve powers to issue general or specific statutory directions as to the manner in which a borough is to exercise its functions of preparing and implementing its LIP, with which they must comply.
- 715 Detailed guidance to boroughs on how to prepare and submit their LIPs is contained in the Second London LIP Guidance following consultation with the boroughs and key partners. The Mayor has recognised the autonomy of the boroughs as reflected in the City Charter and that they should be given greater flexibility to determine their own transport priorities consistent with the goals and outcomes of the MTS. Boroughs are expected to develop their own delivery and performance monitoring plans. The Mayor shares London Councils' desire to minimise the amount of work associated with the preparation, submission and monitoring of LIPs.

<sup>716</sup> To this end the guidance indicates how LIPs should best be structured, and the level of information they should contain, including monitoring, to assist the Mayor by providing him with a reasonable level of information so as to determine the LIP's consistency with the MTS, and with the other statutory approval criteria set out in section 146 of the Act.

### Policy 29

The Mayor, consistent with the approach of the London City Charter, will work with TfL and London Councils to seek to ensure the requirements for a LIP demonstrate consistency with the policies and proposals set out in this MTS, and that other legal requirements are kept to a minimum.

The boroughs will develop LIPs which set out their transport objectives, a delivery plan and a performance monitoring plan. The goals that are required to be addressed by the London boroughs in their LIPs, are:

1. Supporting economic development and population growth
2. Enhancing the quality of life for all Londoners
3. Improving the safety and security of all Londoners
4. Improving transport opportunities for all Londoners
5. Reducing transport's contribution to climate change and improving its resilience

<sup>717</sup> Delivering the London 2012 Olympic and Paralympic Games and its legacy is also a goal that boroughs may wish to include in their LIP submission. This will depend on the impact of the Games in each borough and whether significant Games-related transport projects need to be implemented in each borough after the next round of LIPs are effective in 2011.

<sup>718</sup> The Mayor also expects the boroughs to work towards achieving a number of specific outputs. More detail on these outputs is supplied in the Second London LIP Guidance.



# Chapter eight – Cost, resources and funding the strategy

## 8.1 Cost of the strategy

### 8.1.1 Introduction

<sup>719</sup> Meeting London's transport needs and successfully achieving all the strategy's objectives will require sustained investment beyond the 10-year funding settlement. The strategy sets out a significant and necessary investment in infrastructure and expansion of transport services through to 2031. Cost estimates assume a continuation of the policy and that levels of operational expenditure for the day-to-day provision of services, subject to the efficiencies programme set out in the TfL Business Plan, are funded by sources of recurring income, including grant.

### 8.1.2 Capital investment costs

<sup>720</sup> Committed investment in London's transport infrastructure, including the completion of Crossrail, over the years to 2018 is approximately £4.8bn per year. The proposed package of capital works beyond this will require continuing annual investment of around £3.5bn to £4.5bn (further analysis is underway to determine more precisely the scale of investment required) in the period to 2031. Careful phasing of investment in the period following the current committed programme will be required to ensure construction industry capacity to deliver the works and a balanced investment profile over time.

## 8.2 Funding the strategy

### 8.2.1 Funding sources

<sup>721</sup> Transport in London is funded through a combination of sources, including:

- Government grant direct to TfL
- Revenue from fares and other sources (for example, Congestion Charge)
- Secondary income (for example, advertising)
- TfL 'prudential borrowing' against future revenue, which is capped until 2018 under TfL's 'spending review 2007' funding settlement with Government
- Asset financing and property disposal receipts (although this is unlikely to be a significant source of further funds post 2018)
- Other forms of Government grant to parts of the transport network not controlled by TfL, for example, Network Rail, the DfT HLOS process, borough highway maintenance
- Contributions from the private sector, for example, developer funding for associated transport investments
- Direct borough funding
- Other Government funding sources including specific allocations to support regeneration, health, education, and the London 2012 Olympic and Paralympic Games Transport Plan

## 8.2.2 Approach

- <sup>722</sup> The policies and proposals in this strategy provide the necessary minimum levels of investment to enable London to continue growing and contribute to the UK economy. Further investment is required to meet London's population and employment growth and to address the challenges of climate change. It is essential that TfL continues to secure a fair allocation of funding from Government, reflecting the contribution that transport makes to London's prosperity and success as a world city.
- <sup>723</sup> The current funding settlement from Government provides for £39.2bn of funding through to 2017/18. This, along with funding generated through revenue including fares, borrowing and contributions secured through the private sector, will deliver the short-term policies and proposals of this strategy. In addition to this, funding through Network Rail will also provide major benefits for Londoners through increased capacity on the rail network.
- <sup>724</sup> The strategy underpins the importance of funding the current round of investments such as Crossrail and the Tube upgrades, and the value for money these schemes offer. It is essential that TfL continues to provide levels of service that passengers expect in a way that delivers greater value for money. The strategy covers the period to 2031, and this will require similar levels of funding to continue beyond 2018 to 2031. In a time of potential funding shortfalls, it is essential that TfL maximises the benefit of schemes and investments that are

already funded and secures the best possible return on future levels of investment.

### Policy 30

The Mayor, and TfL, will make the case to Government for long-term investment in the transport network to secure the outcomes set out in this strategy.

### Policy 31

The Mayor, and TfL, will maximise any available efficiencies, subsidise services at appropriate levels and ensure that value for money is otherwise achieved from the existing and planned transport network, while reviewing fares levels to provide, if required, a residual means of achieving the goals of this transport strategy. Innovative ways of financing investment and services, including making the most of the value of transport infrastructure, will be explored.

## 8.2.3 Bus funding

- <sup>725</sup> There are large and broad benefits of the bus service in London – directly to users by enabling access to jobs and services, and through wider social benefits, such as increasing social inclusion and addressing deprivation. It is therefore appropriate that the cost of bus operations is partly met through the Transport Grant from the DfT, and not entirely paid for by users through fares and by reimbursements for concessionary travel.
- <sup>726</sup> London is not unusual in requiring subsidy for its bus operations; indeed, many cities around

the world receive subsidies. Before TfL was set up in 2000 the level of operating subsidy – the difference between fares income and the cost of providing bus services was £41m in 1999/00 and has increased significantly to £560m in 2008/09 as the quantity and quality of bus services have been expanded and improved considerably, and extra free and concessionary travel has been introduced. Over, broadly, the same time period the number of bus kilometres operated in London have increased by over 30 per cent and bus ridership has increased by around 40 per cent.

- 727 The average bus fare revenue in 2008/09 was 47.8p per journey, while the average cost was 72.8p per journey – meaning that one third of the average bus journey is subsidised. Bus fares compare favourably with the cost of using other modes of transport in London and with bus fares in other UK cities.
- 728 In order to maximise the level of funding available for essential investment in capacity and other key priorities, it is essential to ensure that the long-term subsidy for operations is both affordable and sustainable.

### Policy 32

The Mayor, through TfL, will keep the level of subsidy for bus operations under constant review to ensure the correct balance between fares income, bus service levels and quality, social benefits and affordability, in the context of the overall level of funding available for transport.

## 8.2.4 Tube funding

- 729 The cost of operating and maintaining the London Underground system is met by its farepayer revenue and other taxpayer funding. Significant taxpayer funding is committed to cover the costs of the essential investment that is underway to bring Tube assets to a state of good repair and to increase the network's capacity to support London's future economic and population growth.
- 730 The investment in the Underground line upgrades has a very strong business case, and the new capacity will generate additional revenue, create benefits for users and generate wider economic benefits which over time will cover their cost many times over.
- 731 It is vital for the future of London and the national economy that this taxpayer-funded investment is maintained throughout the period of this transport strategy.

### Policy 33

The Mayor, through TfL, will work to secure the investment necessary to remove the backlog of life-expired assets and to deliver the transformation of the Tube.

## 8.2.5 Rail funding

<sup>732</sup> Many of the priorities set out in this strategy are not directly controlled by TfL but by other agencies such as Network Rail. Seventy per cent of all National Rail journeys across the UK start or finish in London and 50 per cent of all National Rail journeys across the UK are made by Londoners. Given this, it is not only fair but essential that a significant proportion of investment in the National Rail network is focused on London.

<sup>733</sup> The quality of National Rail infrastructure in the Capital, while greatly improving, still requires major investment. For example, the quality of National Rail stations in London is poor compared to those directly controlled and managed by TfL and extra funding is needed to secure comparable improvements. It is essential that investment continues to be made in London's National Rail network either directly by National Rail or through new franchises which offer more for Londoners in terms of level and quality of service.

<sup>734</sup> Rail refranchising also offers an opportunity to secure investment from the private sector train operating companies. Refranchising of rail services during the life of this strategy includes:

- Essex Thameside (c2c) – 2011
- Greater Anglia (National Express East Anglia) – 2011
- Integrated Kent Franchise (Southeastern) – 2014

- Greater Western (First Great Western) – 2016
- London Region (London Overground) – 2014
- South Central (Southern) – 2015
- West Midlands (London Midland) – 2015
- Thameslink/Great Northern (First Capital Connect) – 2016
- South Western (South West Trains) – 2017
- Chiltern (Chiltern Railways) – 2021

### Policy 34

The Mayor, through TfL, will work with the DfT, Network Rail, the train operating companies and other stakeholders to secure the necessary investment in London's rail network, including new stations where feasible, through additional capital funding and enhancements to rail services through rail franchises.

<sup>735</sup> Looking to the future, in a period with constrained funding, TfL will continue to be innovative about how transport investments are funded and financed. At the same time, strategic choices will have to be made about the overall subsidy of services, that is, between fare levels, the amount of free and discounted travel and the volume and quality of services provided, to maximise the funding available for necessary investments in the network. TfL has a strong track record of both delivering projects on time and to budget, as well as using a variety of innovative financing models, including private finance initiatives (PFI).

## 8.2.6 Developer contributions to transport

<sup>736</sup> Developments such as new offices, retail and housing often places significant demands on London’s transport system. This needs to be addressed in order to ensure the development is viable and sustainable. TfL will continue to work with the LDA and boroughs to secure developer contributions for the necessary transport improvements through existing planning obligations to facilitate the success of the development and mitigate its impacts on the current transport network, in accordance with relevant legislation and policy guidance.

## 8.2.7 Developer contributions to Crossrail

<sup>737</sup> In view of the strategic regional importance of Crossrail to London’s sustainable development and continued economic success, developments which contribute to the transport needs that the project will wholly or partly address will be required to contribute towards its funding through the use of planning obligations. Where it is appropriate to seek a Crossrail contribution, this should generally be given higher priority than other public transport improvements.

<sup>738</sup> Overall, £300m needs to be secured for Crossrail through planning obligations (with a further £300m to be raised through a Community Infrastructure Levy). While this is a relatively small proportion of the total cost of Crossrail, it is a vital element of the overall funding package for the scheme.

<sup>739</sup> TfL will work with boroughs and other stakeholders to put in place practical arrangements for administering the policy and assessing viability. A protocol to ensure efficient collection of the monies will also be developed.

### Policy 35

The Mayor, and TfL, will work with the London boroughs to secure developer contributions to transport through planning obligations in order to secure the success of each development and to mitigate any negative impacts on the existing transport system in accordance with relevant legislation and policy guidance. As set out in the proposed London Plan policy, where it is appropriate to seek a Crossrail contribution, this should generally be given higher priority than other public transport improvements. TfL will work with the GLA and boroughs to develop a protocol to implement the policy.

## 8.2.8 Other funding sources

<sup>740</sup> There are other sources of funding which the Mayor may pursue in order to assist with the implementation of this strategy. For example, to better integrate transport and other investment in Regeneration Areas, improve the urban realm, or to promote walking and cycling, including:

- London Boroughs
- Government's Community Infrastructure Fund
- NHS London/Primary Care Trust funding to support active travel initiatives
- European Union funds

### Policy 36

The Mayor, and TfL, will work with the London boroughs and other stakeholders, to seek to secure further investment from a variety of sources that help improve the quality and range of transport services available to Londoners.



# Chapter nine – Monitoring and reporting

## 9.1 Monitoring and review

### 9.1.1 Introduction

<sup>741</sup> This strategy outlines a series of challenges for the improvement and delivery of transport in London. The outcomes of this strategy are primarily monitored through the collection and publication of strategic outcome indicators. The strategic indicators quantify progress in the delivery of the strategy in order to facilitate a broad understanding of the ‘totality of effects’ of the strategy’s interventions on transport and wider quality of life in London. These indicators provide a straightforward way of monitoring and reporting progress in delivering the MTS. However, in order to fully understand and interpret developments, a wider range of information is also needed.

<sup>742</sup> The strategic outcome indicators are therefore related to, and interpreted alongside, appropriate supporting and contextual information about specific trends and developments in transport in London. This includes background factors such as economic and demographic change, and the specific actions taken by TfL and delivery partners as part of the implementation of the MTS. This allows changes and the relative contribution of specific policies, to be interpreted. Where appropriate and possible, findings are divided on a spatial (borough, network, region), modal or temporal basis.

### 9.1.2 Mayoral targets

<sup>743</sup> The anticipated outcomes described in chapter six are not statutory targets, however, the Mayor may set, from time to time, statutory targets with respect to the implementation of the strategy, for example, with regard to:

- Mode share
- CO<sub>2</sub>
- Road safety
- Cycling
- Use of the Thames
- Better streets
- Air quality

### 9.1.3 Framework of indicators

<sup>744</sup> The MTS strategic outcome indicators (SOIs) are, deliberately, based on outcomes, rather than outputs (such as particular projects or policies) or inputs (for example, amount of money spent). Likewise, they are multi-modal.

<sup>745</sup> The SOIs for the MTS will sit at the head of a framework of indicators and support information designed to measure delivery against the strategy’s goals by TfL, local authorities and other delivery partners in London, and measure the outcomes of that delivery. This framework, set out in Figure 89, can be envisaged in two dimensions:

- First, a ‘reporting’ framework, whereby the strategic indicators are aligned with the KPIs for the TfL Business Plan, which are in turn connected with performance indicators for

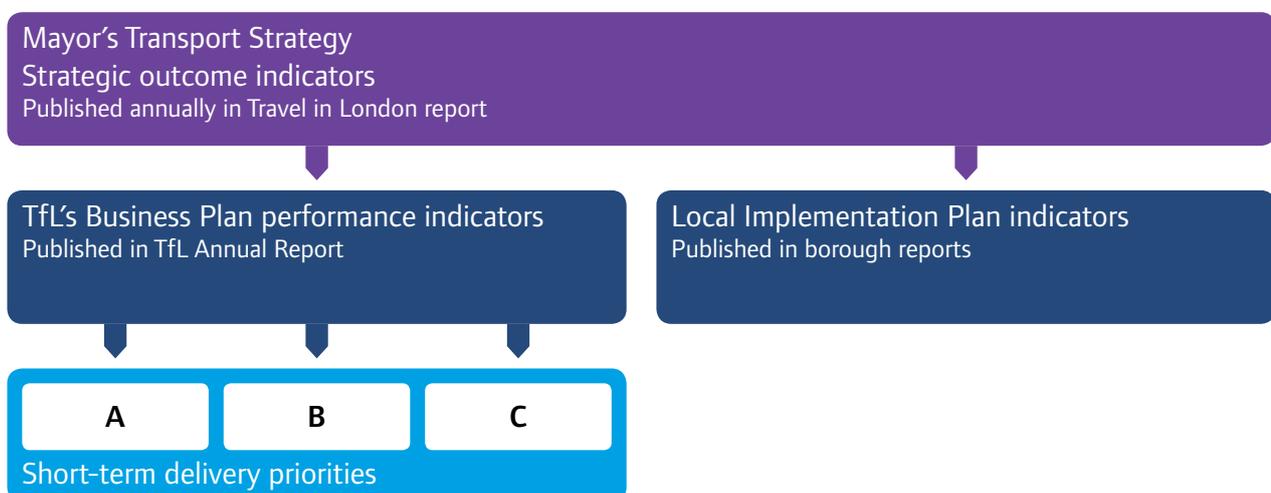
boroughs through the revised arrangements for LIPs. The former has a longer timescale than the latter two; but the KPIs are consistent, once timescales are taken into account. The framework and reporting process also include the transport KPIs and targets in chapter eight of the draft London Plan. There are also envisaged to be shorter term (up to one year) delivery indicators, which consider the short-term outputs that have been achieved, and provide a basis to assess their contribution to change in the strategic 'outcome' indicators

- Second, an 'analysis' framework, where SOIs can be broken down – by mode, borough, time of day, etc, according to specific policy analysis requirements to understand how these outcomes are being achieved

## 9.2 Reporting processes

<sup>746</sup> The SOIs set out in Figure 90 are published in TfL's annual Travel in London report. This report describes key trends and developments affecting how people travel around London. It provides an understanding of what has been achieved to date and interprets the direction of movement of the strategic performance indicators within the context of wider travel, economic and societal conditions. Many of the strategic outcome indicators are published annually, some less frequently; findings are separated out to as local a level as possible. Where the data exist and permit, the report shows a time series and the latest data.

**Figure 89:** Framework of indicators



**Figure 90:** Indicators proposed to monitor the outcomes of the MTS

Goal	Strategic outcome indicator	Brief definition
Contextual indicators	Travel demand	The number of trips (or journey stages) made to, from, or within London per calendar year
	Mode share	Proportion of trips (or trip stages) undertaken by each mode to, from, or within London per calendar year
Supporting economic development and population growth	People's access to jobs	Employment accessibility maps – number of jobs within 45 minutes travel time (three-yearly)
	Smoothing traffic flow – journey time reliability	For a selection of key road corridors, percentage of journeys completed within five minutes of a specified typical journey time
	Public transport reliability	Existing reliability indicators for each principal public transport mode will be presented separately
	Public transport capacity	Calculated using planning capacities for the various modes multiplied by kilometres operated
	Operating costs per passenger kilometre	Operating cost per passenger kilometre, by principal public transport mode
	Asset condition	Composite multi-modal indicator measuring the percentage of in-scope asset that is deemed to be in good condition
Enhancing the quality of life for all Londoners	NO <sub>x</sub> emissions	Emissions from all identifiable ground-based transport sources in London per year, expressed as tonnes of NO <sub>x</sub>
	PM <sub>10</sub> emissions	Emissions from all identifiable ground-based transport sources in London per year, expressed as tonnes of PM <sub>10</sub>
	Public transport customer satisfaction	Overall satisfaction of those travelling on the network with the operation of principal public transport modes
	Road user customer satisfaction	Satisfaction of private road users with the maintenance and operation of the road network
	Public transport crowding	Satisfaction of those travelling on the network with the level of crowding inside the vehicle, on the principal public transport modes
	Perception of journey experience	Perception of London residents of their overall journey experience when travelling in the city
	Perception of noise	Perception of London residents of noise levels in their local area
	Perception of the urban realm	Perception of London residents of the quality of the urban realm in their local area

Goal	Strategic outcome indicator	Brief definition
Improving the safety and security of all Londoners	Volume of road traffic casualties	Number of people killed or seriously injured in road traffic collisions in London per year
	Crime rates on public transport	Crimes per million passenger journeys by principal public transport modes
	Perception of crime/safety	Perception of London residents of their sense of safety and fear of crime when travelling in the city
Improving transport opportunities for all Londoners	Access to services	Local area score of average journey time by public transport, walking and cycling to work, education, health services, quality food shopping and open spaces
	Physical accessibility to the transport system	Level of step-free access across the public transport and streets network
	Real fares levels	Cost for a selected, representative 'basket' of trips
Reducing transport's contribution to climate change and improving its resilience	CO <sub>2</sub> emissions	Emissions from all identifiable ground-based transport sources in London per year, expressed as tonnes of CO <sub>2</sub>
Supporting delivery of the London 2012 Olympic and Paralympic Games and its legacy	Convergence of social and economic outcomes between the five Olympic boroughs and the rest of London	The measure of convergence is to be determined through the Transport Legacy Action Plan

- Figure 1: Enhancements to London’s transport infrastructure**  
Source: TfL
- Figure 2: Mode share**  
Source: From 2006 daily trips estimate in TfL Travel in London, report number 1; 2031 based on trip growth from London Transport Studies (LTS) transport model, with estimate to reflect growth in cycle trips. The LTS is a four-stage model used in London for trip generation, trip distribution, mode split and assignment
- Figure 3: Proposed outcomes**  
Source: TfL
- Figure 4: Travel demand and levels of transport networks serving London**  
Source: Journey purpose and mode share data from TfL
- Figure 5: London’s transport geography at the international, national and inter-regional level**  
Source: TfL
- Figure 6: London’s economic inter-relationship with the Greater South East**  
Source: TfL
- Figure 7: Places which are dominant in the London economy**  
Source: TfL derived from the London Plan
- Figure 8: London-wide transport geography**  
Source: TfL
- Figure 9: London-wide transport connectivity**  
Source: TfL
- Figure 10: Town centres in the CAZ, Inner and Outer London**  
Source: TfL derived from the London Plan
- Figure 11: Spatial pattern of travel across London, with mode shares**  
Source: TfL, Travel in London, report number 1. Percentages are daily 2005 to 2008 average proportion of all trips made from, or within, London. Figures include trips by London and non-London residents and excludes freight. For more information, go to [tfl.gov.uk](http://tfl.gov.uk)
- Figure 12: Daily average number of trips (millions) in London, 2007**  
Source: TfL Travel in London, report number 1. Daily average number of trips in London (including trips to/from London). For more information, go to [tfl.gov.uk](http://tfl.gov.uk)
- Figure 13: Population and employment distribution and forecast growth**  
Source: TfL derived from the London Plan. Figures supplied by the GLA and represent the best view at the time of writing. The CAZ encompasses parts of 10 London boroughs (Kensington & Chelsea, Wandsworth, the City of Westminster, Lambeth, Camden, Islington, City of London, Southwark, Hackney, Tower Hamlets). The boundary of the CAZ is not contiguous with either boroughs or wards – the only areas for which there are employment statistics for

the years between Censuses (every 10 years). An estimate of 2007 and 2031 employment was based on a 'backcast' of CAZ employment using the growth rate of aggregate employment in three boroughs partially or wholly included in the CAZ (Camden, City of Westminster, City of London). Employment in the zone was then projected to 2031, using trend-based forecast growth rates for aggregate employment in the same three boroughs

**Inner London** comprises the following boroughs, and rest of Inner excludes the area defined as CAZ: Camden, Kensington & Chelsea, City of Westminster, City of London, Greenwich, Hackney, Hammersmith & Fulham, Islington, Lambeth, Lewisham, Newham, Southwark, Tower Hamlets, Wandsworth

**Outer London** comprises: Barking & Dagenham, Barnet, Bexley, Brent, Bromley, Croydon, Ealing, Enfield, Haringey, Harrow, Havering, Hillingdon, Hounslow, Kingston upon Thames, Merton, Redbridge, Richmond upon Thames, Sutton, Waltham Forest

**Figure 14: Spatial distribution of population growth, 2007 to 2031**

Source: Based on population projections for 2031 supplied by the GLA. These were used to estimate 2006 to 2031 growth factors which were applied to 2006 population and employment figures allocated to the London Transport Studies (LTS) transport model zones. (The LTS is a four-stage model used in London for trip generation, trip distribution, mode split and assignment)

**Figure 15: Spatial distribution of employment growth, 2007 to 2031**

Source: Based on employment projections for 2031 supplied by the GLA. These were used to estimate 2006 to 2031 growth factors which were applied to 2006 population and employment figures allocated to the London Transport Studies (LTS) transport model zones. (The LTS is a four-stage model used in London for trip generation, trip distribution, mode split and assignment)

**Figure 16: Growth areas in the Greater South East**

Source: TfL, derived from the London Plan, South East England Development Agency (SEEDA) and East of England Regional Assembly (EERA)

**Figure 17: London trends and forecast in population, employment and trip making, index from 1993**

Source: TfL. Trend from midweek daily trips reported in TfL Travel in London report. Projected daily trips based on London Transport Studies (LTS) transport model. GLA population and employment projections and TfL Freight Unit data are also used. (The LTS is a four-stage model used in London for trip generation, trip distribution, mode split and assignment)

**Figure 18: Public transport accessibility levels (PTALs), 2006**

Source: TfL PTAL model – data combining walk and service wait time calculated for a grid of points at 100-metre intervals

**Figure 19: Tube and DLR crowding, 2006**

Source: TfL. Morning peak period crowding from TfL Railplan public transport assignment model, using travel demand matrices from the London Transport Studies (LTS) transport model. Diagram shows categories representing the number of passengers standing per square metre

**Figure 20: Tube and DLR crowding, 2031 (with committed funding/reference case)**

Source: TfL. Morning peak period crowding from TfL Railplan public transport assignment model, using travel demand matrices from the London Transport Studies (LTS) transport model. Diagram shows categories representing the number of passengers standing per square metre

**Figure 21: Rail crowding, 2006**

Source: TfL. Morning peak period crowding from TfL Railplan public transport assignment model, using travel demand matrices from the London Transport Studies (LTS) transport model. Diagram shows categories representing the number of passengers standing per square metre (on train)

**Figure 22: Rail crowding, 2031 (with committed funding/reference case)**

Source: TfL. Morning peak period crowding from TfL Railplan public transport assignment model, using travel demand matrices from the London Transport Studies (LTS) transport model. Diagram shows categories representing the number of passengers standing per square metre (on train)

**Figure 23: Local trips to metropolitan town centres**

Source: TfL – London Transport Studies trips by zone to each Outer London metropolitan centre – displayed as a series of dots proportional to the number of trips within each zone

**Figure 24: Enhanced links to, and between, metropolitan town centres**

Source: TfL

**Figure 25: Highway congestion, average vehicle delay, 2006**

Source: TfL. Output from the London Transport Studies (LTS) transport model, showing average vehicle delay in minutes per vehicle kilometre in each LTS model zone (in the morning peak). This is based on comparison with free flow travel times

**Figure 26: Highway congestion, average vehicle delay, 2031 (with committed funding/reference case)**

Source: TfL. Output from the London Transport Studies (LTS) transport model, showing average vehicle delay in minutes per vehicle kilometre in each LTS model zone (in the morning peak). This is based on comparison with free flow travel times

**Figure 27: Public transport journey relative time differential to/from Bank by physically accessible route in comparison to quickest route**

Source: TfL – comparison of generalised travel times for a 2006 constrained and unconstrained network – reflecting travel times for disabled people requiring step-free access

- Figure 28: Transport's contribution to London's CO<sub>2</sub> emissions**  
Source: TfL Environment Report. An estimate from the London Greenhouse Gas Emissions Inventory. For more information, go to [tfl.gov.uk](http://tfl.gov.uk)
- Figure 29: Layout of the expanded Tottenham Court Road station**  
Source: TfL, go to [www.crossrail.co.uk](http://www.crossrail.co.uk)
- Figure 30: Crossrail route connections and regional maps**  
Source: TfL, go to [www.crossrail.co.uk](http://www.crossrail.co.uk)
- Figure 31: Committed enhancements to London's rail network**  
Source: TfL, derived from DfT Rail White Paper, July 2007
- Figure 32: National Rail and Tube 'stress' on radial corridors into central London**  
Source: TfL. The crowding value for each corridor has been calculated by estimating the flow on each link due to trips between the corridor in question and central London (during the three hour morning peak from 07:00–10:00) and using this data to estimate a weighted average of the crowding measure (passengers per sq metre). The grading is:  
**Highly stressed (red)** – crowding more than 2.25 passengers per sq metre  
**Stressed (amber)** – crowding 1.70–2.24 passengers per sq metre  
**Moderately stressed (green)** – crowding under 1.69 passengers per sq metre  
Note that the definition of the corridor and CAZ relates only to the origin and destination of the trips, thus the links that are used in the calculation are not bound by the geographic definition of the areas
- Figure 33: Further rail capacity needed in London**  
Source: TfL
- Figure 34: The potential benefits from implementing measures beyond those in the TfL Business Plan and HLOS to reduce crowding on London's rail and Tube network**  
Source: TfL, analysis, including modelling using London Transport Studies (LTS) and Railplan. Crowding at morning peak
- Figure 35: National Rail punctuality (London and southeast operators total, including peak services)**  
Source: TfL, derived from the Office of Rail Regulation punctuality of all train services
- Figure 36: London Overground route map (2012)**  
Source: TfL
- Figure 37: London bus use since 1971**  
Source: TfL, Travel in London report, number 1, using service performance data of total passenger journey stages per year (a passenger journey stage is a component part of a trip using a single mode of transport between interchanges. Walking is counted as a separate mode)

- Figure 38: Improving bus journey experience**  
Source: TfL, Travel in London report, number 1, customer satisfaction survey
- Figure 39: Selected orbital and other bus services in Outer London**  
Source: TfL. For more information, go to [tfl.gov.uk](http://tfl.gov.uk)
- Figure 40: Transport for London Road Network**  
Source: TfL
- Figure 41: Causes of unusual congestion by proportion of duration**  
Source: London Traffic Control Centre 2008/09
- Figure 42: Mitigation of increased road congestion (average vehicle delay)**  
Source: TfL. Congestion in 2006, 2031 with the reference case, and 2031 with the strategy based on TfL LTS modelling. 2031 with no interventions based on LTS modelling of effect of funded public transport investment, and including one per cent estimated effect of funded measures to support increases in cycling, travel choices and changes in travel behaviour. Impact of strategy measures for road network management and cycling, including smarter choices and changes in travel behaviour, estimated at one per cent reduction each
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Source: TfL
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Source: TfL
- Figure 46: Examples of key strategic interchange locations outside central London**  
Source: TfL
- Figure 47: Olympic Park legacy international, national, regional and local connections**  
Source: TfL, based on planning submissions by the ODA (non-exhaustive)
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Source: TfL, derived from Stats 19 casualty data collected by the Metropolitan and City Police
- Figure 49: Road casualties by casualty category**  
Source: TfL, derived from Stats 19 casualty data collected by the Metropolitan and City Police
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Source: TfL, derived from GLA, London Atmospheric Emissions Inventory. Concentration of NO<sub>2</sub> by mean concentration of micrograms per cubic metre. Analysis undertaken for TfL by ERG Kings College
- Figure 58:** PM<sub>10</sub> annual mean concentrations ( $\mu\text{g}/\text{m}^3$ ), 2008  
Source: TfL
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Source: TfL
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Source: TfL, derived from the GLA, London Atmospheric Emissions Inventory. Concentration of NO<sub>2</sub> by mean concentration of micrograms per cubic metre. Analysis undertaken for TfL by ERG Kings College
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# Annex B – Cross-reference of policies, proposals and London Plan policies

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
1	The Mayor, through TfL, and working with the DfT, Defra and other government agencies, regional development agencies, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to develop London's transport system in order to accommodate sustainable population and employment growth.	This policy is taken forward by proposals throughout chapter five.	67	1.1
2	The Mayor, through TfL, and working with the DfT, government agencies, Network Rail, train operating companies, London boroughs, coach operators and other transport stakeholders, will support sustainable capacity enhancements to inter-regional, national and international rail and coach services, high-speed rail hubs and the strategic road network serving London.	This policy is taken forward by proposals: 1, 2, 3, 4, 5, 6, 7, 8, 11, 28, 48, 49 and 50.	68	6.4, 6.6
3	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to improve public transport accessibility and conditions for cycling and walking in areas of lower PTAL, where there is an identified need for improving accessibility; and to improve access to economic and social opportunities and services for all Londoners.	This policy is taken forward by proposals: 9, 15, 16, 22, 23, 36, 45, 46, 51, 52, 54, 57, 58, 59, 60, 83, 84 and 85.	70	6.2, 6.4, 6.7, 6.9, 6.10
4	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to improve people's access to jobs, business' access to employment markets, business to business access, and freight access by seeking to ensure appropriate transport capacity and connectivity is provided on radial corridors into central London. In particular, the Mayor will seek to maximise public transport connectivity and capacity benefits on the two main east-west and north-south corridors (incorporating the Crossrail and Thameslink projects respectively). The Mayor will also explore opportunities to make greater use of the Thames for east-west passenger and freight transport across the city.	This policy is taken forward by proposals: 5, 6, 7, 8, 9, 11, 15, 17, 19, 22, 23, 36, 37, 38, 54 and 128.	71	2.17, 6.1, 6.2, 6.4, 6.7, 7.24, 7.25, 7.26

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
5	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to ensure efficient and effective access for people and goods within central London through providing improved central London connectivity and appropriate capacity. This will include improving access to major public transport interchanges for pedestrians, cyclists and by public transport.	This policy is taken forward by proposals: 5, 7, 9, 11, 15, 17, 19, 22, 23, 26, 30, 31, 32, 33, 36, 37, 45, 54, 56, 60, 124, 126 and 129.	77	6.1, 6.2, 6.4, 6.7
6	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will seek to provide appropriate connectivity and capacity on radial transport corridors into current and potential metropolitan town centres and to Strategic Outer London Development Centres.	This policy is taken forward by proposals: 16, 23, 30, 31, 34, 45, 52, 54 and 127.	78	2.15, 2.16, 6.2, 6.4, 6.7
7	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will seek to increase public awareness of existing and planned orbital public transport connectivity in Inner London; and seek to improve orbital connectivity in Outer London, particularly between adjacent metropolitan town centres, where shown to be value for money.	This policy is taken forward by proposals: 14, 15, 16, 23, 34, 39, 45 and 46.	80	2.6, 2.7, 2.8, 6.2
8	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will support a range of transport improvements within metropolitan town centres for people and freight that help improve connectivity and promote the vitality and viability of town centres, and that provide enhanced travel facilities for pedestrians and cyclists.	This policy is taken forward by proposals: 24, 26, 27, 30, 40, 45, 54, 57, 60, 61, 79, 80, 84, 85, 115, 119, 124 and 126.	82	2.15, 6.7, 6.9, 6.10

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
9	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will use the local and strategic development control processes to seek to ensure that: <ul style="list-style-type: none"> <li>a) All high trip generating developments are located in areas of high public transport accessibility, connectivity and capacity (either currently or where new transport schemes are committed)</li> <li>b) The design and layout of development sites maximise access on foot, cycle and to public transport facilities, for example, via safe walking and cycling routes and provision of secure cycle parking</li> <li>c) Access for deliveries and servicing, maximise the opportunities for sustainable freight distribution where possible</li> <li>d) Land for transport use is safeguarded in line with London Plan policy and Supplementary Planning Guidance</li> <li>e) Planning contributions are sought for transport improvements where appropriate</li> </ul>	This policy is taken forward by proposals: 2, 9, 15, 22, 36, 37, 38, 39, 45, 48, 49, 50, 51, 54, 57, 58, 60, 97, 99, 119 and 126.	83	6.1, 6.2, 6.3, 6.5, 6.9, 6.10, 8.2, 8.3
10	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders including the private sector, will seek to improve the efficiency and effectiveness of the operation of the transport system, bring transport assets to a good state of repair, and then maintain them in that condition.	This policy is taken forward by proposals: 10, 11, 12, 13, 17, 18, 19, 21, 23, 24, 30–39, 45, 46, 115, 116, 117, 118, 119, 121, 122, 123, 129 and 130.	86	6.1, 6.2
11	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to reduce the need to travel, encourage the use of more sustainable, less congesting modes of transport (public transport, cycling, walking and the Blue Ribbon Network), set appropriate parking standards, and through investment in infrastructure, service improvements, promotion of smarter travel initiatives and further demand management measures as appropriate, aim to increase public transport, walking and cycling mode share.	This policy is taken forward by proposals: 51, 52, 53, 54, 57, 59, 61, 83, 115, 116, 120, 125, 127, 129 and 130.	87	6.1, 6.2, 6.3, 6.7, 6.9, 6.10, 6.13

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
12	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders including business and the freight industry, will seek to improve the distribution of freight through the provision of better access to/from Strategic Industrial Locations, delivery and servicing plans, and other efficiency measures across London.	This policy is taken forward by proposals: 3, 2, 30, 31, 32, 33, 38, 39, 50, 117, 118, 119, 124, 129 and 130.	88	2.17, 6.11, 6.12, 6.14
13	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will expand the capacity and quality of public transport services, improve passenger comfort and customer satisfaction, reduce crowding, and improve road user satisfaction.	This policy is taken forward by proposals in sections: 5.2, 5.3, 5.4, 5.5, 5.6, 5.9, 5.10, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.24, 5.25, 5.26 and 5.27.	89	6.3, 6.11
14	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to improve transport's contribution to the built and natural environment.	This policy is taken forward by proposals: 83, 84, 85, 90 and 113.	90	7.5, 7.6, 7.19
15	The Mayor, through TfL, and working with Defra, the DfT, Network Rail, train operating companies, freight operators, London boroughs and other stakeholders, will seek to reduce emissions of air pollutants from transport.	This policy is taken forward by proposals: 25, 91–100, 103, 105, 108, 109, 113, 129 and 130.	91	7.14
16	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, freight operators, London boroughs and other stakeholders, will seek to reduce noise impacts from transport.	This policy is taken forward by proposals: 48, 86, 87, 88, 89 and 113.	93	7.15
17	The Mayor, through TfL, and working with the DfT and other government agencies, the London boroughs, health authorities and other stakeholders, will promote healthy travel options such as walking and cycling.	This policy is taken forward by proposals: 51, 52, 53, 54, 55, 57, 58, 59, 60, 61, 62, 68, 115 and 116.	94	3.2, 6.9, 6.10
18	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to reduce the rate of crime, the fear of crime and antisocial behaviour on London's transport system.	This policy is taken forward by proposals: 13, 18, 21, 26, 27, 41, 42, 60, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83 and 84.	95	6.2, 7.3, 7.13

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
19	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders including the police and road safety partnerships, will seek to improve road safety for all communities in London and implement measures that contribute to any targets that may be set by the Mayor from time to time.	This policy is taken forward by proposals: 54, 60, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 83, 84, 129 and 130.	95	6.2
20	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will implement measures that seek to improve operational safety and security on public transport.	This policy is taken forward by proposals: 18, 20, 63, 110, 111 and 112.	95	6.2, 7.3, 7.13
21	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to increase accessibility for all Londoners by promoting measures to improve: a) The physical accessibility of the transport system, including streets, bus stops, stations and vehicles b) Information provision, staff service and the travelling environment	This policy is taken forward by proposals: 5, 9, 13, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 40, 41, 42, 43, 44, 45, 60, 83, 84 and 115.	98	7.2
22	The Mayor, through TfL, and working with the LDA, DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to enhance connectivity, reduce community severance, promote community safety, enhance the urban realm and improve access to jobs and services in deprived areas.	This policy is taken forward by proposals: 5, 6, 7, 8, 9, 12, 14, 15, 19, 22, 23, 34, 39, 50, 60, 74, 76, 77, 80, 83 and 85.	100	2.14
23	The Mayor, through TfL, and working with the LDA, DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will support regeneration of Opportunity Areas and Areas for Intensification as described in the London Plan.	This policy is taken forward by proposals: 2, 5, 8, 9, 14, 15, 16, 17, 19, 22, 23, 34, 38, 39, 46, 50, 54 and 60.	102	2.13, 6.4
24	The Mayor, through TfL, and working with the DfT, Defra and other government agencies, Network Rail, train operating companies, freight operators, London boroughs and other stakeholders, will take the necessary steps to deliver the required contribution from ground-based transport to achieve a 60 per cent reduction in London's CO <sub>2</sub> emissions by 2025 from a 1990 base; and to contribute to further targets that may be set by the Mayor from time to time.	This policy is taken forward by proposals: 1, 2, 4, 7, 8, 9, 12, 14, 17, 22, 25, 26, 27, 30, 31, 33, 38, 39, 45, 46, 47, 50–54, 57–62, 87, 91, 92, 93, 95–109, 113, 115–119, 125, 127, 129 and 130.	103	5.1, 6.1

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
25	The Mayor, through TfL, and working with the DfT, Defra and other government agencies, Network Rail, train operating companies, London boroughs and other stakeholders, will take necessary steps to adapt the transport system and improve its resilience and public safety to the anticipated impacts of climate change.	This policy is taken forward by proposals: 110, 111, 112, 113 and 114.	105	5.11, 5.12, 5.13
26	The Mayor, through TfL, and working with the ODA, DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will ensure delivery of the committed transport infrastructure required for the London 2012 Olympic and Paralympic Games, and its successful operation during the Games; and will maximise the benefits of its physical and behavioural legacy to support the principle of convergence.	The behavioural legacy of the Games will be taken forward by proposals 1, 47, 54 and 116.	106	2.4
27	The Mayor and all parties involved in the delivery of this transport strategy will follow the spirit of the London City Charter and the principles (originally set out in 'Way to Go!') which underpin the strategy. These are: to provide value for money, work in partnership, ensure appropriate integration and phasing of programmes, a fair allocation of available resources across modes and delivery agents, London's regions and boroughs, and a fair funding regime for taxpayers and fare and chargepayers.		309	8.1
28	The Mayor, through TfL, and in consultation with the London boroughs and other stakeholders, will develop a London sub-regional transport plan for each of the five sub-regions of London.		311	2.5

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
29	The Mayor, consistent with the approach of the London City Charter, will work with TfL and London Councils to seek to ensure the requirements for a LIP demonstrate consistency with the policies and proposals set out in this MTS, and that other legal requirements are kept to a minimum. The boroughs will develop LIPs which set out their transport objectives, a delivery plan and a performance monitoring plan. The goals that are required to be addressed by the London boroughs in their LIPs, are: <ol style="list-style-type: none"> <li>1. Supporting economic development and population growth</li> <li>2. Enhancing the quality of life for all Londoners</li> <li>3. Improving the safety and security of all Londoners</li> <li>4. Improving transport opportunities for all Londoners</li> <li>5. Reducing transport's contribution to climate change and improving its resilience</li> </ol>		313	
30	The Mayor, and TfL, will make the case to Government for long-term investment in the transport network to secure the outcomes set out in this strategy.		316	
31	The Mayor, and TfL, will maximise any available efficiencies, subsidise services at appropriate levels and ensure that value for money is otherwise achieved from the existing and planned transport network, while reviewing fares levels to provide, if required, a residual means of achieving the goals of this transport strategy. Innovative ways of financing investment and services, including making the most of the value of transport infrastructure, will be explored.		316	
32	The Mayor, through TfL, will keep the level of subsidy for bus operations under constant review to ensure the correct balance between fares income, bus service levels and quality, social benefits and affordability, in the context of the overall level of funding available for transport.		317	
33	The Mayor, through TfL, will work to secure the investment necessary to remove the backlog of life-expired assets and to deliver the transformation of the Tube.		317	

Policy No.	Policy	Reference	Page No.	Reference to policies in the draft replacement London Plan
34	The Mayor, through TfL, will work with the DfT, Network Rail, the train operating companies and other stakeholders to secure the necessary investment in London's rail network, including new stations where feasible, through additional capital funding and enhancements to rail services through rail franchises.		318	
35	The Mayor, and TfL, will work with the London boroughs to secure developer contributions to transport through planning obligations in order to secure the success of each development and to mitigate any negative impacts on the existing transport system in accordance with relevant legislation and policy guidance. As set out in the proposed London Plan policy, where it is appropriate to seek a Crossrail contribution, this should generally be given higher priority than other public transport improvements. TfL will work with the GLA and boroughs to develop a protocol to implement the policy.		319	6.5, 8.2, 8.3
36	The Mayor, and TfL, will work with the London boroughs and other stakeholders, to seek to secure further investment from a variety of sources that help improve the quality and range of transport services available to Londoners.		320	

Proposal No.	Proposal
1	The Mayor, through TfL, and working with the DfT, Network Rail, the operators of international rail services and other transport stakeholders, will encourage the provision of direct international rail services to a wider range of European destinations, with some of those new services serving Stratford International station.
2	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, freight operating companies, London boroughs and other transport stakeholders, will support the development of more rail freight terminals in or near London, including connections to HS1 for international freight, in line with the London Plan policy to identify new sites for strategic rail freight interchanges.
3	The Mayor, through TfL and working with the DfT, Network Rail, train operating companies, freight operating companies, London boroughs and other transport stakeholders, will support the development of National Rail routes that relieve London of freight without an origin or destination in the Capital.
4	The Mayor and TfL support the development of a national high-speed rail network and will work with the DfT, Network Rail, High Speed Two and other transport stakeholders to ensure that the main London terminal for any new high-speed line is centrally located, well-connected to the existing public transport network, and widely accessible to maximise access to jobs and London's population. It is currently considered that Euston best meets these criteria. Further evaluation will be made of this and other potential termini, in particular, in relation to links to Heathrow.
5	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, freight operating companies, boroughs and other transport stakeholders, will seek to ensure that Crossrail is delivered by 2017, and that it is fully integrated with the rest of London's public transport system; that the impacts of construction on residents and businesses are minimised as far as possible; and that the future benefits Crossrail brings are monitored to ensure the rail link achieves its objectives.
6	The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies and other stakeholders, will consider future extensions of Crossrail that reduce congestion and improve connectivity on London commuter routes.
7	The Mayor, through TfL, will seek to ensure that Network Rail and the train operating companies deliver the committed improvements to the rail network and services in London as set out by the DfT's High Level Output Specification for the period 2009 to 2014.
8	<p>The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will seek further rail capacity across London's rail network, beyond those schemes already committed.</p> <p>The highest priorities in the medium term are to further increase capacity on London Overground; on southwest routes; on West Anglia routes, including access to Stratford; on Great Northern services; and at congested stations.</p> <p>In the longer term, further capacity solutions may be required on a number of rail corridors, such as the Brighton Main Line.</p>
9	The Mayor will support new rail capacity in the broad southwest to northeast corridor, for example, new lines or services using the Chelsea Hackney line safeguarded alignment. TfL will undertake a review of the route to ensure it is providing the maximum benefits, including helping the onward dispersal of passengers from central London termini and value for money.
10	The Mayor, through TfL, will seek to ensure that the DfT, Network Rail and the train operating companies achieve the HLOS 'public performance measure' for reliability, as well as an overall reduction in significant lateness and cancellations for London and southeast services.

Proposal No.	Proposal
11	<p>The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies and London boroughs, will seek to deliver capacity enhancements at some of London's most congested stations. The highest priorities include:</p> <ul style="list-style-type: none"> <li>a) Central London termini station congestion relief and onward distribution enhancements (the potential of all onward modes will be considered)</li> <li>b) Clapham Junction station capacity enhancement (new improved links between platforms, additional entrances and more ticketing facilities)</li> <li>c) Improved capacity at National Rail stations with severe congestion, including Finsbury Park, Bromley South, Wimbledon, Vauxhall and Barking</li> <li>d) Improved capacity at National Rail stations with moderate congestion, including Willesden Junction, Balham, West Croydon, Putney, Norwood Junction and Surbiton</li> </ul>
12	<p>The Mayor, through TfL, and working with Network Rail, the train operating companies and other transport stakeholders, will encourage the achievement of a seven-day railway by better planning and management of necessary engineering and maintenance work on the railway.</p>
13	<p>The Mayor, through TfL, and working with Network Rail, the train operating companies and other transport stakeholders, will encourage the provision of rail services in London that meet common service standards, including improved ambience, amenities and wayfinding at all stations, and staff availability at each station. It is intended these improvements will be rolled-out as franchises are renewed. However, they would be better achieved if the Mayor had more control over suburban rail services in the London area.</p>
14	<p>The Mayor, through TfL, working with the DfT and Network Rail, will deliver the committed investment in the Overground network, investigate the feasibility of providing further capacity to assist orbital movement, and will review potential benefits of extensions to the network of services.</p>
15	<p>The Mayor, through TfL, will support safeguarding the route of the DLR Dagenham Dock extension as part of the housing proposals for Barking Riverside, and will investigate the feasibility of further capacity and network expansion of the DLR including options south of Lewisham, west of Bank and north of Stratford International.</p>
16	<p>The Mayor, through TfL, and working with the London boroughs and other transport stakeholders, will investigate the feasibility of providing extra capacity on the Tramlink network and will review potential benefits of extensions to the system.</p>
17	<p>The Mayor, through TfL, will seek to deliver upgrades to all Tube lines in a phased programme to provide a significant increase in network capacity. This will involve a combination of new rolling stock and/or signalling systems and other asset replacement. As part of this, continued investment to bring the network to a good state of repair and maintain it at that level will be supported.</p>
18	<p>The Mayor, through TfL, will continue to deliver an ongoing programme of Tube station refurbishments and asset stabilisation to ensure stations are operable and deliver customer service requirements, and continue to improve station accessibility over the life of the strategy.</p>

Proposal No.	Proposal
19	<p>The Mayor, through TfL, and working with the London boroughs, private developers and other transport stakeholders, will develop and implement a prioritised programme to deliver station capacity and accessibility enhancements at London's most congested Underground stations, including:</p> <ul style="list-style-type: none"> <li>a) Congestion relief schemes to complement Tube line upgrades and/or integrate with Crossrail at the key central London interchanges of Victoria, Tottenham Court Road, Bond Street, Paddington (Hammersmith &amp; City) and Bank</li> <li>b) Schemes at further strategic Tube interchanges that are critical to London's transport system (for example, Vauxhall, Finsbury Park, Highbury &amp; Islington, Holborn, Camden Town, Oxford Circus, Edgware Road and Northern line City branch, in particular Old Street and Moorgate)</li> <li>c) Major strategic multi-modal/National Rail interchanges on to the Underground network to disperse onward demand arising from National Rail proposals (HLOS2 and HS2 proposals), for example, London Bridge, Euston, Liverpool Street, Paddington, Elephant &amp; Castle and Waterloo</li> </ul>
20	<p>The Mayor, through TfL, will implement the following measures to cool the Underground:</p> <ul style="list-style-type: none"> <li>a) New air-conditioned rolling stock across the sub-surface (Metropolitan, Circle, Hammersmith &amp; City and District) lines, introduced progressively from 2010</li> <li>b) Improved ventilation shafts and replacement of out of service fans</li> </ul>
21	<p>The Mayor, through TfL, will continue to develop and implement measures to deliver the highest standards of customer care on the Underground, including the provision of high quality information about engineering works that affect regular Tube services, and improved information on the accessibility of the Tube network highlighting step-free and mostly step-free routes.</p>
22	<p>The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek longer-term enhancements and extensions to the Underground network, including:</p> <ul style="list-style-type: none"> <li>a) A privately funded extension of the Northern line to Battersea to support regeneration of the Vauxhall/ Nine Elms/Battersea area</li> <li>b) A potential southern extension to the Bakerloo line will be reviewed further. This would utilise spare line capacity, improve connectivity and journey times, while providing relief to congested National Rail approaches to central London from the south/southeast, subject to resources and the results of further study</li> <li>c) A link at Croxley to join the Watford branch of the Metropolitan line to Watford Junction (funding to be secured by Hertfordshire County Council in conjunction with the DfT)</li> </ul>
23	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will keep the development of the bus network under regular review, including reviews of the strategic priorities underlying the process approximately every five years, to ensure it caters for growth in population and employment, while maintaining ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes. All proposals for change will be appraised to ensure that they deliver good value for money and that the funds available are being invested in optimum service improvements.</p>

Proposal No.	Proposal
24	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, including developers, will improve bus passengers' journeys by measures, including:</p> <ul style="list-style-type: none"> <li>a) Incentivising bus operating contracts and expanding staff training in order to consolidate reliability improvements</li> <li>b) Introducing measures such as bus priority at critical locations</li> <li>c) Ensuring that the appropriate enforcement of bus priority is carried out</li> <li>d) Implementing the Countdown 2 project to deliver expanded access to real time information and develop further integration with digital communications to provide real time bus information</li> </ul>
25	<p>The Mayor, through TfL, will upgrade its bus fleet to meet increased emissions standards and will appoint bus manufacturers as part of the New Bus for London project. It is intended that the first prototype will enter service during 2011.</p>
26	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders will support improvements to the taxi service through a number of measures, including:</p> <ul style="list-style-type: none"> <li>a) Continued highway priority for taxi services, for example, access to bus lanes</li> <li>b) Reduced taxi vehicle emissions and development of low emission taxis</li> <li>c) Provision of parking and waiting facilities, including rest facilities</li> <li>d) Provision of ranks and facilities at interchanges</li> <li>e) Taxi marshalling</li> <li>f) Action against touting and illegal cabs</li> <li>g) Improved driving behaviour, to be encouraged through the licensing procedure of taxi drivers</li> <li>h) Ensuring regulated taxi fares changes allow drivers and owners to continue to recover the costs of providing the taxi service and provide a sufficient incentive for taxi provision to meet demand, in particular at night</li> <li>i) Continuous process improvements to provide a modern and cost effective licensing service</li> </ul>
27	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will support improvements to private hire services (especially minicabs) through the following:</p> <ul style="list-style-type: none"> <li>a) Initiatives that deliver further the success of the Safer Travel at Night scheme</li> <li>b) Provision of facilities to pick up as well as drop off passengers where appropriate</li> <li>c) Action against plying for hire, touting, un-roadworthy vehicles and illegal cabs</li> <li>d) Continuous process improvements to provide a modern and cost effective licensing service</li> <li>e) Lower emissions from PHVs</li> </ul>
28	<p>The Mayor, through TfL, and working with the London boroughs, coach operators and other stakeholders, will seek to maximise the use of the existing facilities to increase capacity for coaches, given the anticipated growth in demand for their use and to develop parking standards for coaches. In the longer term, the Mayor will work with all relevant partners to investigate the feasibility of developing a series of coach hubs or the potential for alternative locations for coach station facilities to provide easier access to the coach network, while retaining good access to central London for coach operators.</p>
29	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will encourage and support the community transport sector's contribution to the development and provision of transport services in London.</p>

Proposal No.	Proposal
30	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce measures to smooth traffic flow to manage congestion (delay, reliability and network resilience) for all people and freight movements on the road network, and maximise the efficiency of the network. These measures will include:</p> <ul style="list-style-type: none"> <li>a) Further investment in intelligent traffic control systems (such as the urban traffic control system, SCOOT) and the infrastructure to support them</li> <li>b) Allowing motorcycles and scooters to use TLRN bus lanes subject to a trial period and evaluating its impact</li> <li>c) Upgrading, rationalising or removing traffic management equipment and optimising timings at signal controlled junctions to keep traffic moving</li> <li>d) Working with the DfT to pilot and develop the concept of pedestrian countdown at traffic signals to optimise the amount of 'green time' for both pedestrians and road traffic</li> <li>e) Planning and implementing a targeted programme of improvements to the existing road network, including junction upgrades to improve traffic flow on the most congested sections of the network, and to improve conditions for all road users</li> </ul>
31	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will utilise advances in ITS technology to better manage the road network, improve real time traffic management capability, lay the foundations for communication with in-vehicle systems and develop state-of-the-art traffic signal control systems.</p>
32	<p>The Mayor, through TfL, and working with the London boroughs and utility companies, will seek to minimise the adverse impact of planned interventions on the road network on the movement of people and goods, by:</p> <ul style="list-style-type: none"> <li>a) Strengthening the Mayor's Code of Conduct for Roadworks to further improve coordination between different highway authorities and utilities across London</li> <li>b) Utilising 'LondonWorks' to improve roadworks planning, coordination and information availability</li> <li>c) Encouraging collaboration between utility companies and the use of innovative road engineering techniques such as minimum dig technology and temporary plating over roadworks</li> <li>d) Implementing the concept of 'lane rental' charges for utilities to reflect the value of their temporary possession of road capacity (in terms of cost of delay to the road user) and to incentivise reductions in the duration of roadworks</li> </ul>
33	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve the real time management of unplanned interventions and incidents on the road network, and improve communications to minimise the disruption and raise levels of public satisfaction with road network management.</p>
34	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will work in collaboration to maintain cost-effectively London's road network assets in a good state of repair in order to maximise their operational safety and effectiveness, and to promote road user satisfaction. This will include:</p> <ul style="list-style-type: none"> <li>a) Conducting programmes for the maintenance of roads, pavements, bridges, tunnels and traffic systems so that the TLRN and borough road network is serviceable</li> <li>b) Ensuring highway structures are inspected regularly</li> <li>c) Developing a Tunnels Safety Enhancement Programme taking account of, among other matters, fire risks, lighting, communications and surveillance</li> </ul>

Proposal No.	Proposal
35	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders will give consideration to new road schemes where there is an overall net benefit when judged against the following criteria:</p> <ul style="list-style-type: none"> <li>a) The contribution to London's sustainable development/regeneration including improved connectivity</li> <li>b) The extent to which congestion (average vehicle delay, unreliable journey times and poor levels of network resilience) is reduced</li> <li>c) How net benefit to London's environment can be provided</li> <li>d) How conditions for pedestrians, cyclists, public transport users, freight transport and local residents can be improved</li> <li>e) How safety for all is improved</li> </ul> <p>All proposals will demonstrate how any disbenefits will be mitigated.</p>
36	<p>The Mayor, through TfL, and working with the Port of London Authority, ODA, boat operators, pier owners, riparian boroughs and other interested parties, will continue by means of the River Concordat to work to enable the development of London's river services to reach their full potential and to better integrate river services into the land-based public transport network.</p>
37	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will encourage the provision of more pier capacity, particularly in central London and will seek financial support for new piers when considering development proposals in the vicinity of the Thames. The Mayor, through TfL, will also work with the Port of London Authority, boroughs and operators to identify and promote suitable boat yard facilities in London.</p>
38	<p>The Mayor, through TfL, and working with the Port of London Authority, London boroughs and operators, will seek to ensure that existing safeguarded wharves are fully utilised for waterborne freight (including waste), and will examine the potential to increase the use of the Thames and London's canal network for waterborne freight transport.</p>
39	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will take forward a package of river crossings in east London, including:</p> <ul style="list-style-type: none"> <li>a) A new fixed link at Silvertown to provide congestion relief to the Blackwall Tunnel and provide local links for vehicle traffic</li> <li>b) An upgraded Woolwich Ferry and consideration of a new vehicle ferry at Gallions Reach to improve connectivity</li> <li>c) Local links to improve connections for pedestrians and cyclists</li> <li>d) Consideration of a longer-term fixed link at Gallions Reach to improve connectivity for local traffic, buses, cyclists and to support economic development in this area</li> <li>e) The encouragement of modal shift from private cars to public transport, using new rail links including High Speed One domestic services, Crossrail and the DLR extension to Woolwich, reducing road demand, and so road congestion at river crossings, where possible</li> <li>f) Support for Government proposals to reduce congestion at the Dartford crossing</li> </ul>
40	<p>The Mayor, through TfL, and working with the DfT, Network Rail, the London boroughs and others will improve the physical accessibility of the transport system by prioritising step-free access at strategic interchanges, improving street accessibility in town centres and around accessible stations and maximising the accessibility benefits of new transport schemes, such as Crossrail. In doing so, the Mayor will seek to maximise the benefits of investment by ensuring that resources are focused on improving accessibility for the maximum number of people, while ensuring an equitable balance across London.</p>

Proposal No.	Proposal
41	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve the availability, quality, quantity and timeliness of information about the transport system to remove barriers to travel.
42	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve attitudes of transport staff and travellers towards each other to ensure excellence in customer service and a courteous, safe and friendly travelling environment that does not present a barrier to travel.
43	The Mayor, through TfL, will work to ensure a greater staff availability to provide direct assistance to customers and continue to improve customer experience, by enhancing staff training to ensure that the access needs of disabled passengers are understood by all frontline staff.
44	The Mayor, through TfL, will support door-to-door services for people with mobility problems who require this form of transport service.
45	<p>The Mayor, through TfL, and working with Network Rail, the train operating companies, London boroughs and other stakeholders, will improve the customer experience and physical accessibility at interchanges across London through the application of the principles set out by the TfL Interchange Best Practice Guidelines of 'efficiency', 'useability', 'understanding' and 'quality' to all interchange schemes in London. Such measures include:</p> <ol style="list-style-type: none"> <li>Provision of consistent and enhanced travel information</li> <li>Improved walking and cycling facilities at, and on routes to, public transport stations and stops</li> <li>Improved integration of public transport services in London, both in terms of service planning and physical location</li> <li>Improved efficiency, effectiveness and quality of interchanges across London to further integrate London's transport system</li> <li>Provision of consistent customer service delivery standards</li> <li>Assurance that interchange facilities have sufficient capacity to meet travel demand</li> </ol>
46	<p>The Mayor, through TfL, and working with Network Rail, the train operating companies, London boroughs and other stakeholders, will prioritise improvements to strategic interchanges, that will:</p> <ol style="list-style-type: none"> <li>Provide opportunities for orbital public transport services</li> <li>Provide interchange opportunities before arriving in central London, in order to reduce interchange capacity pressure at London's rail termini</li> <li>Provide opportunities to accommodate population and employment growth, with developer contributions towards the interchange improvements sought in appropriate circumstances</li> </ol>
47	<p>The Mayor in partnership with the London boroughs, TfL and Olympic Park Legacy Company, will develop a Transport Legacy Action Plan and monitoring programme to ensure the benefits of the legacy of the 2012 Games are maximised and that transport interventions support convergence as set out in the five Olympic Boroughs Strategic Regeneration Framework. The plan will be monitored for 10 years after the Games, and will define:</p> <ul style="list-style-type: none"> <li>Partners and their responsibilities</li> <li>The monitoring area within the five Olympic boroughs</li> <li>Key indicators and targets within the monitoring area and London-wide</li> <li>Actions and interventions required to meet the targets</li> <li>Annual review of targets</li> </ul>

Proposal No.	Proposal
48	The Mayor recognises that the provision of adequate airport capacity serving the South East is critical to the competitive position of London in a global economy, but will oppose any further increases in runway capacity at Heathrow.
49	The Mayor believes the aviation industry should meet its full environmental and external costs and supports the position of 'The Future of Air Transport' White Paper published in 2003. This states that airport operators should be responsible for paying the costs of upgrading or enhancing road, rail or other transport networks or services where these are needed to accommodate additional passengers travelling to, and from, expanded or growing airports.
50	The Mayor, through TfL, and working with the London boroughs, DfT, airport operators, Network Rail, train operating companies and other stakeholders, will seek to improve access to London's airports for passengers and staff by public transport, particularly from those parts of London which do not currently have good access by rail or bus; and for goods through better management of the road network, development of consolidation/break-bulk centres and encouragement of access by rail and waterway.
51	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will provide support, including sharing best practice, to enable and empower employers, schools, community groups, other organisations and individuals to deliver the improvements necessary to create a cycling revolution in London.
52	The Mayor, through TfL, and working with the London boroughs that are keen to pilot the Biking Borough approach, will develop the Biking Borough scheme including measures such as cycle hubs and marketing initiatives to promote cycling.
53	The Mayor, through TfL, will work with the DfT, London boroughs and stakeholders to raise the profile of cycling, using information and behavioural change measures, including smarter travel initiatives and major events.
54	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will deliver improvements to cycling infrastructure and training to support the cycling revolution, including: <ul style="list-style-type: none"> <li>a) The launch of the central London Cycle Hire scheme in 2010</li> <li>b) Twelve Cycle Superhighways will be developed for commuters and others to cycle to central London, improving the capacity of the radial network</li> <li>c) Enhanced cycle links to the Olympic Park by 2012, and the development of a wider network of Greenways across London</li> <li>d) Further phases of the Cycle Hire scheme introduced in Inner and Outer London subject to sufficient demand and feasibility</li> <li>e) Increased provision of secure bicycle parking facilities, particularly at stations, workplaces, schools, retail and leisure sites</li> <li>f) Improving permeability for cycling by further integrating the road network and open spaces</li> <li>g) Delivering road enhancements to make cycling easier and safer, including managing car access to residential areas, through physical or design measures, to create pleasant and safer cycling environments</li> <li>h) Offering cycle training for people of all ages</li> </ul>
55	The Mayor, through TfL, and working with the police, London boroughs and DfT, will encourage changes to be made to the Highway Code and road traffic regulations, where necessary, to make cycling more convenient and to encourage a culture of mutual respect between all road users.

Proposal No.	Proposal
56	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will press for specific primary legislation to establish an effective legal framework for pedicabs, including specific licensing powers for the boroughs.
57	The Mayor will seek to use his planning powers and work with the London boroughs to encourage cycling by supporting development that: <ul style="list-style-type: none"> <li>a) Provides cycle parking to an appropriate standard</li> <li>b) Integrates the needs of cyclists into the design</li> <li>c) Promotes the co-location of key trip attractors to make cycling a more viable and attractive travel option</li> <li>d) Provides cycle hire docking stations dependent on sufficient demand and feasibility studies</li> </ul>
58	The Mayor, through TfL, and working with Network Rail, the train operating companies and London boroughs, will review cycle parking standards and aim to implement ‘best-practice’ levels of cycle parking provision at any new station or as part of any comprehensive station redevelopment works. Additional cycle parking provision will also be provided at other stations to meet demand, wherever possible.
59	The Mayor, through TfL, and working with the London boroughs, employers, schools, community groups, other organisations and individuals, will bring about a step change in the walking experience in London to make walking count.
60	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve the walking experience by enhancing the urban realm and taking focused action to ensure safe, comfortable and attractive walking conditions, including: <ul style="list-style-type: none"> <li>a) Development of the ‘key walking route’ approach, to encourage walking and improve corridors between local destinations where people want to travel, encapsulating squares and open spaces where appropriate (for example, London parks)</li> <li>b) Providing direct, convenient pedestrian access (for example, with surface crossings) where appropriate</li> <li>c) Street audits to identify pedestrian needs and guidance (such as pedestrian comfort levels)</li> <li>d) Delivery of the seven Strategic Walk Network routes, separate from, but alongside the development of, Greenways</li> <li>e) Training for those involved in the design and delivery of schemes that impact walking conditions</li> <li>f) Enhancing pavement space for pedestrians and removing guardrails and other obstacles</li> <li>g) Seeking to manage car access to residential areas, through physical or design measures, to create pleasant and safer walking environments</li> <li>h) Tackling the fear of crime and feeling unsafe on the streets</li> <li>i) Supporting major projects such as high street revitalisation through good quality public realm designed to support regeneration of small businesses and encourage local shopping and activity</li> <li>j) Improving access, safety and security between the station and surrounding areas for pedestrians (and cyclists) to encourage active and smarter travel</li> <li>k) Encouraging the extension of a network of linked green spaces (namely, the All London Green Grid)</li> <li>l) Supporting developments that emphasise the quality and permeability of the pedestrian environment (section 5.18 Better streets)</li> </ul>

Proposal No.	Proposal
61	The Mayor, through TfL, and working with the London boroughs, developers and other stakeholders, will improve the quality and provision of information and resources for walking, especially at stations, interchanges and in town centres by measures, including: <ul style="list-style-type: none"> <li>a) Extending Legible London to other areas</li> <li>b) Creating an online one-stop walking resource to facilitate walking, linked to an enhanced Journey Planner with advanced walking options</li> <li>c) Developing consistent wayfinding formats and making use of new wayfinding technologies</li> </ul>
62	The Mayor, through TfL, working with the London boroughs, developers and other stakeholders, will promote walking and its benefits through information campaigns, events to raise the profile of walking, and smarter travel initiatives such as school and workplace travel plans.
63	The Mayor, through TfL and working with the London boroughs, Network Rail, train operating companies, the police and other stakeholders, will seek to reduce fatality and injury rates on London's transport system further; and will aim to reduce London bus road user fatality, major and minor injury rates.
64	The Mayor, through TfL, and working with the London boroughs, police, Highways Agency, road safety partnerships, and other stakeholders, will seek to achieve any new national road safety targets and such further road safety targets as the Mayor may set from time to time.
65	The Mayor, through TfL, working with the police, Highways Agency, London boroughs, road safety partnerships and other stakeholders, will develop a new Road Safety Plan to reflect any new road safety targets to be set by the Government or the Mayor and review progress every five years.
66	The Mayor, through TfL, will continue to monitor road safety schemes and publish road safety casualty reports and research.
67	The Mayor, through TfL, and working with the London boroughs, police, DfT, and other stakeholders, will undertake public information and engagement to improve road user behaviours and reduce the risk of collisions.
68	The Mayor, through TfL, the police and working with the DfT, London boroughs, road freight operators and other stakeholders, will improve safety for cyclists in the vicinity of HGVs and other vehicles, by: <ul style="list-style-type: none"> <li>a) Encouraging the Government to amend legislation and remove the current exemption for HGVs being fitted with sideguard protection</li> <li>b) Working to increase the number of HGVs with sideguards or fitted with electronic warning devices that detect cyclists</li> <li>c) Raising awareness among drivers of the safety benefits of advance stop line areas</li> </ul>
69	The Mayor, through TfL and working with the DfT, London boroughs, road freight operators and other stakeholders, will seek enhanced vehicle and driver safety from organisations operating corporate fleets by working with the freight sector and other stakeholders, promoting increased membership of the Freight Operator Recognition Scheme, and encouraging operators to uptake and demonstrate freight best practice.
70	The Mayor, through TfL, and by working with the DfT, London boroughs and Health and Safety Executive, will seek to improve road safety by developing initiatives and working with employers to increase work-related road safety and to reduce casualties involving work-related vehicles and activities.
71	The Mayor, through TfL, and working with the London boroughs, Highways Agency and other stakeholders, will implement targeted physical engineering and other design considerations to improve road safety across London's road network.

Proposal No.	Proposal
72	The Mayor, through TfL, and working with the DfT, London boroughs, vehicle manufacturers and other stakeholders, will encourage the introduction of voluntary 'intelligent speed adaptation', subject to the outcome of trials in corporate fleets, including freight, passenger transport and company cars and vans.
73	The Mayor, through TfL, and working with the police, London boroughs and other partners will continue implementing effective enforcement measures, targeted at locations with poor collision records across London's road network, including new average speed cameras which will be trialled subject to local consultation, for example, on main roads and for enforcing speed in 20mph zones.
74	The Mayor, through TfL, and working with the London boroughs, transport operators, police and local communities, will establish a statutory community safety partnership for transport and travelling in London. These partners will seek to ensure a strategic, effective, integrated and financially sustainable approach to improving safety and security across the transport system. The partnership will develop and implement a rolling three-year community safety strategy to tackle crime, fear of crime and antisocial behaviour. The strategy will set out shared priorities, objectives and targets based on a joint annual strategic assessment.
75	The Mayor, through TfL, and working with the London boroughs, police and other stakeholders, will make best use of available resources, basing decisions on evidence and shared intelligence, to: <ul style="list-style-type: none"> <li>a) Increase the visibility and accessibility of uniformed staff and officers, including special constables, at the right times and locations and provide them with the right powers to maximise their impact on crime, antisocial behaviour and public confidence in travelling in London</li> <li>b) Target enforcement activity on priority crimes, antisocial behaviour and behaviour that feeds the fear of crime using a problem-solving approach</li> <li>c) Create a small joint intelligence unit between TfL and policing agencies to improve intelligence sharing and the efficiency and effectiveness of resource deployment</li> </ul>
76	The Mayor, through TfL, and working with the London boroughs, police and other stakeholders will integrate local policing structures on the transport system; improve coordination and deploy resources collectively. Joint tasking of uniformed staff will help maximise their effectiveness.
77	The Mayor, through TfL, and working with the London boroughs, police and other stakeholders, will integrate reporting systems for antisocial behaviour, crime and disorder on the transport system.
78	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce a package of measures including marketing, education and engagement activities to help passengers make informed, safer travel choices, and raise awareness of the effect of inconsiderate and antisocial behaviour on others.
79	The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will seek to ensure that: <ul style="list-style-type: none"> <li>a) Safety and security considerations are incorporated into the planning and design of transport facilities</li> <li>b) Existing transport infrastructure, including pedestrian routes and cycle parking facilities, are kept in a good state of repair and have adequate lighting, signage, clear lines of vision and CCTV coverage where appropriate</li> </ul>
80	The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will exploit the opportunities provided by new technology to prevent crime and disorder.

Proposal No.	Proposal
81	The Mayor, through TfL, and working with the London boroughs, police, and other stakeholders, will seek to: <ul style="list-style-type: none"> <li>a) Improve the safety of night-time public transport services</li> <li>b) Improve the safety of cabs</li> <li>c) Provide better information about, and access to, safer travel options</li> </ul>
82	The Mayor, through TfL, and working with the London boroughs, police and other emergency services and stakeholders, will seek to reduce the likelihood and impact of potential terrorist attacks on the transport system.
83	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will use the principles of 'better streets' to seek to improve town centres, in particular: removing clutter and improving the layout and design of streets; enhancing and protecting the built and historic environment; increasing the permeability of streets; and creating clear and easily understandable routes and spaces to make it easier for cyclists, pedestrians and disabled people to get about.
84	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce accessible for all, 'better streets' initiatives. Consideration will be given to trialling the removal of traffic signals where safe and appropriate.
85	The Mayor, through TfL and the LDA, and working with the London boroughs, Network Rail and other stakeholders, will seek to implement integrated and complementary improvements to town centres, streets and pedestrian and cycling routes directly adjacent to where major public transport investment projects are being delivered, using sustainable materials.
86	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will target the provision of noise reduction measures and noise mitigation measures in areas significantly affected by transport noise, to improve perceptions of noise and reduce the impacts of noise on dwellings and people, by: <ul style="list-style-type: none"> <li>a) Timely and effective rail maintenance and replacement works</li> <li>b) Working to the TfL Health Safety and Environment policy</li> <li>c) Ensuring all new transport projects consider noise mitigation</li> <li>d) Introducing road maintenance programmes to replace road surfaces with low noise surfacing where possible</li> <li>e) Improving traffic management and signal control techniques</li> <li>f) Introducing speed enforcement measures which do not encourage noisy, rapid acceleration and deceleration</li> <li>g) Introducing quieter buses</li> <li>h) Procuring new, quieter public sector service vehicles, potentially through joint procurement to achieve efficiency</li> </ul>
87	The Mayor, through TfL, and working with London Councils, London boroughs, freight operators, and other stakeholders, will explore opportunities to use the London Lorry Control Scheme to encourage companies to operate quieter vehicles as well as to promote improvements in air quality, and reduce CO <sub>2</sub> emissions.
88	The Mayor, through TfL, and working with the London boroughs, motorist organisations, freight operators and other stakeholders will encourage quieter driving through publicity campaigns aimed at private drivers and motorcyclists, and training programmes for professional drivers.

Proposal No.	Proposal
89	<p>The Mayor, through TfL, and working with the DfT, the national air traffic control service and the European Commission, will:</p> <ul style="list-style-type: none"> <li>a) Encourage the development and use of quieter aircraft</li> <li>b) Seek to coordinate flight paths so they minimise their impact on London</li> </ul>
90	<p>The Mayor, through TfL, and working with the DfT, Highways Agency, London boroughs, Network Rail, and other stakeholders, will make the most of open spaces across the transport system (for example, green spaces alongside railway lines, roads, rivers, canals, cycling and walking routes, green grids and on roof tops) to improve the quality and diversity of London's natural environment.</p>
91	<p>The Mayor, through TfL and working with London boroughs, transport operators and other stakeholders, will encourage behavioural changes to reduce vehicle emissions, by:</p> <ul style="list-style-type: none"> <li>a) Promoting walking and cycling, the use of car clubs, car sharing, the use of fuel efficient vehicles and smarter driving techniques and raising awareness about air quality</li> <li>b) Implementing eco-driving training for all GLA/functional body, taxi and bus drivers</li> <li>c) The Mayor will also reduce emissions from the wider fleet by supporting eco-driving training for members of the public and freight drivers (through the existing FORS scheme) and tackling emissions caused by unnecessary idling</li> <li>d) Providing better information about emissions from private vehicles and the public transport fleet</li> </ul>
92	<p>The Mayor, through TfL, and working with the London boroughs, DfT, Network Rail, train operating companies and other stakeholders, will introduce measures to reduce emissions, including:</p> <ul style="list-style-type: none"> <li>a) Cleaner buses</li> <li>b) Cleaner taxis and PHVs</li> <li>c) Further rail electrification, including the recently announced Great Western Main Line electrification scheme and the Barking to Gospel Oak line</li> <li>d) Cleaner passenger boats and other river vessels, which use more environmentally friendly fuels</li> <li>e) Encouraging the introduction and use of cleaner public service and local authority vehicles</li> </ul>
93	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will take further action to reduce private vehicle emissions, by:</p> <ul style="list-style-type: none"> <li>a) Supporting the uptake of low emission vehicles, such as electric cars and vans</li> <li>b) Incentivising of low emission vehicles through pressing for changes to vehicle excise duty and parking regulations</li> <li>c) Working with the European Commission, the Government and vehicle manufacturers, the Mayor will encourage the development of new technologies which reduce vehicles emissions, such as better tyres which wear less, more sophisticated abatement technology and automatic hybrid-switching</li> </ul>
94	<p>The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce targeted local measures at poor air quality priority locations to reduce emissions and improve local air quality.</p>

Proposal No.	Proposal
95	<p>The Mayor, through TfL, will continue to operate the existing London Low Emission Zone. The Mayor will consider further tightening of the standards of the current LEZ, as well as the introduction of further emissions control schemes to encourage the use of cleaner vehicles in London:</p> <ul style="list-style-type: none"> <li>a) The current LEZ scheme will continue to operate to reduce emissions from the heaviest vehicles, and tighter standards will be introduced in 2012 as planned</li> <li>b) The Mayor will defer extending the LEZ to LGVs and minibuses (which was due to commence in 2010) to 2012</li> <li>c) In 2015, the Mayor will, subject to technical feasibility, introduce an emissions standard for NOx (Euro IV) into the LEZ for HGVs, buses and coaches</li> <li>d) If necessary, the Mayor will consider introducing minimum requirements for other vehicles or tighter standards in particular locations within London</li> <li>e) The Mayor will work with boroughs that propose to take local action to address air quality through local low emission zones or similar measures</li> </ul>
96	<p>The Mayor, through TfL, and working with the London boroughs, transport operators and other stakeholders, will promote behavioural change and smarter travel measures aimed at encouraging more use of lower carbon modes, eco-driving practices, better vehicle maintenance and flexible working patterns to reduce CO2 emissions.</p>
97	<p>The Mayor, through TfL, and working with the London boroughs, transport operators, and other stakeholders, will support, promote and improve sustainable, low CO2-emitting transport (including public transport, cycling, walking, and rail and water for freight), and reduce the need to travel through integration of transport and land use planning.</p>
98	<p>The Mayor, through TfL, and working with the London boroughs, car club operators, and other stakeholders, will support expansion of car clubs and encourage their use of ultra low carbon vehicles.</p>
99	<p>The Mayor, through TfL, and working with the London boroughs, road freight operators and other stakeholders, will:</p> <ul style="list-style-type: none"> <li>a) Adopt planning conditions that specify Delivery Service Plans for major developments (by spring 2011)</li> <li>b) Aim for 50 per cent of HGVs and vans serving London to be members of FORS by 2016</li> <li>c) Encourage, and where appropriate specify, improved freight movement efficiency through, for example, greater consolidation, more off-peak freight movement and greater use of water and rail-based transport</li> <li>d) Support freight industry land requirements for locally focused consolidation and/or break-bulk facilities and access to waterways and railways</li> </ul>
100	<p>The Mayor, through TfL, will introduce automatic train control (a tool that can optimise energy efficiency through driving style) across the Tube network. Drivers of non-automatic railways, such as London Overground, will be given training on energy efficient driving style, as will London's bus drivers.</p>
101	<p>The Mayor, through TfL, or otherwise, will work with the DfT and other stakeholders to promote research, investment and regulation to achieve improved aviation carbon efficiency.</p>
102	<p>The Mayor, through TfL, and working with the London boroughs, Highways Agency, and other stakeholders, will implement a package of measures (including signal timing reviews and the coordination of traffic signals) to reduce road traffic emissions by smoothing the flow of traffic and optimising the efficiency of London's road network.</p>

Proposal No.	Proposal
103	The Mayor, through TfL, and by working with the London boroughs, will encourage a switch from conventional to low CO <sub>2</sub> -emitting road vehicles and low carbon fuel sources where feasible. The Mayor will lobby Government and other stakeholders to follow suit in order to establish a package of integrated incentives across national, regional and local government to ensure low carbon road vehicles are price competitive with conventional technology.
104	The Mayor, through TfL, or otherwise, will continue to examine the feasibility of increasing the use of sustainable biofuels in vehicle fleets controlled or regulated by Mayoral bodies, and will encourage the boroughs and other vehicle fleet operators to do likewise.
105	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will enable and support the development and mass market uptake of low carbon road vehicles (including EVs) through, for example, the delivery of infrastructure required for the distribution of alternative transport fuel sources, including EV recharging points.
106	The Mayor, through TfL, and working with Network Rail, and the DfT, will endeavour to: a) Provide low loss electricity supply infrastructure on London's rail networks b) Implement regenerative braking where feasible on London's rail networks c) Develop, trial and seek to implement measures that minimise the loss through electricity distribution on the Underground
107	The Mayor, through TfL, and working with the DfT, energy companies, and other stakeholders, will deliver additional low/zero carbon electricity-generating capacity and investigate the potential for micro-generation at sites on the transport system.
108	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will promote CO <sub>2</sub> standards for vehicles and infrastructure controlled, procured or regulated by the Mayor, GLA Group and/or other public sector bodies (for example, public transport vehicles, taxis, street and station lighting and infrastructure embodied carbon) to reduce emissions from existing and new vehicles and infrastructure, including the following specific measures: a) The Mayor, through his functional bodies, will increase the proportion of his vehicle fleet powered by electricity b) All new buses entering fleets operated on behalf of the Mayor from 2011/12 will be lower carbon c) Work with vehicle manufacturers and the taxi trade to develop a new low carbon and low air pollutant version of the London taxi d) A trial of at least five hydrogen powered buses from 2010 e) Trialling of low energy station lighting and automatic meter reading f) LED traffic signals preferred to conventional technology when replacing life-expired signal sets and further development of LED lighting leading to a preference for LED technology when replacing life-expired lighting, if proved to be feasible g) Major infrastructure schemes will conduct a carbon footprint assessment h) Where relevant, encourage the GLA group, boroughs, other public sector bodies and their suppliers to procure freight services from FORS members or freight operators able to demonstrate equivalent competencies
109	The Mayor, through TfL, and working with the London boroughs, DfT, Highways Agency, and other stakeholders, will keep under review the option of road user charging and/or regulatory demand management measures to influence a shift to more CO <sub>2</sub> -efficient private and commercial road vehicles, and to lower carbon travel options such as walking, cycling and public transport.

Proposal No.	Proposal
110	The Mayor, through TfL, and by working with the London boroughs, Network Rail, Highways Agency, airport operators and other stakeholders, will determine the vulnerability of transport assets to the impacts of climate change and maintain existing infrastructure (including remedial works where effective and affordable) to improve resilience to climate change.
111	<p>The Mayor, through TfL, and working with the London boroughs, Network Rail, and other stakeholders, will prepare adaptation strategies to improve safety and network resilience to threats posed by climate change, and ensure that new transport infrastructure is appropriately resilient. The adaptation strategy should include:</p> <ul style="list-style-type: none"> <li>a) Climate change impacts risk assessment of infrastructure and operations to identify key risks and mitigation opportunities</li> <li>b) The prioritisation of identified risks and proposals for appropriate management and/or mitigation action plans, including emergency planning and investment plans</li> <li>c) Guidelines for major procurement contracts (including design, construction and maintenance) to demonstrate a climate risk assessment for the lifetime of the investment</li> </ul>
112	<p>The Mayor, through TfL, and working with the London boroughs, Network Rail and other transport infrastructure owners, will ensure the transport system is developed with climate change in mind, by:</p> <ul style="list-style-type: none"> <li>a) Designing, locating and constructing new infrastructure to withstand climatic conditions anticipated over its design life</li> <li>b) Introducing energy efficient air-conditioned rolling stock where feasible, for example, on London Overground services and sub-surface Tube lines</li> <li>c) Continuing to investigate the feasibility of innovative methods of cooling the deep tunnelled sections of the Tube network</li> <li>d) Ensuring that all new buses entering the London fleet will feature specific climate change adaptation measures</li> </ul>
113	The Mayor, through TfL, and working with London boroughs, Network Rail and other transport infrastructure owners, will plant an additional 10,000 street trees by 2012, with the ambition of an additional two million trees in London's parks, gardens and green spaces by 2025.
114	The Mayor, through TfL, and working with the London boroughs, Network Rail, and other stakeholders, will develop and test plans and procedures to minimise risk to person and property, manage disruption and ensure rapid transport system recovery from the impact of climate change related events.
115	<p>The Mayor, through TfL, and working with the London boroughs, DfT, Network Rail, train operating companies, and other stakeholders, will enhance the provision of information to improve customers' knowledge and understanding of service availability, delays and other information to improve customer satisfaction, and the way Londoners use public transport and make travel decisions, by:</p> <ul style="list-style-type: none"> <li>a) Improving the provision of real time and other journey planning information, including upgrading the TfL web-based journey planner, allowing further improvements to its real time performance, accuracy and personalisation</li> <li>b) Providing customers with a range of paper-based information (Tube, cycle and bus 'spider' maps, timetables, fares and service changes)</li> <li>c) Raising public awareness and knowledge of existing public transport provision, particularly, orbital public transport services</li> <li>d) Further development of journey planning, including web-based information, for local trips to town centres</li> <li>e) Developing town centre journey planning tools consistent with other information resources proposed in the strategy</li> </ul>

Proposal No.	Proposal
116	The Mayor, through TfL, and working with the London boroughs and other stakeholders, will use smarter travel initiatives across London to facilitate more efficient use of the transport system, achieve mode shift to cycling, walking and public transport and encourage the take-up of healthier travel options.
117	The Mayor, through TfL, and working with the London boroughs, and other stakeholders in the public and private sectors, will improve the efficiency and effectiveness of freight operations through the promotion of 'delivery and servicing plans', 'construction logistics plans', the Freight Operator Recognition Scheme, Freight Quality Partnerships and other efficiency measures across London.
118	The Mayor, through TfL, and working with the London boroughs, freight industry, and other stakeholders, will develop the London freight information portal to exchange information and share knowledge to ultimately improve the performance of freight operators, boroughs and TfL.
119	The Mayor, through TfL, working with the London boroughs, freight operators and other stakeholders, will support the introduction of consolidation centres and break-bulk facilities where appropriate, especially at Strategic Industrial Locations, to allow distributed goods to be transferred from lorries using the trunk road network to more environmentally friendly vehicles for servicing urban centres.
120	The Mayor will ensure that fares provide an appropriate and necessary level of financial contribution towards the cost of providing public transport services to ensure that public transport continues to play a central role in London's transport system and overall economic development.
121	The Mayor will keep the range of concessions for which he is responsible under review to ensure that they are focused on where they will be most effective at helping those in most need of them. Concessions for schoolchildren are also conditional on good behaviour. If removed for poor behaviour, concessions can be earned back through programmes of community activity and good behaviour.
122	The Mayor, through TfL, will seek to conclude the creation of a fully integrated fare collection system for London that covers both TfL and National Rail services with a common set of travel products simplified to the maximum extent possible, in cooperation with the Association of Train Operating Companies and the DfT.
123	The Mayor, through TfL, and working with the London boroughs, train operating companies, other transport operators and stakeholders, will explore ways to reduce the cost of revenue collection and to make fare payment quicker and more convenient for passengers through the use of new technology and other initiatives.
124	The Mayor, through TfL, and working with the London boroughs, London Councils, and other stakeholders, will seek to ensure fair and consistent enforcement of parking and loading regulations across London, together with more consistent regulations, clearer signage, and more advance information regarding parking availability. Pan-London parking provision and regulations information will be published on the internet in an easy-to-access format.
125	The Mayor, through TfL, and working with the London boroughs, car park operators, and other stakeholders, will encourage implementation of pricing differentials based on vehicle emissions, including banded resident parking permits and other on and off-street parking charges, including incentives for EVs.
126	The Mayor, through TfL, the LDA, and working with the London boroughs and other stakeholders, will seek to ensure that new developments generating significant volumes of freight activity provide adequate off-street lorry parking and waiting facilities.

Proposal No.	Proposal
127	The Mayor, through TfL, the LDA, and working with the London boroughs and other stakeholders, will support those park and ride schemes in Outer London that lead to an overall reduction in congestion, journey times and road vehicle kilometres.
128	The Mayor, through TfL, subject to consultation, will remove the Western Extension of the central London Congestion Charging zone after putting in place such measures in mitigation of negative impacts as are both desirable and practicable.
129	The Mayor, through TfL, will operate and monitor Congestion Charging in the original Central London Congestion Charging zone. The Mayor will keep the scheme under review, making variations to ensure the continued effectiveness of the policy reflects best practice, improves the operation of the scheme, or helps it to deliver the desired outcomes of the MTS.
130	The Mayor, through TfL, and working with the London boroughs and other stakeholders, if other measures are deemed insufficient to meet the strategy's goals, may consider managing the demand for travel through pricing incentives (such as parking charges or road user charging schemes). This would depend upon there being a reasonable balance between the objectives of any scheme and its costs and other impacts. Any scheme would need to take account of local conditions, as well as the impact on surrounding regions, and to be fair and flexible relating charges to the external costs of travel with sensitivity to time of day, and with scope for discounts or exemptions for specific user groups. The Mayor will also consider imposing charges or tolls to support specific infrastructure improvements, such as river crossings.

# Annex C – Freight and servicing contents

Freight and servicing is considered throughout the MTS and most policies and proposals apply to both people and goods. For ease of reference, these chapters are most relevant for freight and servicing:

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**Accessibility:** The general term for how easy it is for people to get to places, jobs, homes and services.

**Accessibility Plan:** The GLA Act 1999 requires the production of a specific accessibility plan covering the full remit of the policies and proposals in this area, together with a timetable for implementation. It is currently intended that a draft will be prepared alongside the public consultation draft of the MTS.

**Air quality:** The main air pollutant emissions from ground-based transport are:

- Oxides of nitrogen
- Particulate matter of varying size fractions, notably PM<sub>10</sub> and PM<sub>2.5</sub>

The Mayor's Air Quality Strategy considers emissions of these pollutants from all sources in London, including transport.

**All London Green Grid:** A strategic framework for creating, improving and managing London's green infrastructure (for example, parks, Greenways) and promoting active travel.

**Antisocial behaviour:** The Crime and Disorder Act 1998 describes antisocial behaviour as that which is 'likely to cause alarm, harassment or distress to members of the public'.

**BAA Ltd:** The body that owns and operates six UK airports, including Heathrow.

**Better streets:** A street with a minimal amount of visual clutter and obstacles that encourages a degree of negotiation between road users.

**Biking Boroughs:** London Boroughs that prioritise cycling in their local transport strategies

and LIPs. Strong political commitment will help to unlock the potential for cycling trips within the borough, especially in areas of more significant opportunity, such as local town centres. Biking Boroughs will demonstrate partnership working, for example, with schools, NHS Primary Care Trusts and businesses, to deliver an integrated package of measures including smarter travel interventions, traffic management and infrastructure. TfL will offer support with programme development and technical expertise.

**Break-bulk facilities:** These are locations where larger vehicles unload materials and goods (often for retail), which are then transported to their final destination by smaller vehicles. Consolidation centres are currently only used by the construction industry, but are essentially the same concept.

**Carbon dioxide (CO<sub>2</sub>):** The primary greenhouse gas emission associated with transport. Produced through the burning of fossil fuels, either in engines or electricity generators, to produce power for transport purposes.

**Car clubs:** A car club provides its members with quick and easy access to a car for hire. Members can make use of car club vehicles as and when they need them.

**Central Activities Zone (CAZ):** The area where planning policy promotes finance, specialist retail, tourist, cultural uses and activities.

**Central London:** The area, broadly speaking, within the Inner Ring Road, similar to the area covered by the central London Congestion Charge.

**Central London Congestion Charging scheme:**

The charge applied to vehicles entering a defined area of central London to reduce congestion.

**Climate change:** Long-term significant change in the expected patterns of average weather conditions of a specific region over an appropriately significant period of time.

**Civils:** Infrastructure assets such as bridges, viaducts, embankments and drainage systems.

**Construction Logistics Plans (CLPs):** Travel plans which aim to improve the sustainability of construction freight movements by establishing site management and procurement processes to reduce the impact of construction traffic on the road network.

**Consolidation centre:** See break-bulk facilities.

**Convergence (as in London 2012 Olympic and Paralympic Games legacy):** The principle and aim that within 20 years the communities of the five London boroughs hosting the 2012 Games would have the similar social and economic chances as their neighbours across London.

**Cycle Safety Action Plan:** The Mayor's action plan includes input from expert groups as well as ordinary Londoners to identify the types of collision most likely to result in serious cycling accidents and sets out measures to reduce them.

**dBa:** Refers to decibel, a logarithmic measurement used to express sound intensity and power.

**Delivering a Sustainable Transport System (DaSTS):** A framework for the assessment of funding for schemes intended for implementation in the period 2014 to 2019.

**Delivery and Servicing Plans (DSPs):** Travel plans which aim to improve the sustainability of freight and servicing by working with suppliers, clients and the freight industry to reduce the number of deliveries required, while ensuring remaining deliveries are made as safe and as environmentally friendly as possible.

**Department for Transport (DfT):** The Government department responsible for the UK transport network.

**Defra:** The Department for Environment, Food and Rural Affairs.

**Disability Equality Scheme (DES):** A statutory document which sets out in detail what TfL is going to do to ensure that the services it offers are accessible to disabled people. TfL is required to produce a DES every three years containing an outcome-based action plan that sets out what will be achieved during that timescale.

**Economic Development Strategy (EDS):** A strategy produced on behalf of the Mayor by the LDA to support the development of the Capital's economy.

**Equal Life Chances for All:** The Mayor's framework to address the remaining and significant pockets of deprivation and inequality, providing a fresh analysis and different solutions to inclusion, community cohesion and tackling disadvantage. It aims to achieve equal life chances for all and proposes an approach that brings Londoners together, rather than dividing them. It sets out the Mayor's equality vision and the framework necessary to deliver it.

**Fail to stop collision:** Collisions resulting in injury where one or more vehicle leaves the scene, so that information about the vehicle and its driver may be unknown. These collisions are often referred to as ‘hit and run’ collisions.

**Freight:** The delivery, collection and physical carriage of goods by any mode. This includes the provision of servicing, utilities and the movement of waste. Servicing incorporates maintenance and other skilled trades supplied to individual and corporate clients.

**Freight Operator Recognition Scheme (FORS):** An industry-led membership scheme aiming to improve freight efficiency and operation in London.

**Greater London Authority (GLA):** The region-wide governing body for London. It consists of a directly elected executive Mayor of London and an elected 25-member London Assembly with scrutiny powers.

**GLA Act 1999:** The Greater London Authority Act 1999 as amended by the 2007 Act of the same name.

**Greenways:** These are reliable, safe and pleasant walking and cycling routes running through parks, forests, waterways and quiet residential streets.

**HGV (heavy goods vehicle):** Motor vehicles (for example, trucks/lorries) with a maximum gross vehicle weight of more than 3.5 tonnes.

**High Level Output Specification (HLOS):** The railway investment and service improvements the Government has committed to funding for the period 2009 to 2014.

**Highways Agency:** An executive agency of the Department for Transport which is responsible for

operating, maintaining and improving the strategic road network in England.

**iBus:** An automatic vehicle location (AVL) system to improve the reliability and operation of London’s buses.

**Inner London:** Includes the boroughs of Camden, Greenwich, Hackney, Hammersmith & Fulham, Islington, Kensington & Chelsea, Lambeth, Lewisham, City of London, Southwark, Tower Hamlets, Wandsworth and the City of Westminster.

**Integrated Impact Assessment (IIA):** The MTS is subject to a number of legal requirements to prepare complementary assessments of how the strategy might affect people, places and conditions in London. TfL has undertaken an IIA to meet all these requirements simultaneously and to maximise the contribution which the strategy can make to progressing sustainability. The IIA integrates the following assessments to take into account all aspects of sustainability:

- Strategic Environment Assessment (SEA)
- Health Impact Assessment (HIA)
- Equality Impact Assessment (EqIA)
- Assessment of Economic Impacts
- Habitats screening exercise

Community safety, including crime and disorder, was also considered as part of the IIA.

**Intensification Areas:** These areas have significant potential for an increase in residential, employment and other uses through development of sites at higher densities with more mixed and intensive use.

**Intensification Area Planning Frameworks**

**(IAPFs):** See Opportunity and Intensification Area Planning Frameworks.

**Journey stage:** A journey stage is part (or sometimes all) of a trip made by a single mode of transport. A home to work trip, for example, may contain three journey stages: a walk to a bus stop, a bus journey stage, and a further walk from the bus stop to the workplace. Note that if the same home to work trip were made directly by car, walking or bicycle, there would be only one journey stage.

**Key walking route:** A program of projects to improve the walking environment across London. These projects include improving routes to shops, schools, leisure centres and work, new or improved pedestrian crossings, and clearer signing.

**Legible London:** A map-based pedestrian wayfinding and information system that gives people clear and consistent information to facilitate and encourage walking journeys. It is managed by TfL but available for third party use.

**Leq:** A well-established index of long-term constant average exposure to noise and is an abbreviation for 'equivalent continuous noise level'. It replaces the Noise and Number Index used previously. Calculated values give the level of a steady sound which, if heard continuously, would contain the equivalent total amount of sound energy (decibels) as all the noise events over the same period of time. For example, at Heathrow, a 16-hour core operating period is analysed, from 07:00 to 23:00.

**LGV (light goods vehicle):** Motor vehicles (for example, vans/pick-ups) with a maximum gross vehicle weight of up to 3.5 tonnes.

**Lifetime neighbourhoods:** These are designed to be welcoming, accessible and inviting for everyone, regardless of age, health or disability. They are sustainable in terms of climate change, transport services, housing, public services, civic space and amenities, making it possible for people to enjoy a fulfilling life and take part in the economic, civic and social life of the community.

**Local Implementation Plans (LIPs):** Statutory transport plans produced by London boroughs bringing together transport proposals to implement the MTS at a local level.

**London Councils:** This organisation represents London's 33 local authorities and lobbies on their behalf. London Councils also runs a number pan-London services.

**London Electric Vehicle Centre of Excellence:** Established within the Greater London Authority group to implement the London Electric Vehicle Delivery Plan. The unit will seek to exchange knowledge and experience with other cities intending to take forward similar plans.

**London Freight Plan:** Produced by TfL in conjunction with stakeholders in the private and public sector, outlines a vision for sustainable freight distribution in the Capital. The plan highlights challenges faced by London's diverse freight sectors and details four key projects (FORS, DSPs, CLPs and the freight information portal). The London Rail Freight Strategy sets out how TfL would like to see rail freight develop in the medium term.

**London Plan:** The Mayor of London's spatial development strategy for London.

**London sub-regions:** While having fuzzy boundaries to encourage cross-boundary working, London regions are proposed to contain the following boroughs:

- Central London region: Cities of London and Westminster, plus the boroughs of Camden, Islington, Kensington & Chelsea, Lambeth and Southwark
- North London region: Boroughs of Barnet, Enfield, Haringey and Waltham Forest
- East London region: Boroughs of Barking & Dagenham, Bexley, Greenwich, Hackney, Havering, Lewisham, Newham, Redbridge and Tower Hamlets
- South London region: Boroughs of Bromley, Croydon, Kingston upon Thames, Merton, Richmond upon Thames, Sutton and Wandsworth
- West London region: Boroughs of Brent, Ealing, Hammersmith & Fulham, Harrow, Hillingdon and Hounslow

**Londoners:** Anyone in London, including permanent and temporary residents, visitors, students, workers and tourists.

**LondonWorks:** Planning software used by TfL and London boroughs to coordinate utility street works in the Capital with the aim of reducing negative impacts on traffic flows.

**Low Emission Zone (LEZ):** The application of charges across Greater London based on emissions of air pollutants to reduce the amount of harmful vehicular emissions in the city.

**Mayoral functional bodies:** The bodies which provide services for which the GLA is ultimately responsible. They include TfL (transport), the Metropolitan Police Authority (policing), the London Fire and Emergency Planning Authority (fire and rescue) and the LDA (development and strategic planning).

**Mayor's Air Quality Strategy (MAQS):**

See air quality.

**Metropolitan town centres:** The 12 metropolitan centres currently identified are Bromley, Croydon, Ealing, Wood Green, Harrow, Romford, Uxbridge, Hounslow, Kingston, Ilford, Shepherd's Bush and Sutton. The London Plan also identifies three potential metropolitan town centres: Stratford, Woolwich and Brent Cross.

**Mobility impairment:** People who may find it harder to get around streets and use public transport for a variety of reasons. This can include people with a disability (sensory, physical or people with learning difficulties), older people, the very young, expectant mothers and people with luggage.

**Mode share:** This is a measure of the relative use of each mode of transport. It can be measured in several ways including trips by each mode and journey stages by each mode. A trip is defined as a one-way movement from one place to another to achieve a single main purpose. Trips may be further sub-divided into journey stages, the single components of parts of a trip using a single mode of transport between the interchanges. Each of these definitions is valid, though gives a differing result.

**Natura 2000:** A European network of protected sites which represent areas of the highest value for

natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community.

**Network Rail:** The company that owns and operates Britain's rail infrastructure.

**Noise contour:** The Civil Aviation Authority estimates the noise exposures around major airports (such as Heathrow, Gatwick and Stansted) for the DfT. The magnitude and extent of the aircraft noise around these airports are depicted on maps by contours of constant aircraft noise index (Leq) values. The contours are generated by a computer model validated with noise measurements, which calculates the emissions and propagation of noise from arriving and departing air traffic.

**Opportunity Areas:** London's principal opportunities for accommodating large scale development to provide substantial numbers of new employment and housing. Each typically has more than 5,000 jobs and/or 2,500 homes, with a mixed and intensive use of land and assisted by good public transport accessibility.

### **Opportunity and Intensification Area**

**Planning Frameworks:** Planning frameworks take different forms depending on local circumstances. They focus on implementation, identifying both opportunities and challenges that need resolving including land use, transport infrastructure requirements and other intervention. With support from strategic partners they should set realistic programmes and timescales for delivery.

**Orbital travel:** Non-radial journeys made between one part of London and another, where the end destination is not in central London.

**Outer London:** Includes the boroughs of Barking and Dagenham, Barnet, Bexley, Brent, Bromley, Croydon, Ealing, Enfield, Haringey, Harrow, Havering, Hillingdon, Hounslow, Kingston upon Thames, Merton, Newham, Redbridge, Richmond upon Thames, Sutton and Waltham Forest.

**Outer London Commission:** The Outer London Commission was established by the Mayor to explore how Outer London can better realise its economic potential, especially in town centres, as well as identify Opportunity and Intensification Areas and Strategic Industrial Locations. Its membership includes representatives of business, the boroughs, the (property) development industry and the voluntary sector.

The Commission is tasked with identifying opportunities to enhance the 'quality of life' and encourage economic development. It will also examine the relationship between demographic, housing and economic growth and the transport improvements needed to facilitate this.

**PHV:** Private hire vehicles, for example, minicabs.

**Physical accessibility:** How easy it is for all people to get around streets and to use public transport.

### **Planning Policy Guidance 13 (PPG13):**

National guidance regarding the integration of planning and transport at the national, regional, strategic and local level, and to promote more sustainable transport choices for carrying people and for moving freight.

**Polyclinic:** Polyclinics provide a wide range of health care services (including diagnostics) without the need for an overnight stay. Polyclinics

are sometimes co-located with a hospital or may be located in another locality entirely. A typical polyclinic will house a number of general medical practitioners such as doctors and nurses.

**Potential metropolitan town centres:**

See metropolitan town centres.

**Public transport accessibility level (PTAL):**

This is a measure of accessibility to the public transport network. For any given point in London PTALs combine walk time to the network (stations, bus stops) with service wait time at these stops to give an overall accessibility index. This can be allocated to six accessibility levels with one being poor and six being excellent.

**Police:** All police forces in London tasked with law enforcement on transport infrastructure. Principally, this incorporates all relevant divisions of the Metropolitan Police Service, City of London Police and British Transport Police.

**Public private partnership (PPP):** A mechanism for using the private sector to deliver outcomes for the public sector, usually on the basis of a long-term funding agreement.

**Rail Vehicle Accessibility Regulations (RVAR):**

Legislation created in 1998 which ensures that all new trains, trams and other track-based systems, are accessible to disabled people, including wheelchair users.

**Reference case:** The situation that is projected to occur in a future year under existing policies. It is a baseline or 'default' position. The reference case is based on GLA projections for population and employment, and the investment in the published TfL Business Plan and HLOS, including:

- The investment in the TfL Business Plan up to 2017/18
- Completion of the full LU PPP line upgrade specification (including the Bakerloo line upgrade assumed to be in 2020)
- Crossrail
- HLOS improvements in 2009 to 2014
- Removal of the Congestion Charging Western Extension zone

**Regenerative braking:** A mechanism that reduces vehicle or train speed by converting some of its kinetic energy into a storable form instead of dissipating it as heat as with a conventional brake. The captured energy is stored for future use or fed back into a power system for use by other vehicles/trains.

**Road pricing:** Normally refers to the use of charges on moving vehicles for the use of roads. It normally includes tolls for specific sections of the road system and Congestion Charging where prices are intended to influence the level of traffic. It usually excludes taxes on fuel or vehicles, hire charges and charges for parking. Road user charging can be used synonymously, though it sometimes includes taxes and charges for parking.

Road pricing is a flexible policy measure. For example, schemes can be implemented to influence the degree of use that is made of limited road space (as is the primary objective of the central London Congestion Charging scheme) or the characteristics of the vehicles using the roads (the primary objective of the LEZ).

**Scheme order (Congestion Charging):** A legal document specifying the precise details of

the operation of the central London Congestion Charging scheme, such as its hours of operation, its geographical scope, the vehicles affected, any discounts and exemptions, and charges applicable. Its full title is the Greater London (Central Zone) Congestion Charging Order 2004.

**Scheme order (Low Emission Zone):** A legal document specifying the precise details of the operation of the London LEZ scheme, such as its hours of operation, its geographical scope, the vehicles affected, any discounts and exemptions, and charges applicable. Its full title is the Greater London Low Emission Zone Charging Order 2006.

**SCOOT:** An urban traffic control system which automatically optimises traffic signal settings based on traffic demand over a sequence of signalised junctions.

**Shared space:** A concept which suggests a degree of sharing of streetscape between different transport modes and street users, requiring everyone to consider the requirements, aspirations and needs of each other.

**Smarter travel:** Programmes of targeted measures to promote sustainable travel, helping to reduce congestion and crowding and mitigate the environmental impacts of transport.

**Smoothing traffic flow:** Overarching term for the package of measures that seeks to manage road congestion and which includes managing delay, improving journey time reliability and network resilience.

**Spider map:** A diagrammatic map to show all the bus routes from a single location.

**Strategic Industrial Locations (SILs):** These are London's main reservoirs of industrial land comprising approximately 40 per cent of the Capital's total supply. They are of two types to meet and support the requirements of different sorts of industrial occupier:

- Preferred industrial locations which are particularly suitable for general industrial, light industrial, storage and distribution, waste management, recycling, some transport-related functions, utilities, wholesale markets and other industrial related activities
- Industrial business parks which are particularly suitable for activities that need better quality surroundings including: research and development, light industrial and higher value general industrial, some waste management, utility and transport functions, wholesale markets and small scale distribution

**Strategic Outer London development centres:**

Centres in Outer London or adjacent parts of Inner London with one of more strategic economic functions of greater than sub-regional importance, with specialist strengths that generate growth significantly above the long-term Outer London trend. The inclusion of strategic Outer London development centres in the London Plan and the MTS does not imply that development growth should be concentrated in these centres over town centres.

**Strategic Road Network:** Strategically significant roads in London for which TfL has a Network Management Duty, comprising the 580km TLRN and 500km of borough roads.

**Strategic Walk Network (SWN):** A 350-mile network of seven strategic walking routes across London. The network provides the opportunity for leisure walking and connects both rural and suburban areas, in addition to some of the Capital's most popular central destinations. The network also provides quality pedestrian access to transport links, education and employment destinations.

**Sub-regions:** See London sub-regions.

**The Committee on Climate Change:** An independent body established under the Climate Change Act to advise the UK Government on reducing greenhouse gas emissions.

**TfL Park and Ride Assessment Framework:** The framework sets out the criteria for considering new park and ride provision in London.

**Transport for London Road Network (TLRN):** Described in the GLA Act 1999 as the Greater London Authority Road Network. The Mayor has decided to call this the Transport for London Road Network. It comprises 580km of London's red routes and other important streets.

**Train operating companies (TOCs):** Businesses operating passenger trains on the railway system of mainland Great Britain under the collective National Rail brand.

**Transport and Works Act (TWA):** Legislation created in 1992 regulating the construction and operation of railways, tramways and other guided transport schemes, and works which interfere with navigational rights.

**Travel plans:** Plans promoting and providing guidance on sustainable transport options for a given location with the aim of promoting sustainable and environmentally friendly modes.

**Trip:** A complete movement from origin to destination, for example, from home to work.

**20mph zone:** Areas with self-enforcing speed limits that reduce vehicle speeds. Research has found that as speeds reduce casualties can be reduced by more than 40 per cent after a zone is implemented in London.

**Urban realm:** The area between building alignments including public spaces next to streets. The street makes up the greatest part of the urban realm in most cities.

**Variation Order:** A legal document specifying changes to be made to the Congestion Charging or LEZ scheme orders. Any change to the Congestion Charging or LEZ scheme must be made by TfL and then be subject to public and stakeholder consultation. In light of this, the Mayor may choose to confirm the variation order, make modifications to it, or not confirm it.

**'Way to Go! – Planning for Better Transport':** This non-statutory publication, published in November 2008, sets out the Mayor of London's vision for transport in the Capital.



## Other formats and languages

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### Vietnamese

Nếu bạn muốn có văn bản tài liệu này bằng ngôn ngữ của mình, hãy liên hệ theo số điện thoại hoặc địa chỉ dưới đây.

### Greek

Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος εγγράφου στη δική σας γλώσσα, παρακαλείστε να επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυδρομικά στην παρακάτω διεύθυνση.

### Turkish

Bu belgenin kendi dilinizde hazırlanmış bir nüshasını edinmek için, lütfen aşağıdaki telefon numarasını arayınız veya adrese başvurunuz.

### Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ:

### Hindi

यदि आप इस दस्तावेज की प्रति अपनी भाषा में चाहते हैं, तो कृपया निम्नलिखित नंबर पर फोन करें अथवा नीचे दिये गये पते पर संपर्क करें

### Bengali

আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলি (কপি) চান, তা হলে নীচের ফোন নম্বরে বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

### Urdu

اگر آپ اس دستاویز کی نقل اپنی زبان میں چاہتے ہیں، تو براہ کرم نیچے دئے گئے نمبر پر فون کریں یا دیئے گئے پتے پر رابطہ کریں

### Arabic

إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى الاتصال برقم الهاتف أو مراسلة العنوان أدناه

### Gujarati

જો તમને આ દસ્તાવેજની નકલ તમારી ભાષામાં જોઈતી હોય તો, કૃપા કરી આપેલ નંબર ઉપર ફોન કરો અથવા નીચેના સરનામે સંપર્ક સાધો.

